Formalising the current state of play in weight management: the knowledge, experiences and practices of women, pharmacists and pharmacy assistants

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ERRATA

P65: Section 2.5.3.2, Paragraph 2, line 3, "increases" for "increase"
P70: Section 2.5.5.5, Paragraph 3, line 1, "past" for "post"
P93: 5th bullet point, line 1, "experiences" for experience"
P149: Section "differences and similarities between pharmacy-specific outcomes", line 3 add 95% before CI, line 4 add 95% before CI
P150: Below figure, line 2 add 95% before CI, line 4 add 95% before CI
P172: Under Abstract, line 5, "were" for "was"
P195: First bullet point, line 1, "pharmacists" for "pharmacists' "
P266: First paragraph, line 5, "experiences" for experience"
P312: Paragraph 2, line 1, remove "a" before the word consensus
P318: Paragraph 1, line 6, "practices" for "practice"
P318: Paragraph 1, line 6, "of" for "for"
P150: Figure 1, The Y-axis has been labelled "Percentage of respondents", the X-axis has been labelled "Weight loss benefits"
Pxvi: Abbreviations, RR, "Risk reduction" for "Relative risk"

ADDENDUM

P2: In the Thesis Overview section, the study design for each phase has been added, the phase(s) each objective and hypotheses are related to have also been highlighted.
P20, 25-28, 37-47, 50, 54, 55, 57, 72, 77, 84, 85, 88, 89: change "patient(s)" to "consumer(s)" where appropriate
P28: Table 6: Surgical Interventions: Disadvantages: additional disadvantages of bariatric surgery have been included: "Contraindicated in consumers with, severe gastrointestinal disease, cancers, unstable heart disease, unstable lung disease, advanced liver disease and uncontrolled obstructive sleep apnoea with portal hypertension, Revision or reversal of surgery may be required in some consumers. Main complications reported include: perioperative, infections, thromboembolism and acute cholecystitis."
P32: Section 2.3.4, end of paragraph, add: "An often cited limitation of these products and weight management programs is cost. The participants in these studies may have continued with the weight management program for 12 months and experienced significant weight loss outcomes because they did not have to pay for the program. The results may not be realised in a real-life setting if consumers were unable to continue on the program due to their expense."
P38: Section 2.4.2, following 2nd paragraph add: "A recent systematic review by Gordon *et al*. exploring community pharmacy-based weight management interventions concluded that currently there is a lack of evidence for the effectiveness and cost-effectiveness of these interventions.[ref1] The authors highlighted that long-term studies using RCTs need to be conducted to determine the effectiveness and cost-effectiveness of community pharmacy-based weight management interventions."
Added reference: Ref1- Gordon J, Watson M, Avenell A. Lightening the load? A systematic review of community pharmacy-based weight management interventions. *Obes Rev* 2011;12(11):897-911.
P72: Paragraph 2, line 2: sentence reworded - "However, a recent review by Smith identified pharmacists as being uniquely placed to counsel women on obesity risk factors, prevention and treatment.[218]
P75: The heading of 2.6.1.3 has been changed to "current weight loss methods".
P157: Paragraph 2, line 11: "diet and exercise counselling" changed to "weight management counselling".
P227: Abstract, Background edited to: "Simulated patient methodology has become widely used in pharmacy practice research. Prior to this study, however, no study had previously used the Angoff method to develop an objective approach to assess performance levels of pharmacy staff."
P228: Abstract, Methods, line 3, edited to: "An expert panel meeting with a senior pharmacy educator, a major chain clinical pharmacist manager and a pharmacy owner was organised to determine the appropriateness of items on, and the cut-score for, each analytical checklist."
P233: Methods section. The sentence commencing "The steps commonly used in OSCE development …" has been replaced by - "Steps three to six commonly used in OSCE development (outlined above in the Introduction) were adapted in this study to develop a post-analytical checklist to determine a successful pharmacy consultation. These steps have been described below."
P235: Methods section, under training of simulated patients, the following has been included: "Training was conducted over two days in a virtual pharmacy setting, which mimicked the look and feel of a community pharmacy. During the training, the simulated patients were able to act out the scenario in different areas of the virtual pharmacy, speak to different employees in the virtual pharmacy including pharmacists and pharmacy assistants, as well as act out the scenario in different pharmacy environments i.e. with varying levels of background noise. A pilot visit was conducted in one community pharmacy, which was not included in the research study. The simulated patients were also trained in how to complete the analytical checklists and were made familiar with each item and what it meant. Training was also conducted to ensure that the simulated patients had a clear understanding of what would denote a yes or no answer to each item on the analytical checklist. Throughout the training any ambiguity in the items on the analytical checklist was made clear."
P242: Paragraph 1, line 8: "they also do not" sentence has been removed
P255: Methods section, under Pharmacy sample selection, edits have been made and this section now reads: "Two hundred and fifty pharmacies were randomly chosen from the Pharmacy Premises Regulatory Authority in Victoria list of community pharmacies in Victoria. The selected pharmacies were notified of the study by mail one month prior to the commencement of the mystery shopper visits. Pharmacies were given 30 days to opt out of the study. In order to minimise the Hawthorne effect [14], and enable a more accurate assessment of what was occurring in real life practice, the pharmacies were not told when the visits would occur or the description of the mystery shopper scenarios. The pharmacies were told that the visits would aim to gain an insight into current weight management recommendations being made to women pharmacy consumers by pharmacists and/or pharmacy assistants. Ten pharmacies opted out of the study and thus, from the list of 250 pharmacies, 240 pharmacies remained and 30 pharmacies were then randomly selected for the mystery shoppers to visit. As this was an exploratory study, the sample size was not calculated and was based on resources available at the time.
P257: Methods section, under analysis, line 3, sentence beginning with "Pearson's" has been edited to: "Pearson's chi-squared test was used to determine any significant relationships between two categorical variables between the two scenarios (Fisher's Exact test was used where there was less than five cases in the category). "
P259: Table 2 has been modified:

	Overall N=60 n (%)	Scenario 1 N=30 n (%)	Scenario 2 N=30 n (%)	P-value
General				
Number of items responded to on the post-visit analytical checklist Median (IQR range)	8 (3-12)	7.5 (3-9.5)	8 (3-27)	0.29
Time taken to attend mystery shopper (minutes) Median (IQR range)	2 (1-5)	2 (2-5.25)	1.5 (1-5)	0.09
Length of consultation (minutes) Mean; SD (IQR range)	6.45; 4.84 (2-10)	3.80; 3.09 (2-5)	9.17; 4.82 (5-10)	<0.001 *95% CI* (-7.46,- 3.27)
Pharmacists offering advice	24 (40.0)	20 (66.7)	4 (13.3)	<0.001
Pharmacy assistants offering advice	45 (75.0)	18 (60.0)	27 (90.0)	0.007
Both pharmacist and pharmacy assistant offering advice	9 (15.0)	8 (26.7)	1 (3.3)	0.03
History-taking				
Weight	19 (31.7)	11 (36.7)	8 (26.7)	0.41

	Overall N=60 n (%)	Scenario 1 N=30 n (%)	Scenario 2 N=30 n (%)	P-value
BMI calculated	9 (15.0)	9 (30.0)	0 (0)	0.002
Reason for weight loss	22 (36.7)	11 (36.7)	11 (36.7)	1
Current diet and exercise habits	12 (20)	3 (10.0)	9 (30.0)	0.10
Previous weight loss attempts	14 (23.3)	2 (6.7)	12 (40.0)	0.005
Previous weight loss methods	12 (20.0)	2 (6.7)	10 (33.3)	0.02
Patient's goal weight	11 (18.3)	1 (3.3)	10 (33.3)	0.006
Current medical conditions	8 (13.3)	0 (0)	8 (26.7)	0.005
Current medications	3 (5.0)	0 (0)	3 (10.0)	0.24
Pregnancy	2 (3.3)	0 (0)	2 (6.7)	0.49
Breastfeeding	3 (5.0)	0 (0)	3 (10.0)	0.24
Recommendations				
Reduced dietary intake	38 (63.3)	15 (50.0)	23 (76.7)	0.03
Increased physical activity	26 (43.3)	10 (33.3)	16 (53.3)	0.12
Reduced dietary intake and increased physical activity	25 (41.2)	10 (33.3)	15 (50.0)	0.19
Vitamin/herbal product	12 (20.0)	8 (26.7)	4 (13.3)	0.33
Orlistat (Xenical®)	10 (16.7)	9 (30.0)	1 (3.3)	0.01
Meal replacement product	7 (11.7)	6 (20.0)	1 (3.3)	0.10
Pharmacy based program	25 (41.7)	3 (10.0)	22 (73.3)	<0.001
Use of a food diary	4 (6.7)	0 (0)	4 (13.3)	0.11
Referral to support networks	11 (18.3)	2 (6.7)	9 (30)	0.04
Offer of pamphlets, written advice	12 (20.0)	3 (10.0)	9 (30)	0.10
Referral to other HCP(s)	3 (5.0)	1 (3.3)	2 (6.7)	1.0
Note: IQR= inter-quartile range, SD= standard deviation, CI= confidence interval				

P263-267: Discussion has been edited and now reads:
This study provides a greater understanding of the current weight management practices and recommendations being made by pharmacy staff to women pharmacy consumers and highlights areas in which pharmacy staff need further training and education. This study is the first Australian study to use mystery shoppers to investigate actual weight management recommendations made by pharmacists and pharmacy assistants specifically to women using an objective assessment method.
The quality of pharmacy staff consultations varied depending on the type of scenario. No pharmacy had a successful pharmacy consultation in Scenario 1, which was disappointing, considering the majority of the mystery shopper interactions were dealt with by a pharmacist. Since pharmacists are trained health care professionals with medication expertise it was expected that pharmacist-mystery shopper interactions would result in a higher post-analytical checklist score compared to pharmacy assistant-mystery shopper interactions. In Australia, Xenical® (orlistat) is a Pharmacist Only Product (available OTC with pharmacist intervention). It cannot legally be recommended or sold by pharmacy assistants without the direct involvement of a pharmacist. It is unacceptable that in the three sales that were completed solely by pharmacy assistants without any consultation with the pharmacist, correct procedure for the sale of orlistat was not followed.
Three successful pharmacy consultations were recorded for Scenario 2, all of which had been dealt with solely by a pharmacy assistant. Although there were no significant differences between Scenario 1 and Scenario 2 in the number of items to which a response was recorded on the post-analytical checklists (P = 0.294), the range of scores varied greatly between the scenarios, with higher scores being recorded for Scenario 2. This is similar to other studies that have shown that pharmacy staff perform better in responding to symptom-based request (Scenario 2) scenarios compared with product-based requests (Scenario 1) [23].
History taking and assessment
In both scenarios, the majority of pharmacy staff did not ask the recommended questions as outlined by weight management guidelines [12,25]. These results are similar to those seen by Choice® in their mystery shopper study [8]. It is interesting to note that no pharmacy staff member asked the woman in Scenario 1 whether she was pregnant or breastfeeding and in Scenario 2 only two pharmacy staff members asked about pregnancy and three asked about breastfeeding. Pharmacies have been identified as an ideal location for women to obtain diet and exercise advice in the perinatal period, pharmacy staff in the current study did not even determine if the women were pregnant or breastfeeding. For women pharmacy consumers of child-bearing age, pregnancy and breastfeeding are two very relevant points that need to be addressed before any recommendation is made. These results underline the need for development of pharmacy staff weight management education material with an emphasis on how to take an appropriate weight management history.
In a recent study by Fakih *et al.* investigating current weight management services provided by Australian community pharmacies using a mailed questionnaire (ref1), the majority of pharmacists and pharmacy assistants who responded said that they would ask about previous weight loss attempts, dietary habits, exercise habits, existing medical conditions and current medications when they are approached by a consumer seeking weight management advice. However, this was not observed in this mystery shopper study. Pharmacists and pharmacy assistants asked about medications (3/60) and medical conditions (8/60) in less than 15 per cent of the mystery shopper visits. Current diet and exercise habits were also only solicited in 20% (12/60) of the mystery shopper visits. The importance of taking an adequate weight management history has been highlighted in national weight management guidelines.[13] It was disappointing to see that pharmacists and pharmacy assistants were not asking the questions they recognised as important in Fakih *et al.*'s study in a real-life setting (ref1). Furthermore, in the study by Fakih *et al.*, just under 50 per cent of pharmacists (251/537) said they would utilise a person's BMI and WC measurement in combination for weight assessment. In the mystery shopper visits, only 15% (9/60) of visits had a BMI calculated and no visit had a WC measurement taken.
This study highlighted the poor weight management assessment skills of pharmacists and pharmacy assistants. There are a number of explanations for the observed differences in findings between Fakih *et al.*'s study (ref1) and this study. These include:
Pharmacists and pharmacy assistants may feel uncomfortable asking a woman about her weight history in a real-life situation. Dastani *et al.* has previously found that pharmacists in Texas, USA, felt uncomfortable providing weight management counselling to their consumers.[26]
In Fakih *et al.*'s study pharmacists were significantly more likely (P < 0.001) to understand the importance of calculating a BMI and taking a WC measurement when assessing a person's weight compared to pharmacy assistants (ref1). In the mystery shopper study, BMI was calculated by only pharmacists in the first scenario that involved Xenical®. The majority of the other mystery shopper visits were dealt solely by pharmacy assistants without pharmacist intervention. Pharmacy assistants may not understand the significance of calculating a person's BMI when assessing a consumer's weight.
Finally, pharmacists and pharmacy assistants may not feel that they have the time to take a thorough weight management history. This all relates to barriers commonly described by pharmacists to the delivery of enhanced pharmacy services and includes time, space, pharmacy layout and staffing issues [7,26]. Both pharmacists and pharmacy assistants appear to understand what questions need to be asked when taking a thorough weight management history but are unable to do this in a real-life situation.
The inability of pharmacists and pharmacy assistants to take a thorough weight management history is particularly alarming. With over 90% (832/880) of pharmacies stocking weight loss products and just under 50% (424/880) of pharmacies offering a weight management program in Australia,(ref1) it is extremely important that each member of the pharmacy is able to take a thorough history. Weight loss products are not without side effects, interactions or contraindications. If pharmacists and pharmacy assistants are to sell these products correctly they need to treat them like any other medication that may cause harm. Currently pharmacists and pharmacy assistants are treating these products as a "quick sale" without the need for any assessment to determine their suitability for their consumer.

In this study pharmacy assistants dealt with 60 per cent of the mystery shopper visits alone without communication with the pharmacist. This finding indicates that future weight management training and education material that is developed must target pharmacy assistants in addition to pharmacists. These results are comparable to those reported by Um *et al* in an Australian consumer survey [27]. In their study, 50 per cent of surveyed consumers reported that they had been served by pharmacy assistants when seeking information from their community pharmacy about weight management [27].

Recommendations made by pharmacists and pharmacy assistants.

Weight management recommendations made by pharmacy staff to the mystery shoppers varied remarkably between the pharmacies and the different scenarios. The expert panel group had determined that for a successful pharmacy consultation, decreased calorie intake and increased physical activity must be recommended, however only around 60 per cent of pharmacy staff provided any dietary advice and less than half recommended increased exercise. The low number of pharmacy staff consultations offering advice on both diet and exercise in weight management may be due to lack of knowledge and confidence of pharmacy staff in this area, again highlighting the need for further education. Hughes *et al*. found that pharmacy staff report being significantly less confident providing advice on nutrition and physical activity compared with other primary health care professionals such as general practitioners and nurses [9]. During counselling many of the pharmacy staff relied on personal experiences to give weight loss advice, did not refer the women to appropriate support networks or did not provide any written information. Pharmacies have recently been perceived as providing weight management services merely for a financial gain by selling non-evidence based products or selling products that are not indicated for the consumer [7,26,28]. In this study, although not indicated or recommended, orlistat was sold to the woman in Scenario 1 in 30 per cent of pharmacy visits. In a further 30 per cent of pharmacy visits, pharmacy staff recommended this woman purchase another weight loss product such as a meal replacement product or vitamin/herbal product. In addition to poor history-taking in Scenario 2, the outcome was also very product focused. This is of concern as the majority of products recommended were pharmacy-based programs that rely on meal replacements to achieve weight loss and require a thorough history, which was not undertaken, to determine their appropriateness. It is difficult to determine whether the recommendations were based on the desire for a sale or lack of knowledge about other suitable options.

Study Limitations

A recent study by Werner and Benrimoj has shown that when mystery shopper visits are audio-taped, a statistically significant difference between the answers in the standardised data collection questionnaire (completed immediately post visit) and the answers obtained from the taped consultations is observed [ref2]. It is recommended that mystery shopper consultations be audio-taped to reduce recall bias [ref2]. A major limitation of this study is that audio-recording of the mystery shopper consultation was not undertaken due to the difficulty in gaining ethical approval. However, recall bias was minimised by the mystery shoppers recording the results of the consultation immediately following each visit on a post-visit data collection form. The mystery shoppers visited a small sample of pharmacies in only one state of Australia, so the results cannot be generalised to all Australian community pharmacies, however, it is unlikely that weight management services differ much between Australian states. The checklist used to determine the success of the consultations provided an objective, pre-determined list of criteria for assessment.

Added reference: Ref1- Fakih S, Hussainy SY, Marriott JL. A national mailed survey exploring weight management services across Australian community pharmacies. Australian Journal of Primary Health 2014; http://dx.doi.org/10.1071/PY13118.

Added reference: Ref2- Werner JB, Benrimoj SI. Audio taping simulated patient encounters in community pharmacy to enhance the reliability of assessments. American Journal of Pharmaceutical Education. 2008;72(6):136.

P272-283: "Summary of Phases 2 and 3" has been removed

P301, 303 305-307: Tables 3, 4 and 5: The descriptors "homogenous and heterogeneous" have been removed

P308: Paragraph 2, line 5: sentence beginning with "interestingly" has been reworded to: "Interestingly, the reasons that pharmacists and pharmacy assistants felt were most relevant to pharmacies having a role in weight management were the current availability of weight loss products in pharmacy".

P318: First sentence "With the prevalence of overweight and obesity… "in Australia" has been added.

P318: Following paragraph 2 the heading "Women pharmacy consumers' views on community pharmacy involvement in weight management" has been added

P319: Following paragraph 1 the heading "Utilisation of OTC weight management products" has been added

P319: Paragraph 2, line 6, end of sentence, add: "This confirmed hypothesis 1 that many women pharmacy consumers in Australia and England are currently using weight loss product(s) and treatment(s) that are not endorsed by current weight management guidelines."

P320: Following paragraph 2 the heading "Current weight management counselling by healthcare professional" has been added

P320: Paragraph 2, line 6, end of sentence add "This finding answers hypothesis 2 and highlights that women pharmacy consumers in Australia and England are not receiving adequate information about weight management from their healthcare professionals, including pharmacists and pharmacy assistants."

P320: Following paragraph 1 the heading "History taking and assessment by pharmacists and pharmacy assistants" has been added

P321: Following paragraph 1 the heading "Pharmacists as part of a multidisciplinary team " has been added

P321: Following paragraph 2 the following section has been added: "Weight management recommendations made by pharmacists and pharmacy assistants" In Phase 2, the majority of pharmacists and pharmacy assistants said that they would recommend decreased calorie intake and increased exercise as part of their counselling if someone approached them regarding weight management. Overall in the case vignette study in Phase 3, the findings were similar to those seen in Phase 2 with decreased calorie intake and increased exercise also recommended by the majority of pharmacists (62.0%; 333/537) and pharmacy assistants (61.5%; 248/403). Although a combination of decreased calorie intake and increased exercise was recommended for most of the case vignettes, it is worth mentioning that in the pregnancy case vignette, very few pharmacists and pharmacy assistants recommended decreased calorie intake and increased exercise (29.4%; 52/177).

More specifically, in the borderline healthy weight case vignette (woman requesting Xenical®), over 50% (115/200) of respondents said that they would recommend decreased calorie intake and increased exercise. In the mystery shopper study acting out the same scenario, this result was very different, with only a third (10/30) of pharmacists or pharmacy assistants recommending reduced dietary intake and increased physical activity to the mystery shopper. Similarly, the responses to the post-partum case-vignette differed from what was observed in the real-life scenario. In the case-vignette study, over 70% (130/176) of pharmacists and pharmacists said that they would recommend decreased calorie intake and increased exercise, compared to only 50% (15/30) of pharmacists and pharmacy assistants in the mystery shopper study.

Decreased calorie intake and increased physical activity is the recommended first-line therapy for weight management in all national weight management guidelines.[21](ref1)(ref2) Pharmacists and pharmacy assistants must be able to provide this information to their consumers when they are approached about weight management. Basic counselling on healthy eating and increased exercise should occur in *all* weight management counselling sessions, in line with relevant dietary and physical activity guidelines available.[21](ref3) It is disappointing to see that only 40% (25/60) of mystery shopper pharmacy consultations resulted in this counselling being provided. Before any weight management intervention or program is to be offered or recommended in community pharmacies, all pharmacists and pharmacy assistants need to be trained in this aspect of weight management counselling. Consumers should expect to receive evidence-based diet and exercise advice from their community pharmacist and support-staff. Unfortunately, this is not what is currently observed in practice. These results confirm hypothesis 3 and 4 outlined at the beginning of this thesis which stated that Australian pharmacists and pharmacy assistants lack knowledge on widely available programs and products and are aware of different treatment options."

Added reference: Ref1- Ministry of Health. Clinical Guidelines for Weight Mangement in New Zealand Adults 2009 [Accessed August 2010]. Available from: http://www.moh.govt.nz/moh.nsf/indexmh/clinical-guidelines-for-weight-management-in-nz-adults.

Added reference: Ref2- Scottish Intercollegiate Guidelines Network. 115 Management of Obesity. A national clinical guideline February 2010 [Accessed 13/04/2013]. Available from: http://www.sign.ac.uk/pdf/sign115.pdf.

Added reference: Ref3- National Health and Medical Research Council. Australian Dietary Guidelines. Canberra: National Health and Medical Research Council., 2013

P322: Paragraph 1, line 11 (beginning with "Finally") to line 15 have been deleted. The following has been added: "In addition, pharmacists and pharmacy assistants may feel that they lack the time to offer the weight management services they said they would offer in the case vignettes.

Finally, pharmacists and pharmacy assistants may know what weight management advice they need to recommend to their consumers when asked about weight management, but they simply may lack the skills to provide the appropriate counselling. This was emphasised throughout Phases 2, 3 and 4. Pharmacists and pharmacy assistants highlighted the need for further training in counselling skills, history taking skills as well as the need for a "train the trainer" model so that they can have the appropriate skills to effectively counsel on weight management. The importance of additional training in history-taking and appropriate recommendations to women of different life-stages and BMIs was seen throughout the different phases of this thesis."

P322: Following paragraph 1, the heading "Educational resources required" has been added

P323: paragraph 2, line 4, add following sentence: "This confirms the final hypothesis of the project which stated that women pharmacy consumers, pharmacists and pharmacy assistants want a weight management educational resource to be developed and delivered online, so that they are able to obtain consistent, evidence-based weight management information that can be widely used and applied in pharmacy."

P325: Following paragraph 2, add new section: "Limitations: The limitations of each study have been described in the manuscripts described in Chapters 4-10. However, there are certain overall limitations of this research project including:

- Evidence-based weight management recommendations in Phases 1-4 were defined based on the 2003 NHMRC Clinical Practice Guidelines for the Management of Overweight and Obesity in Adults.(ref4) These were the only guidelines in Australia available at the time. In phases 2 and 3 where it was vital to compare recommendations made by pharmacists and pharmacy assistants to up-to-date weight management guidelines, the weight management guidelines recently published in New Zealand and Scotland were used.(ref1)(ref2) Using guidelines developed for different countries may be a limitation, as they may not reflect Australian practice; however, the recently released 2013 NHMRC guidelines recommend similar weight management interventions to the New Zealand and Scotland weight management guidelines.[21] This indicates that it was appropriate that recommendations made by pharmacists and pharmacy assistants in Phases 2 and 3 could be compared to available weight management guidelines in New Zealand and Scotland.(ref1)(ref2)
- Throughout the research project the significance level was pre-determined to be $P < 0.05$ regardless of how many statistical tests were undertaken in each study. This could increase the chance of finding an incorrect, statistically significant result. Since many of the studies undertaken in this research project were exploratory in nature, the conventional $P < 0.05$ value was used and deemed appropriate."

Added reference: Ref1- Ministry of Health. Clinical Guidelines for Weight Mangement in New Zealand Adults 2009 [Accessed August 2010]. Available from: http://www.moh.govt.nz/moh.nsf/indexmh/clinical-guidelines-for-weight-management-in-nz-adults.

Added reference: Ref2- Scottish Intercollegiate Guidelines Network. 115 Management of Obesity. A national clinical guideline February 2010 [Accessed 13/04/2013]. Available from: http://www.sign.ac.uk/pdf/sign115.pdf.

P326: Recommendation section has been edited. Last paragraph on page 327 has not been changed. The remainder of the section now reads:

As can be seen from the findings of this research, women-specific educational resources need to be developed and implemented in community pharmacy. The results generated from all four phases of the research should be considered when developing these educational resources. Educational resources are needed to address the areas in which pharmacists and pharmacy assistants appear to be deficient. However, the importance of training pharmacists and pharmacy assistants in the different areas of weight management counselling also needs to be highlighted. The following recommendations can be made:

Practice

Pharmacists and pharmacy assistants need to become more familiar with available weight management guidelines and educational resources so that they are aware of evidence-based weight management treatment(s);

Information regarding the benefits of weight loss needs to be highlighted in educational resources. In addition, pharmacists should use opportunities when dispensing medications used to treat obesity-related conditions to deliver weight management advice;

Pharmacists and pharmacy assistants should utilise the 5A's counselling framework provided in the 2013 NHMRC Clinical Practice Guidelines for the Management of Overweight and Obesity in Adults, Adolescents and Children in Australia to help them recommend appropriate weight management advice to their consumers.[21] This framework will also improve their ability to take an appropriate weight management history;

Pharmacists and pharmacy assistants need to become more familiar with women-specific weight issues so that they are able to support their women pharmacy consumers in different life stages, especially since it has been shown that women in the perinatal period come into contact with pharmacists and pharmacy assistants more frequently than other primary health care professionals;[22]

Policy

Government bodies need to consider pharmacists as key health care professionals in the prevention and treatment of overweight and obesity in Australia and as such, need to be mentioned in future iterations of existing weight management guidelines so that other health professionals are aware of the pharmacist's role in this area.

Once the educational resources are developed and piloted in community pharmacies across Australia, dissemination needs to occur. Development of the resources, training and delivery of the resources needs to occur in collaboration with major pharmaceutical organisations including the Pharmaceutical Society of Australia and the Pharmacy Guild of Australia. This will ensure that the resources are widely available in community pharmacies across the country.

Education

Weight management advice should be delivered face-to-face in the pharmacy. Educational resources should be used to supplement information provided;

Educational resources need to be accessible online with accompanying hard-copy formats to help pharmacists and pharmacy assistants support their women pharmacy consumers;

Women pharmacy consumers should be educated about the importance of seeking health care advice prior to commencing any weight management regimen;

Training in the areas identified as lacking by women, pharmacists and pharmacy assistants in all phases of the research need to be addressed so that pharmacists and pharmacy assistants can deliver appropriate weight management services to their women pharmacy consumers; and

Nationally and internationally topics related to weight management including nutrition, physical activity, weight loss medications, history-taking skills and counselling strategies needs to be covered in the pharmacy curricula. This is crucial to ensure that all pharmacy graduates can have a general understanding in this increasingly growing area of pharmacy practice.

Research

The results from this research project have provided key stakeholders - government bodies, pharmacy professional organisations and universities - with the information required for the future development and implementation of women-specific educational resources for use in community pharmacies.

Currently no information is available nationally and internationally on the pharmacy curriculum in this area. Little is known about the weight management knowledge, history taking and counselling skills pharmacy students are taught during their pharmacy degree. It will be important to understand the level of weight management skills pharmacy students graduate with, to further understand the training and education that is needed. Ultimately it would be of great importance to have weight management as a component in the pharmacy curriculum.

A study should be conducted to determine the suitability and acceptance of future educational resources by pharmacists, pharmacy assistants and women pharmacy consumers.

Research should also investigate whether pharmacists and pharmacy assistants' knowledge, comfort in providing weight management advice, history-taking skills and counselling ability, is improved after the dissemination of the educational resources.

Future studies should determine whether weight management educational resources for women, delivered by pharmacists and pharmacy assistants, contribute to positive weight loss outcomes.

Phase 1 was conducted in both Victoria and Nottingham, England. Although similar results between the women pharmacy consumers were found, in future it will be important to investigate the current recommendations made by pharmacists and pharmacy assistants to women pharmacy consumers in England. This will help determine whether the same educational resources developed in Australia for pharmacists and pharmacy assistants, can be utilised in both regions.

This thesis is dedicated to my sister Zeinab.

She is the person who carries me through everything, and turns dreams into reality

He who taught (the use of) the Pen,

Taught the human that which he knew not

(Qur'an 96: 3-4)

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Abbreviations

ABS: Australian Bureau of Statistics

AIHW: Australian Institute of Health and Welfare

AusDiab study: The Australian Diabetes, Obesity and Lifestyle study

BDI: Beck Depression Inventory

BES: Gormally Binge Eating Scale

BMI: Body Mass Index

CI: Confidence interval

GP: General practitioner

HCP: Health care professional

HDL: High-density lipoprotein

HT: Hypertension

IQR: Interquartile range

LDL: Low-density lipoprotein

MR: Meal replacement

MRP: Meal replacement product

NGT: Nominal group technique

NHMRC: National Health and Medical Research Council

NICE: National Institute for Health and Care Excellence

NSW: New South Wales

OSCE: Objective structured clinic examinations

OTC: Over-the-counter

OR: Odds ratio

PA: Pharmacy assistant

PCOS: Polycystic ovary syndrome

PCT: Primary care trust

PhARIA: Pharmacy Access/Remoteness Index of Australia

QCPP: Quality Care Pharmacy Program

RR: Risk reduction

RCD: Reduced calorie intake

RCT: Randomised controlled trial

SF: Short Form

T2DM: Type 2 diabetes mellitus

UK: United Kingdom

USA: United States of America

WC: Waist Circumference

WWW: World Wide Web

Y/O: Years old

List of publications during candidacy

1. **Fakih S**, Hussainy SY, Marriott JL. Women, pharmacy and the World Wide Web: could they be the answer to the obesity epidemic? *International Journal of Pharmacy Practice;* 2013 Jan 31. DOI: 10.1111/ijpp.12020.

2. **Fakih S**, Hussainy SY, Marriott JL. Women pharmacy consumers' experiences with weight loss treatment across Victoria, Australia. *International Journal of Clinical Pharmacy.* 2013;35(6):1120-1129.

3. **Fakih S**, Marriott JL, Hussainy SY. A national mailed-survey exploring weight management services across Australian community pharmacies. *Australian Journal of Primary Health*; 2014 (accepted 3rd January 2014)

List of presentations during candidacy

1. **Fakih S**, Hussainy SY, Marriott JL, Demos L, McNeil J. Women pharmacy consumers' experiences with weight loss treatment: A population-based survey (poster presentation*). 6th Annual Postgraduate Research Symposium.* Melbourne, Australia, 2011.

2. **Fakih S**, Hussainy SY, Marriott JL, Demos L, McNeil J. Women pharmacy consumers' experiences with weight loss treatment: A population-based survey (poster presentation). *Pharmacy Australia Congress.* Melbourne, Australia, 2011.

3. **Fakih S**, Hussainy SY, Marriott JL, Boardman H, Anderson C, Demos L, McNeil J, Peeters, A. Comparing Women Pharmacy Consumers' Experiences with Weight Loss Treatment in Victoria and Nottingham: A Cross-Sectional Study (oral presentation). *6th Annual Postgraduate Research Symposium.* Melbourne, Australia, 2011.

4. **Fakih S,** Hussainy SY, Marriott JL, Boardman H, Anderson C, Demos L, McNeil J. Comparing Women Pharmacy Consumers' Experiences with Weight Loss Treatment in Victoria and Nottingham: A Cross-Sectional Study (oral presentation). *Australasian Pharmaceutical Science Association.* Adelaide, Australia, 2011.

5. **Fakih S**, Hussainy SY, Marriott JL. A national mailed-survey exploring weight management services across Australian community pharmacies (poster presentation). *National Medicines Symposium.* Sydney, Australia, 2012.

6. **Fakih S**, Hussainy SY, Marriott JL. A national mailed-survey exploring weight management services across Australian community pharmacies (oral presentation). *17th International Social Pharmacy Workshop.* Phuket, Thailand, 2012

7. **Fakih S**, Hussainy SY, Marriott JL. A national mailed-survey exploring weight management services across Australian community pharmacies (poster presentation). *7th Annual Postgraduate Research Symposium.* Melbourne, Australia, 2012.

8. **Fakih S**, Hussainy SY, Marriott JL. Exploring Weight Management Recommendations for Women in Australian Community Pharmacies- A Case Vignette Study (poster presentation). *The 45th American Society of Health System Pharmacists (ASHP) Midyear Clinical Meeting*. Las Vegas, USA, 2012.

Abstract

Background

The development of weight management interventions specifically targeting women has recently been emphasised. Pharmacists have been highlighted as key healthcare professionals in the treatment of overweight and obesity. Currently, there is little information about weight management services provided to women pharmacy consumers by pharmacists and pharmacy assistants.

Aims

The overall aim of this research, conducted in four phases, was to investigate the state of weight management services currently provided to women through community pharmacies by identifying the attitudes, recommendations, practices and knowledge of women, pharmacists and pharmacy assistants.

Methods

The research project was divided into four phases:

- Phase 1 utilised researcher-administered questionnaires to elicit women pharmacy consumers' experiences with weight loss products and programs in community pharmacies in Victoria, Australia and Nottingham, England;
- Phase 2 explored community pharmacy weight management services throughout Australia;
- Phase 3 investigated pharmacists' and pharmacy assistants' weight management recommendations to women pharmacy consumers using case vignettes and simulated patient methodology (mystery shoppers); and

- Phase 4 involved conducting four focus groups with women, pharmacists and pharmacy assistants using the nominal group technique to determine the requirements, content and design of future educational resources for community pharmacy use.

Key findings

Results from Phase 1 highlighted that the majority of women in Victoria who had attempted to lose weight in the past (81.9%; 230/281) feel comfortable receiving advice from pharmacists, with 42% (117/281) wanting a pharmacist in their ideal weight management program and 42% (118/281) wanting their program to be delivered in a pharmacy. Overall, women in Victoria and Nottingham had similar views of what they wanted in their ideal weight management program. This study highlighted the potential for weight management educational resources developed for women pharmacy consumers in Australia or England to be used interchangeably.

In Phase 2, a total of 537 pharmacist and 403 pharmacy assistant responses, from 880 different pharmacies, were received. Weight loss products were stocked by 94.5% (n=832/880) of associated pharmacies and 48.2% (n=424/880) offered a weight management program. This study highlighted current deficiencies in weight management advice offered by pharmacists and pharmacy assistants.

Results from Phase 3 highlighted that, overall, pharmacists had a better understanding of the consumer's needs in each case vignette compared to pharmacy assistants. Just fewer than 60% (64/108) of pharmacists were able to correctly identify gestational weight gain for healthy weight women and how this changed when women were overweight or obese. Pharmacy assistants were significantly more likely ($P < 0.05$) to recommend herbal supplements in each of the case vignettes compared to pharmacists. Mystery shopper visits further highlighted the need for pharmacy weight management educational resources to be

developed. Pharmacists and pharmacy assistants demonstrated very poor history-taking in both scenarios. Recommendations made, and advice given, were not in line with the 2013 NHMRC Clinical Practice Guidelines for the Management of Overweight and Obesity in Adults, Adolescents and Children in Australia.

In Phase 4, pharmacists and pharmacy assistants were seen as having a role in the treatment of overweight and obesity due to their accessibility, trust and the availability of products in pharmacy. Participants unanimously agreed that training in weight management needed to be ongoing, easily accessible, online and in hard copy formats (for those who do not have access to the internet), and most importantly, needs to originate from reputable sources.

Conclusion

This research has provided a greater understanding of the current weight management practices of women pharmacy consumers and recommendations made by pharmacists and pharmacy assistants. The need for the development of pharmacy-specific educational resources was identified and reinforced in all four phases of the research project. These findings collectively will guide the development and content of women-specific weight management educational resources for community pharmacy use.

General Declaration

Declaration for thesis based, or partially based, on conjointly published or unpublished work

In accordance with Monash University Doctorate Regulation 17 Doctor of Philosophy and Research Master's regulations the following declarations are made:

I hereby declare that this thesis contains no material which has been accepted for the award of any other degree or diploma at any university or equivalent institution and that, to the best of my knowledge and belief, this thesis contains no material previously published or written by another person, except where due reference is made in the text of the thesis.

This thesis includes two original papers published in peer reviewed journals, one in press and five unpublished manuscripts (submitted under-review). The core theme of the thesis is *to determine the current state of play in weight management by identifying the knowledge, experiences and practices of women, pharmacists and pharmacy assistants.*

The conception of ideas, their development and writing of all the manuscripts in the thesis were the principal responsibility of myself, the candidate, working within the Centre for Medicine Use and Safety under the supervision of Dr Safeera Hussainy and A/Prof Jennifer Marriott.

The inclusion of co-authors reflects the fact that the work originated from active collaboration between researchers and acknowledges input into team-based research.

In the case of **Chapters 3** to **10** my contribution to the work involved the following:

Thesis chapter	Publication title (publication status)	Nature and extent of candidate's contribution
3	Women, pharmacy and the World Wide Web: could they be the answer to the obesity epidemic? **(published)**	Reviewed literature; prepared and corrected manuscript for publication
4	Women pharmacy consumers' experiences with weight loss treatment across Victoria, Australia **(published)**	Reviewed literature; designed methods; coordinated the ethics application; developed study materials; carried out recruitment; undertook data collection; performed data analysis; and prepared and corrected manuscript for publication
5	Comparing women pharmacy consumers' experiences with weight loss treatment in Victoria and Nottingham: A cross-sectional study **(submitted)**	Reviewed literature; designed methods; coordinated the ethics application; developed study materials; carried out recruitment; undertook data collection; performed data analysis; and prepared manuscript
6	National mailed-survey exploring weight management services across Australian community pharmacies **(accepted)**	Reviewed literature; designed methods; coordinated the ethics application; developed study materials; undertook data collection; performed data analysis; and prepared and corrected manuscript for publication
7	Exploring weight management recommendations across Australian community pharmacies using case vignettes **(under review)**	Reviewed literature; designed methods; coordinated the ethics application; developed study materials; undertook data collection; performed data analysis; and prepared manuscript
8	Applying a standard setting approach used in objective structured clinical examinations to assess performance levels of pharmacy staff using simulated patient methodology **(under review)**	Reviewed literature; designed methods; coordinated the ethics application; developed study materials; carried out recruitment and expert panel group; performed data analysis; prepared manuscript
9	Advice on weight management: Are pharmacy staff getting it right? Results from a mystery shopper study **(under review)**	Reviewed literature; designed methods; coordinated the ethics application; developed study materials; trained the mystery shoppers; performed data analysis; and prepared manuscript
10	Developing weight management educational resources - what do women, pharmacists and pharmacy assistants want? **(submitted)**	Reviewed literature; designed methods; coordinated the ethics application; developed study materials; carried out recruitment and focus groups; performed data analysis; and prepared manuscript

I have not renumbered sections of submitted or published papers within the thesis

Signed: ……

Date: ……

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CHAPTER 1

INTRODUCTION

1.1 Thesis overview

This thesis begins with a review of the literature, which focuses on community pharmacy involvement in weight management. **Chapter 2** provides a general review and summary of the literature about the current prevalence of overweight and obesity, associated costs, health risks and benefits of weight loss; current weight management interventions; non-pharmacy based weight management interventions; community pharmacy based weight management interventions; women and weight management; consumers' experiences with weight management services; and currently available weight management guidelines and educational resources. The gaps in the literature have been highlighted at the end of Chapter 2. **Chapter 3** describes a personal view article based on the literature review. This article explores the importance of community pharmacy involvement in providing women with evidence-based weight management information.

Phase 1 explores experiences with weight loss products and programs of women pharmacy consumers' in Australia and England and presents their views on pharmacy involvement in weight management. These results are described in **Chapters 4 and 5.**

Phase 2 investigates current weight management services in Australian community pharmacies; pharmacists and pharmacy assistants' general weight management recommendations; and weight management training areas pharmacists and pharmacy assistants consider necessary. Results are presented in **Chapter 6.**

Phase 3 findings are outlined in **Chapters 7 and 9.** Phase 3 explores current weight management recommendations by pharmacists and pharmacy assistants to women pharmacy consumers of different ages, life stages and body mass indices. **Chapter 7** details findings from the case vignette study. **Chapter 8** describes the methodology used in the

mystery shopper study, which is presented in **Chapter 9.** A discussion of the findings from **Phases 2 and 3** is provided as a short summary following **Chapter 9.**

Phase 4 presents the results from the focus groups with women, pharmacists and pharmacy assistants on what they want in their ideal weight management educational resource. These results are discussed in **Chapter 10.**

An overall summary of the research project, including recommendations, directions for future research and conclusions, is presented in **Chapter 11.**

1.2 Problem Statement

Primary health care workers, including pharmacists, have been increasingly regarded as key stakeholders to help prevent and treat overweight and obesity.[1-4] Women are known to be the main consumer group in community pharmacy.[5, 6] In addition, pharmacists and pharmacy assistants in Australia come into contact with women in the perinatal period more often than any other primary health care provider.[7] This places pharmacies in a special position to be able to deliver evidence-based weight management interventions to women pharmacy consumers. Currently, the main weight management resource available to primary health care providers is the 2013 National Health and Medical Research Council (NHMRC) Clinical Practice Guidelines for the Management of Overweight and Obesity for Adults, Adolescents and Children in Australia.[8] These guidelines do not mention pharmacists or pharmacy assistants and offer limited information on weight management for women at different life stages. This gap in care exists and could be addressed via development and implementation of pharmacy-specific educational resources.

An important component in the development of successful weight management interventions is to involve patients, draw from their experiences, and take into account

their attitudes towards weight management approaches. In addition, for educational resources to be effectively developed, it is vital to have an understanding of current practice so that training material can focus on areas identified as deficient. Currently in Australia there is no information about Australian pharmacy consumers' experiences, attitudes and perceptions about different weight management approaches. There is also little information about current weight management recommendations, advice given, and products and programs provided by Australian community pharmacists and pharmacy assistants. Furthermore, women pharmacy consumers' attitudes and experiences of commonly available weight management products and programs has not been researched in England, a country with similar demographics and pharmaceutical care services to Australia. This information will help determine whether educational resources developed in Australia can be used in England and vice-versa.

1.3 Aims and Objectives

The overall aim of this research is to determine the knowledge, experiences and practices of women, pharmacists and pharmacy assistants in weight management. This information can then be used to develop women-specific weight management educational resources for pharmacy use.

The objectives of this research are to:

- Determine if women pharmacy consumers are currently using, or have used, weight loss treatment(s); gauge awareness of treatment evidence and potential consequences of obesity (e.g. on "heart health"); treatment duration, perceived benefits and adherence; and interaction with health professionals during treatment and advice given.

- Determine the knowledge and practices of Australian pharmacists towards weight loss programs and products.
- Determine the knowledge and practices of Australian pharmacy assistants towards weight loss programs and products.
- Determine what women, pharmacists and pharmacy assistants want in weight management educational resources.

1.4 Research hypotheses

- Many women pharmacy consumers in Australia and England are currently using weight loss products and treatment(s) that are not endorsed by the current weight management guidelines.
- Women pharmacy consumers in Australia and England are not receiving adequate information about weight management from their healthcare professionals, including pharmacy assistants and pharmacists.
- Australian pharmacists lack knowledge about women-specific weight management approaches and are unaware of different treatment options for different population groups.
- Australian pharmacy assistants lack training and education on widely available weight loss pharmacy programs and products and do not correctly identify patients that need referral to a pharmacist.
- Women pharmacy consumers, pharmacists and pharmacy assistants want a weight management educational resource to be developed and delivered online, so that

they are able to obtain consistent, evidence-based weight management information that can be widely used and applied in pharmacy.

1.5 References

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CHAPTER 2

LITERATURE REVIEW

2.1 Introduction

2.1.1 Definition of overweight and obesity

Overweight and obesity is defined by the World Health Organization (WHO) as the excessive or abnormal fat accumulation in the body that may cause impaired health.[1] Obesity is a complex condition, one with serious social and psychological dimensions, which affects virtually all age and socioeconomic groups and overwhelms both developed and developing countries.[2] It is important to recognise that obesity is a chronic condition that requires long-term treatment similar to other chronic diseases, such as hypertension, dyslipidaemia and diabetes to which it contributes. In today's society obesity is often still seen as a lifestyle issue and barriers to treating obesity as a chronic condition remain. [3, 4]

2.1.2 Classification of overweight and obesity

There is no gold standard measure for overweight and obesity; it relies on measuring a combination of both body mass and fat distribution.[5] Widespread measures include body mass index (BMI), waist-to-hip ratio and waist circumference (WC).[5] Based on the 2013 National Health and Medical Research Council (NHMRC) Clinical Practice Guidelines for the Management of Overweight and Obesity for Adults, Adolescents and Children in Australia, measurement of weight, height and calculation of BMI should be considered as standard practice and used to classify individuals as underweight, normal, overweight or obese.[6] Measuring WC has also been recommended and should be included as standard practice to assess absolute risk of cardiovascular disease and type 2 diabetes.[6]

2.1.2.1 Body mass index (BMI)

Overweight and obesity is most commonly classified by using BMI. A person's BMI is a measure of their body mass adjusted to their height and it is calculated using the following formula: [1]

$$BMI = \frac{\text{body mass (kilograms)}}{\text{height(meters)}^2}$$

The World Health Organization (WHO) has accepted BMI to be the most useful measure of overweight and obesity and has described the BMI cut-off points in adults based on the increase in risk of chronic disease states and mortality.[1] Table 1 below describes the internationally recognised classification of weight according to the WHO and the increased risk of co-morbidities. These values have been calculated based on people of European descent.

Table 1: WHO classification of weight using BMI[1]

Classification	BMI (kg/m^2)	Risk of co-morbidities
Underweight	< 18.5	Low
Normal range	18.5-24.9	Average
Overweight	≥ 25	
- **Pre-obese**	25.0-29.9	Increased
- **Obese I**	30.0-34.9	Moderate
- **Obese II**	35.0-39.9	Severe
- **Obese III**	≥ 40	Very severe

There are some disadvantages to using BMI and they include the following:

- People of different ethnicity, mainly Asians and Indians, have different distribution of fat mass and have an increased risk of co-morbidities at lower BMIs. It has therefore been suggested that the BMI values for these populations should be decreased to a healthy weight cut-off of 21.9 kg/m^2, an overweight cut-off of 24.9 kg/m^2, and an obese range starting at 25.0 kg/m^2.[7]

- Conversely, Polynesians and African-Americans have a higher percentage of lean mass and thus it is suggested that the BMI cut-offs should be higher.[5] This is also true for Pacific-Islander populations.[6]

- Compared with non-indigenous people, Indigenous Australians have an increased risk of developing diabetes with a BMI range of 20-25 kg/m^2. Therefore, it has been advised that for Aboriginal people a BMI of < 22 kg/m^2 would be a more suitable target.[8]

- In the elderly population the BMI might be an underestimate of the true risk of co-morbidities as the elderly have a higher percentage of fat mass.[9]

- BMI does not distinguish between genders; pre-menopausal women have less abdominal mass than males and abdominal mass is an indicator for increased risk of disease.[10] Males have less body fat than women at equivalent BMIs.[6]

- BMI can be overestimated in individuals with increased muscle e.g. athletes.[11]

2.1.2.2 Waist circumference (WC)

Waist circumference (WC) provides a measure of an individual's central obesity (abdominal fat), which is an important factor when considering the risk of a range of diseases including cardiovascular disease, type 2 diabetes and metabolic syndrome (a cluster of risk factors including visceral obesity, dyslipidaemia, hyperglycaemia, and hypertension that increase the risk of cardiovascular disease).[6, 12] It is simple and cheap to measure with a high predictive validity.[13] WC is also useful in further predicting the risk of certain health conditions in patients with a BMI of less than 35 (over a BMI of 35 it adds little value).[14]

Table 2 shows the suggested WC cut-off points based on risk for Caucasian men and women.

Table 2: WC (cm) and risk of metabolic complications associated with excess weight in Caucasian men and women[1]

	Risk of metabolic complications	
	Increased	**Substantially Increased**
Men	≥ 94 cm	≥ 102 cm
Women	≥ 80 cm	≥ 88 cm

Like BMI, individuals of different ethnicities[7] and different ages[15] will have different cut-off points for risk based on WC. It has been suggested that Asian people require the "substantially increased" risk cut-off point to be reduced to ≥ 90 cm for males and ≥ 80 cm for women.[16] WC is also not an appropriate measure in pregnancy.[6]

2.1.3 Causes of overweight and obesity

Overweight and obesity are ultimately caused by an imbalance of energy intake and energy consumption i.e. an increased energy intake and decreased physical activity.[1] It has also been established that genetics, hormones, environmental, psychological, endocrine and metabolic diseases, quitting smoking, as well as certain medications, can all predispose certain people to becoming overweight or obese.[2, 6]

Energy balance is regulated by a complex physiological system that involves many mediators and hormones.[6] The system attempts to maintain weight over a period of time by changing appetite, energy intake and energy expenditure. When there is a large increase in energy intake over a sustained period of time, energy balance cannot be maintained, and weight gain therefore occurs. The body's physiological system then tries to maintain energy balance at the new higher body weight; any attempts of weight loss are defended by the system trying to increase appetite and reduce expenditure.[6, 17, 18]

Factors that affect the physiological system include large intake of foods and drinks high in fat and sugar and also sustained low physical activity and sedentary behaviour.[6] Other causes of weight gain include:

- biological factors: inheritability, epigenetic changes, and early life experiences (in utero, first months of life);[19-22]
- environmental factors: food supply, busy lifestyles, portion sizes, urban design, disruption of sleep; and[23]
- Individual factors: individual habits and psychological factors.[6]

People are also at an increased risk of weight gain at some life stages, including adolescence, women planning pregnancy, pregnancy, menopause and older people.[6, 24-26] The life stages affecting women are discussed in further detail in Section 2.5.

2.1.4 Prevalence of obesity

According to the WHO one billion adults worldwide are currently considered overweight and at least 300 million adults worldwide are considered obese.[27] The WHO predicts that if the overweight and obesity trend continues at the same rate, by 2015 there will be approximately 2.3 billion people worldwide who will be classified as overweight and 700 million people worldwide who will be classified as obese.[27]

Australia has one of the most overweight and obese populations in the world.[28] Results from the 2011-2012 Australian Health Survey indicate that 42 per cent of males and 35 per cent of women are overweight and 28 per cent of both males and women are obese.[29] Based on data from the National Health Survey, Australia's combined overweight and obese adult population is 63 per cent.[30] This is a 7 per cent increase on that reported in 1995.[28] Similarly, in England, there has been an increase in the prevalence of overweight and obesity in the last ten years.[31] There is currently an estimated 41 per cent of males and 33

per cent of women considered overweight and 24 per cent of males and 26 per cent of women estimated to be obese.[31]

Obesity is also more prevalent in certain groups of the Australian population, with research showing that the prevalence of obesity increases in people of Aboriginal or Torres Strait Islander descent,[32] people born overseas,[33] people who live in rural and remote areas[33] and people from disadvantaged socioeconomic groups.[33] The proportion of adult indigenous Australians who are overweight and obese is greater for all age groups compared to the non-indigenous population, with the greatest differences being in the female population.[34]

Over the last decade, the prevalence of overweight and obesity in Australia has been rising.[28] In addition, the prevalence of many obesity-related conditions such as diabetes and cardiovascular diseases have also increased.[28] Sassi *et al*. reported that over the next decade there will be an increase in the prevalence of overweight and obesity in Australia to 66 per cent.[35] Another study also reported that by 2025 over 80 per cent of males and 75 per cent of women aged 20 years and over will be overweight or obese.[36] Reasons for the increased prevalence of overweight and obesity in Australia may be attributed to the increased energy intake in the adult population from 1983 to 1995 and the low levels of Australian adults who exercise sufficiently.[37]

The Australian Diabetes Obesity and Lifestyle (AusDiab) five year follow-up study also identified an increase in Australia's overweight and obesity prevalence.[38] This study found that on average, adults under 65 years old had a body weight increase of 1.8 kg in a five year period. Women on average were likely to gain more weight than males over the five year period and also had greater increases in their WC measurements. More people in the overweight category were classed as obese at the five year follow-up and fewer people in the overweight category moved into the normal weight category.[38] This is a cause for concern and suggests that current Australian weight management practices are ineffective.

Studies have also found that when people self-report their height and weight they often overestimate their height and underestimate their weight; [39, 40] therefore the true overweight and obesity prevalence in Australia might be even higher than the results published in the AusDiab study and the results from Australia's Health Survey.[28, 38]

Based on these findings and the increased prevalence of overweight and obesity in Australia, the Australian Health Ministers included obesity as a National Health Priority Area in 2008, acknowledging that it is a chronic disease that has a substantial impact on the health of Australians.[41] Furthermore, in 2008 the Australian Government formed the National Preventative Health Taskforce to recommend key actions to help stop, and to reverse, the prevalence of overweight and obesity in Australia.[42] Recommendations to help make Australia "the healthiest country by 2020" were outlined in the report, "Obesity in Australia: a need for urgent action," released in 2009.[42] The recommendations included involvement of community groups, health services, industry officials and government sectors. Importantly, the need to "strengthen, upskill and support primary healthcare workers" so that they can support their consumers in making healthier decisions was seen as a key priority.[42]

2.1.5 Cost of obesity in Australia

In 2008, the total direct and indirect cost of obesity was estimated to be $8.3 billion.[43] Colagiuri *et al.* estimated that the annual total direct cost of overweight and obesity in Australia in 2005 was $21 billion and the total direct and indirect costs of overweight and obesity could have been as high as $56.6 billion.[44]

A 2010 report by IBISWorld indicated that in 2010-2011 Australians were expected to spend up to $789.6 million on weight loss products, including low calorie shakes and diet pills, to assist them to lose weight, making weight loss products one of the top ten biggest growth industries of 2010.[45] The same report also suggested that by 2015-2016 Australians might

be spending up to $1 billion on weight loss products to help them lose weight. Furthermore, in 2002, women aged 18-32 years old were reported to spend $414 million on weight loss products and/or programs in Australia.[46] These figures do not take into account the money spent on exercise-related activities such as gyms and personal trainers, and thus are expected to be even higher.[45]

2.1.6 Risks of being overweight and obese

In developed, high income countries, overweight and obesity are considered to be the third preventable risk factor for non-communicable diseases, preceded by smoking and high blood pressure.[47]

Numerous studies have shown that obesity can increase the risk of a number of conditions, including type 2 diabetes mellitus, hypertension, coronary heart disease, sleep apnoea, respiratory diseases, gallbladder disease, breast, colon and uterine cancers, gastroesophageal reflux disease, stress urinary incontinence, chronic kidney disease and osteoarthritis. [48-53]

The relative risk of developing common obesity-related conditions is presented in Table 3. The relative risks compare the risk of individuals in the obese BMI category (BMI ≥ 30) with non-obese individuals (BMI < 30).

Table 3: Relative risk of conditions associated with obesity[5, 54]

Body system	Condition	Relative risk (RR)
Cardiovascular	Hypertension Dyslipidaemia Coronary heart disease Varicose veins	Greatly increased (RR>3) Greatly increased (RR>3) Moderately increased (RR 2-3) Slightly increased (RR 1-2)
Endocrine	Type 2 diabetes Insulin resistance Polycystic ovary disease	Greatly increased (RR>3) Greatly increased (RR>3) Slightly increased (RR 1-2)
Gastrointestinal and hepatobiliary	Gall bladder disease Non-alcoholic liver disease Hernia	Greatly increased (RR>3) Greatly increased (RR>3) Moderately increased (RR 2-3)
Genito-urinary	Stress incontinence	Slightly increased (RR 1-2)
Musculoskeletal	Gout Osteoarthritis Cellulitis Musculoskeletal problems e.g. carpal tunnel	Moderately increased (RR 2-3) Moderately increased (RR 2-3) Slightly increased (RR 1-2) Slightly increased (RR 1-2)
Neurological and psychiatric	Daytime sleepiness and fatigue Depression and anxiety Stroke Psychological problems	Greatly increased (RR>3) Greatly increased (RR>3) Moderately increased (RR 2-3) Moderately increased (RR 2-3)
Obstetric and gynaecological	Impaired fertility	Slightly increased (RR 1-2)
Pulmonary	Sleep apnoea Breathlessness Asthma	Greatly increased (RR>3) Greatly increased (RR>3) Greatly increased (RR>3)
Other	Cancer (breast, endometrial, colon) Cataract Skin complications	Slightly increased (RR= 1-2) Slightly increased (RR= 1-2) Slightly increased (RR= 1-2)

Being overweight (BMI 25-30 kg/m^2) also places individuals at higher risk of developing certain conditions including, but not limited to, hypertension, type 2 diabetes, fertility problems, complications in pregnancy, bladder control problems and gallstones.[55]

2.1.7 Benefits of weight loss

Numerous studies have shown that people who are overweight or obese can decrease their chance of weight-related health risks with weight losses of only 5-10 per cent. [56, 57]

Benefits of small weight losses include:[58-63]

- Reduced cardiovascular risk: decreased systolic blood pressure, improved lipid profiles, reduced all-cause mortality;
- Type 2 diabetes prevention and improvement: prevention or delay in the onset of type 2 diabetes, improvements in glycaemic control;
- Reduction in obstructive sleep apnoea;
- Improvement in chronic kidney disease;
- Improvement in self-esteem and depression;
- Improvements in gastro-oesophageal reflux disease;
- Reduction in knee pain experiences in people suffering from osteoarthritis; and
- Improvements in mobility in older people.

Jung reviewed the benefits of a 10 kg weight loss in men and women and found a significant decrease in all-cause mortality and an increase in better health outcomes (Table 4).[64]

The 2013 National Health and Medical Research Council (NHMRC) Clinical Practice Guidelines for the Management of Overweight and Obesity for Adults, Adolescents and Children in Australia recommend healthcare professionals include, as part of routine care, discussion of the benefits of modest weight losses in consumers who are overweight or obese.[6]

Table 4: Benefits of a 10 kg weight loss [64]

Condition	Benefit
Mortality	20-25% decrease in total mortality
	Up to 40% decrease in diabetes-related deaths
	Up to 50% decrease in obesity- related deaths
Blood pressure	Systolic blood pressure decrease of 10 mmHg
	Diastolic blood pressure decrease of 20 mmHg
Diabetes	Up to 50% decrease of fasting glucose
	> 50% decreased risk of developing type 2 diabetes
	15% decrease of HbA1c%
Lipids	High density lipoprotein increase of 8%
	Total cholesterol drop of 10%
	Low density lipoprotein drop of 15%
	Triglycerides drop of 30%

2.1.8 Definition of weight loss, weight maintenance and weight management

As mentioned above, overweight and obesity is ultimately due to an imbalance in the energy intake and expenditure equation resulting in a net energy gain that is eventually converted to fat.

Weight maintenance is defined as an individual maintaining their body weight with less than 3 per cent change.[65] It occurs when the body's physiological system is able to maintain energy balance.

Weight loss is defined as the process of attempting to lose weight intentionally by reducing energy intake, increasing energy output or both.

Weight management in this thesis refers to weight maintenance, weight loss, or prevention of weight gain in healthy weight individuals.

2.2 Current weight management interventions

2.2.1 The 5As counselling framework

There are a wide range of weight management options available to people who are overweight and obese. One of the critical factors when implementing a weight management approach to assist someone to lose or maintain their weight is the need to target the treatment option to the specific patient. In addition, prevention of unhealthy weight gain is also seen as the most cost-effective and efficient approach to help manage overweight and obesity in the Australian population.[6] It is therefore recommended that interventions target all individuals, households and communities.[6]

The 2013 NHMRC Clinical Practice Guidelines for the Management of Overweight and Obesity in Adults, Adolescents and Children in Australia have presented an overweight and obesity model for adults to assist health practitioners with the different approaches for weight management in different population groups according to BMI.[6] The model is not specific but can be utilised to assist health professionals to make a decision about the best intervention plan for an individual patient. This model utilises a common tool used in behaviour change counselling: the 5As framework approach.[66, 67]

The 5As counselling framework was developed for smoking cessation but has recently been used successfully for obesity counselling.[67, 68] In smoking cessation, the 5As framework consists of Ask, Assess, Advise, Assist and Arrange.[66] The framework is based on behavioural change theories, is evidence-based and requires minimal intervention. A study by Serdula *et al*. was the first to adapt the 5As framework to obesity counselling.[69] The Canadian Obesity Network has recently implemented the 5As in their new guidelines to help assist primary healthcare providers in obesity counselling.[70] Unlike the framework used in smoking cessation where healthcare workers are recommended to directly ask the

consumer about their smoking status, the Canadian obesity management model recommends that healthcare providers ask permission to discuss weight first. In addition, the Canadian model is slightly modified as they have included the last A for "Arrange" in the "Assist" step and have added "Agree" as an extra step to ensure healthcare professionals and individuals agree on outcomes and treatments. The Australian 5As model is based on the original smoking cessation framework and includes Ask, Assess, Advise, Assist and Arrange. Unlike the Canadian model, the Australian model does not have the "A" for "Agree" and instead has "Arrange" as the final step.[6] The "Arrange" step has previously been used in obesity counselling and is considered important for follow-up and long-term management.[68] Table 5 has been adapted from the Australian and Canadian 5As models for obesity counselling.

Primary healthcare providers have been identified as key healthcare professionals in the prevention and treatment of overweight and obesity in Australia.[42] Collaboration has also been identified as a major strength in delivering successful weight management programs.[6] Studies have shown that multidisciplinary weight management interventions are more likely to be effective compared to weight management interventions delivered by one healthcare professional.[71, 72] The new NHMRC guidelines have noted key areas where healthcare professionals can be involved in weight management and have emphasised the importance of collaboration.[6] Although the NHMRC guidelines provide suggestions on where each primary healthcare provider might be involved in a multidisciplinary approach using the 5As obesity management model, pharmacists and pharmacy assistants are not mentioned.

Table 5: The 5As of obesity management and counselling

	BMI < 25 kg/m^2	BMI 25-29.9 kg/m^2	BMI 30.0-34.9 kg/m^2	BMI 35.0- 39.9 kg/m^2	BMI > 40 kg/m^2
	Standard care		**Active Management**		
Ask and Assess	• Ask permission to discuss weight. • Assess at every visit and check BMI.	• Ask permission to discuss weight. • Assess at every visit and check BMI. • Discuss if BMI is increasing. • Manage comorbidities. • Discuss current health behaviours • Discuss other risk factors that may contribute to weight gain including medications, quitting smoking, life-stage.	• Ask permission to discuss weight. • Discuss health issues. • Manage comorbidities. • Assess other factors related to health risks including blood pressure, cholesterol, glucose levels etc. • Discuss current health behaviours (eating and physical activity). • Discuss other risk factors that may contribute to weight gain including medications, quitting smoking, life-stage.		
Advise	• Promote healthy lifestyle.	• Promote healthy lifestyle: decreased calorie intake, increased physical activity and healthy behaviours.	• Promote healthy lifestyle: decreased calorie intake, increased physical activity and healthy behaviours. • Explain the health risks of obesity and the benefit of weight management. • Explore and discuss treatment options.		
Agree		• Agree on treatment plan to promote healthy lifestyle. • Agree on weight loss expectations and achieving realistic goals.	• Agree on treatment options. • Agree on weight loss expectations and achieving realistic goals.		
Assist		• Assist in finding local programs that may help individual achieve goals.	• Assist in setting up weight loss program that is personalised for the individual based on current weight, weight loss goals, lifestyle and comorbidities - tailor the approach to the individual. • Assist in identifying and addressing barriers to weight management.		
Arrange			• Review and monitor. • Long-term weight management.		

2.2.2 Weight management treatments

There is a plethora of studies investigating different weight management treatments in isolation or in combination.[55, 73-87] Table 6 summarises the different strategies that have been explored to assist consumers to lose weight. Combination approaches of diet, exercise and behavioural modification should be considered as first-line.[14, 54, 88, 89] The table outlines recommendations for lifestyle interventions and intensive interventions. Intensive interventions should be recommended to consumers with a BMI of ≥ 27kg/m^2 with associated comorbidities or BMI > 30kg/m^2 with/without comorbidities. Lifestyle interventions should be recommended alongside all intensive interventions.[6]

Table 6: Weight management treatments

Weight management Approach	Advantages	Disadvantages	Summary of effect and evidence
Diet[5, 6, 54]			
Nutrition advice (lowering fat or energy intake)[78, 79, 87] ***(lifestyle intervention)***	• Empowering individuals to read and interpret fat and carbohydrate content on food labels so that they will be able to make adequate choices about what foods to eat. • Aim to reduce 0.5-1.0 kg per week. • Accepted more by consumers, compliance higher and decreased weight regain in comparison to low energy diets and very low energy diets.	• Need to be highly motivated, can take time for results to be seen. • Slower weight losses than the low energy diets and the very low energy diets.	• Average weight loss of 4% after one year. • Reduce WC measures by 2-5 cm after one year treatment. • Dietary changes alone produce a weight loss of 3-5 kg in 12 months and 0 kg in 5 years.
Low energy diets[73, 77, 90] (4200-6720KJ) ***(lifestyle intervention)***	• Good for high risk groups as rapid weight loss can be seen.	• Need close supervision. • Weight regain is a possibility without behavioural modification; it has been shown that after 1-2 years of treatment half of the weight lost may be regained.	• Average weight loss of 7% after 1 year. Overall weight loss of up to 5.31 kg at 12 months. • Reduce WC measures by 10 cm after 6 months. • Blood pressure, lipid levels, blood glucose levels are all significantly improved at 12 months.

Weight management Approach	Advantages	Disadvantages	Summary of effect and evidence
Very low energy diets[73, 75, 91] (<4200KJ) ***(intensive intervention)***	• Good for consumers where other diets have failed and for consumers with life-threatening conditions. • Consumers able to lose a large amount of weight in the initial weight loss period. • Improved blood pressure, glucose, HbA1c%, cholesterol, lipids and quality of life. • Available in pharmacies as a commercial meal replacement product (e.g. Optifast®) or as part of a pharmacy weight management program e.g. Tony Ferguson®.	• Must have close supervision. • They must include the correct amount of daily vitamins, minerals, protein and essential fatty acid or consumers will be malnourished. • Weight regain is common and can be dangerous if occurs immediately. • Costs associated.	• Treatment duration is usually 8-16 weeks, but can be used for up to 12 months. • Average weight loss of 4% after one year. One study showed an average weight loss of 13.4 kg at one year. • 75-65% of patients return to the pre-treatment weight after 2-7 years.

Weight management Approach	Advantages	Disadvantages	Summary of effect and evidence
Physical activity[5, 6, 82, 92, 93]			
Increased physical activity ***(lifestyle intervention)***	• Increased fitness. • Decreased weight regain following weight loss phase. • Physical activity alone maintains weight and can increase fat-free mass. • Physical activity has positive effects on cardiovascular risk factors.	• Stigma associated with physical activity in pregnancy. • Stigma associated with physical activity in severely obese consumers. • Perceived and experienced difficulties of physical activity in overweight and obese patients.	• An additional weight loss of 1.95 kg can be seen when diet and physical activity are combined.[73] • Physical activity combined with diet and behavioural change results in an additional weight loss of 2.1 kg.[54] • 150-300 minutes of moderate-intensity activity or 75-150 minutes of vigorous activity each week is required to achieve health benefits. • To prevent weight gain 300 minutes of moderate-intensity or 150 minutes of vigorous activity is required.

Weight management Approach	Advantages	Disadvantages	Summary of effect and evidence
Behavioural modification[5, 6, 73, 81]			
Behavioral modification, focus groups, support groups, problem-solving education. ***(lifestyle intervention)***	• Necessary component in weight loss programs • Increases knowledge and ways to prevent weight regain. • Positive results with diet, exercise or pharmacological treatments. • Information can be delivered face-to-face and supplemented by other resources.	• Difficult to maintain weight loss. • Time-consuming if there are scheduled meetings. • Cost of programs usually high.	• Behavioural modification when combined with diet produces the greatest weight loss with an average loss at 12 months of 7.67 kg.
Pharmacological products[5, 6, 73, 86]			
Orlistat[83, 94] ***(intensive intervention)***	• Indicated for weight loss in patients with a BMI > 27 kg/m^2 with a cardiovascular risk factor or a BMI ≥ 30 kg/m^2. • Available OTC in Australian pharmacies. • Has a local mode of action and works by inhibiting fat digestion in the gastrointestinal tract. • Free of neurological and cardiovascular side effects.	• Fat soluble vitamins may need to be supplemented. • Side effects include diarrhoea, watery stools and flatulence.	• Treatment duration should be dependent on initial weight loss outcomes. If weight loss is greater than 5% then treatment should continue over 12 weeks. • At 12 months orlistat has been shown to produce a weight loss of 3.01 kg. • Positive effects on lipids, blood glucose and insulin levels have been found.

Weight management Approach	Advantages	Disadvantages	Summary of effect and evidence
Pharmacological products[5, 6, 73, 86]			
Phentermine[54] ***(intensive intervention)***	• Good for short-term weight loss in patients with a BMI > 25 kg/m^2 with a cardiovascular risk factor or a BMI ≥ 30 kg/m^2. • Indicated in consumers over 12 years of age i.e. not indicated in children < 12.	• Not recommended for long term weight loss (no studies have explored using phentermine for a 12 month period). • Side effects include increased blood pressure, tachycardia, insomnia and excitability.	• Registered for use for short-term weight loss. • Causes weight losses of up to 6-7 kg, 50% greater than placebo.
Complimentary products[5, 6, 95-97]			
Caffeine, Guarana, Brindleberry, Chitosan, Chromium, L-carnitine, fibre, Ginko, Grapeseed extract, Inositol etc. ***(not recommended)***	• Buying the product can sometimes motivate individuals to decrease calorie intake and increase physical activity, thus producing a weight loss.	• Side effects such as stomach cramps, bloating, diarrhoea, headache, constipation and insomnia have been reported.	• Lack evidence and may be harmful. Not recommended, but widely used. • Over 1000 "weight loss" OTC products are listed on the Australian Register of Therapeutic Goods.
Surgical Interventions[6, 84, 85]			
Bariatric surgery *Gastric bypass* *Gastric banding* *Gastric stapling* ***(intensive intervention)***	• Large weight losses • Huge improvements in obesity-related conditions including improved fertility and improved pregnancy outcomes. • Weight maintenance is high.	• Invasive. • High cost to patients.	• Weight loss of up to 43% can be seen. Loss of up to 40-50 kg over a 12 month period. • Positive effects on blood glucose levels, blood pressure and blood lipid levels.

2.3 Non-pharmacy weight management interventions

Many approaches and strategies have been formulated to try to help people lose weight. An overview of some of these strategies has been outlined below.

2.3.1 Government strategies

Australian federal and state governments have implemented weight management campaigns to try to target a wide range of people. Campaigns such as the 10,000 Step challenge, Shape up Australia, Swap it, Don't Stop it, Measure Up Campaign, Go For Your Life and the Draw The Line campaigns aim to reach a diverse range of people and deliver ideas and motivation about lifestyle interventions. The campaigns are advertised through the media (television, newspaper and magazines) and have online support networks. Obese people exposed to the government weight management campaigns improved their eating and increased their physical activity.[98]

The Measure Up campaign was developed and launched in 2008 as part of the Australian Better Health Initiative to encourage people to make healthy lifestyle choices surrounding nutrition and physical activity.[99] More recently, the Measure Up Campaign was evaluated using computer-assisted telephone interviews with adults aged 18 to 65 years old to determine the public's awareness of the campaign and its impact on attitudes and behaviours of the target audience. The majority of individuals surveyed were able to recall Measure Up advertising and were aware of the campaign and its message regarding healthy eating, waistline measurement and negative effects of obesity on other conditions.[99] The results indicate that 15 per cent of the primary audience had measured their waistline and a quarter of the audience had tried to reduce their waistline based on the messages they had seen on the campaign. The authors, however, highlighted the importance of not overloading the public with too many messages

using one type of media delivery. They suggested that for future government campaigns it would be more suitable to have one key message delivered through one type of advertising method so that the public is able to understand the different messages they are attempting to convey.[99] The new phase of the Measure Up Campaign called 'Swap It, Don't Stop' has received positive feedback from the public.[100] Reports show that from March 2011 to June 2012 there have been 740,000 visits to the website and a further 50,000 people have downloaded the phone application.[100] This campaign focuses on empowering the public by providing information about simple changes that can help them achieve healthier lifestyles.[100] This new campaign has clear, important messages to which the public and primary healthcare professionals can refer.

2.3.2 Media strategies

In Australia, the media (television, newspapers, and magazines) has been increasingly used to heighten awareness of weight management and deliver information on weight management approaches. A recent study showed that 33 per cent of individuals surveyed (n=142) thought that media was an effective way of promoting weight management approaches.[98] However, the individuals in the study felt that media campaigns could produce a negative opinion about overweight and obese people. The participants in this study felt that certain campaigns such as the Cancer Council campaign in Australia were hurtful and made them feel like they were completely responsible for their weight.[98]

2.3.3 Online strategies

Internet programs have been used with some success. Bennet *et al*. highlighted that web-based weight management programs may be a suitable option in primary care due to the internet's accessibility, low cost and adaptability.[101] Currently in Australia, a randomised controlled trial

(RCT) using an internet-based weight management program is being conducted; the results of this trial are expected to demonstrate the effectiveness of using the internet as a weight loss medium.[102] A recent review of web-based weight management interventions showed that internet programs can offer the same effectiveness of weight loss and weight maintenance as lifestyle interventions, however, further research needs to be conducted.[103]

A RCT in the USA by Bennet *et al.*, investigating the effectiveness of a moderately-intensive web-based weight management intervention compared to standard care provided by a primary healthcare professional over a three month period, found that the participants in the intervention group achieved significantly greater mean weight loss.[101] Just over a quarter of the participants randomised to the intervention group (n=51) achieved a weight loss of greater than 5 per cent of their body weight, compared to no participants in the standard care group (n=50).[101] The intervention group had face-to-face and telephone behavioural coaching throughout the study in addition to the web resource. The role of the coaches was to assist the participants with using the webpage and to remind the participants to access the resource.

In another USA study by Appel *et al.* that is part of the Practice-based Opportunities for Weight Reduction (POWER) trials, web-based interventions using telephone coaching (remote intervention) or face-to-face coaching (in-person support) were compared to no intervention.[104] Both web-based interventions (remote or in-person) achieved significantly better weight loss outcomes compared to the control group ($P < 0.001$). No significant differences in weight loss at six months and 24 months were seen between the remote group compared to the in-person support group.[104]

These studies offer examples of how web-based weight management interventions can be developed in a primary care setting. Web-based interventions can be successfully used, but

cannot completely replace face-to-face delivery of information. The NHMRC guidelines recommend that web-based interventions should be used as part of other options and as a tool to remind and reinforce key messages about healthy lifestyle behaviour.[6]

2.3.4 Commercial weight loss programs

The number of commercial weight loss programs available in Australia is increasing. Weight Watchers®, Jenny Craig® and Lite n' Easy® are reduced energy diets that are widely available. The commercial diets that have been demonstrated to be effective using an RCT are Jenny Craig and Weight Watchers®.[105-107] Unlike Weight Watchers®, where individuals learn how to correctly choose food based on calories, Jenny Craig® and Lite n' Easy® prepare food for the individual; this may increase the likelihood of these people returning to old eating habits when they stop the program. A recent multicentre RCT conducted in the UK, Australia and Germany by Jebb *et al.* investigated the effectiveness of primary care providers referring individuals to Weight Watchers® compared with standard care (weight loss advice provided by primary healthcare providers located in doctors' clinics).[108] They found that individuals referred to Weight Watchers® achieved a mean 12-month weight loss significantly greater ($P < 0.0001$) than those receiving standard care across all countries. In addition, participants randomised to Weight Watchers® were significantly more likely to achieve positive changes in their insulin levels ($P = 0.0065$) and ratio of total cholesterol to HDL cholesterol ($P = 0.0021$).[108] In the RCTs exploring commercial weight loss programs, the programs were offered free to the participants and this may limit generalisability.[106]

2.3.5 Primary healthcare based weight management programs

Numerous studies in Australia and internationally have explored the use of primary healthcare providers offering weight management advice to their consumers.[109, 110] In a systematic review

exploring weight management services provided by primary healthcare providers, two different approaches were identified:[109]

1. The primary healthcare provider delivered behavioural counselling to the consumer with/without pharmacotherapy; or
2. The healthcare provider worked as part of a multidisciplinary team to offer support to the consumer.

The review concluded that low-intensity healthy lifestyle counselling by primary healthcare workers alone cannot achieve significant weight loss outcomes and that more research is needed in identifying where primary healthcare workers can fit in to a collaborative intervention.[109]

In Australia, primary healthcare providers have been highlighted as key stakeholders to help prevent, manage and treat overweight and obesity.[111, 112] The Australian NHMRC guidelines have identified the importance of primary healthcare professionals providing weight management services. In Australia, 85 per cent of the population visits the doctor at least once a year and the average person is said to visit a pharmacy 14 times a year. [111, 113] The 'Obesity in Australia: a need for urgent action' report in 2008, described the lack of referral pathways in primary care to other allied health professionals and other weight management providers.[112] The report highlighted the need for further research in the treatment of overweight and obesity using multidisciplinary teams and identified the use of the Australian Government's Super Clinics as possible locations.[112] Development of funding programs was recommended to help primary healthcare providers educate their consumers about nutrition, physical activity and healthy lifestyle behaviours to help prevent and treat overweight and obesity.

In a review of primary-care based weight management interventions in the UK, several different weight management interventions were reviewed and found to achieve successful weight loss outcomes.[110] The authors highlighted that the interventions investigated were each unique and provided assistance at different stages of weight management depending on consumer need.[110] One primary care weight management program that was highlighted was The Counterweight Programme. This program is an evidence- and theory-based primary care weight management intervention developed in the UK.[114] The program relies on trained nurses and other healthcare professionals to deliver nine face-to-face counselling sessions (individual or group sessions) over a 12-month period, to assess weight, advise on healthy lifestyle behaviours and monitor weight loss. The program has been evaluated in a variety of settings and has been shown to achieve clinically significant weight loss outcomes at 12 and 24 months.[114] The Counterweight Programme is further discussed in Section 2.4.

Recently in the UK, The Lighten Up RCT compared the effectiveness of a variety of commercial weight management providers (Weight Watchers®, Slimming World® and Rosemary Conley®), Size Down® (community weight management service), and primary health interventions (in general practice or pharmacy) to a comparator group receiving 12 free vouchers to a council run leisure centre over a three month period.[107] All participants in each arm of the study achieved statistically significant ($P < 0.05$) weight loss at the end of the study. At 12 months follow up, statistically significant ($P < 0.05$) weight loss from baseline were achieved in all interventions except the primary care interventions. The authors attributed the differences in weight loss outcomes achieved in the primary care settings to a number of factors:[107]

1. The healthcare professionals were less experienced in weight management compared to the counsellors in the commercial weight management groups;

2. One-on-one monitoring and behaviour change information counselling sessions were organised in the primary care intervention group compared to the other intervention arms that used group counselling sessions; and

3. Difficulty in making regular appointments to visit the primary healthcare provider.

Further work is needed to identify where primary healthcare weight management interventions fit, and in particular, where pharmacy can be involved.

2.4 Community pharmacy based weight loss interventions

2.4.1 Introduction to enhanced pharmacy services

Pharmacists are widely known for their traditional role of dispensing and supplying medication. Recently there has been a change within the pharmacy profession and pharmacists are now also recognised for their ability to assist in chronic disease management, screening activities, health education and awareness campaigns, and also in the promotion of quality use of medicines.[113, 115-117] These services have become increasingly important in recent years due to increasing populations, pressure on the primary healthcare system, the increasing cost of healthcare and the acceptance of non-medical primary healthcare providers.[117] Berbatis *et al.* explored the range of enhanced pharmacy services offered in Australia and found that over 40 per cent of community pharmacy owners surveyed were offering health services in asthma care, diabetes care, supply of methadone, hypertension and wound care. In addition, over a quarter of pharmacies were offering community health education and just over 30 per cent offered a weight management service.[117]

Health promotion has also become one of the key areas in which pharmacists are involved. Health promotion is depicted in all six types of community pharmacy services identified by Emerson, Whitehead and Benrimoj.[118] In addition, according to The National Strategy for Quality Use of Medicines in Australia,[119] pharmacists have a key responsibility to make sure they are up-to-date with evidence-based practice so that their consumers can be best informed about treatment options, risks and benefits and how best to take control of their health.[119] The Pharmaceutical Society of Australia also includes health promotion as one of its professional practice standards. The standard states that "the pharmacist actively engages individual consumers and the community to promote health and wellbeing".[120] This standard ensures that Australian pharmacists have the resources required to provide evidence-based health information to their consumers and also be involved with other groups and organisations to help facilitate health promotion in the community.

Pharmacists are in an ideal position to contribute to health promotion. They are easily accessible, with approximately 5000 pharmacies across Australia that each service approximately 4000 people.[121] They attract both healthy and non-healthy individuals and it is believed that the average person visits a pharmacy 14 times a year.[121] It has been said that community pharmacies have 78.2 million consultations annually regarding health and medications.[113] They are open an average of 8-14 hours a day and some may even be open 24 hours a day. No appointments need to be made to see the pharmacist and most importantly the pharmacist is viewed as one of the most trusted and approachable professionals.[113, 121, 122] Pharmacists are able to build close relationships with their consumers and other healthcare professionals in their area and are able to use those connections to achieve the best possible health outcomes for their consumers. Pharmacists give advice, provide information and are able to empower their consumers, as well as their community, to make informed decisions

about their own health and wellbeing. It is for these reasons that pharmacists have become increasingly involved in health promotion activities over the last 30 years.[123]

There have been numerous studies internationally and locally, regarding enhanced pharmacy services and health promotion in community pharmacy.[124-132] The majority of the studies focus on cardiovascular disease, asthma, diabetes, osteoporosis and, more recently, chlamydia screening. These interventions involved giving health information and screening, while others involved employing a health prevention program or specific interventions to help treat certain conditions. Studies specifically investigating the provision of health information and screening activities demonstrated that positive outcomes are likely to occur when pharmacists are involved in health education, screening and health promoting services.[118, 133-135]

2.4.2 Barriers to implementing enhanced pharmacy based services

Even though health promotion in pharmacy has increased over the last decade there are still key barriers that have been identified that prevent these services from being more widespread. The main barriers include lack of reimbursement, time-related issues, education and training, space, pharmacist availability, boundary encroachment (pharmacists feeling they are taking over the GP's role), pharmacists' public image (public still not viewing the pharmacist as a facilitator to changing lifestyle habits) and the legal implications of pharmacists and pharmacy assistants providing health promotion activities and services.[116, 117, 126, 136, 137]

The comfort level of pharmacy staff can also be perceived as a barrier. Studies have shown that some pharmacists and pharmacy assistants may feel uncomfortable approaching patients regarding a sensitive issue. Meijer *et al.* found that by using a core team in a pharmacy (one pharmacist and a number of pharmacy assistants) to educate the other pharmacy staff on an intervention plan (increasing patient education on folic acid supplementation in pregnancy)

and by revisiting the intervention strategy every couple of months to discuss ways of improving information delivery and processes, pharmacy staff would feel more comfortable discussing sensitive issues with patients.[137]

2.4.3 Introduction to weight management services in pharmacy

Over the last ten years consumers have seen an increase in the number of weight management services available in pharmacies.

Overweight and obese consumers regularly come into contact with their community pharmacist to obtain advice and medications for their weight-related conditions. It has therefore been recognised that pharmacists can play a role in helping these patients lose weight.[3] Pharmacists are medication management specialists and are able to recognise the different medications that can slow down weight loss or increase weight gain. Pharmacists are also trained in chronic disease management and are aware of the different conditions that can be affected by an increased BMI, as well as understand the different conditions that can hinder weight loss. With this knowledge, pharmacists are in a special position to adequately deliver a weight management program specific to a consumer, by taking into account important factors such as medications and medical history. [136]

Recently in Canada, a panel of seven experts in obesity discussed the need for better accessibility of obesity treatment.[4] This group of experts recognised that obesity is a chronic condition, and, like any other chronic condition, “key elements” need to be in force to help manage and treat the condition. [4] They acknowledged that education, access to evidence-based weight management practices and products, and behavioural support from healthcare professionals and community groups are vital in combating overweight and obesity. They also documented that pharmacists are key stakeholders in managing overweight and obesity due to

their accessibility, knowledge and credibility among consumers.[4] Similar to Canada, pharmacists in Australia have been identified as key health professionals to combat overweight and obesity through education, health promotion and the supply of evidence-based medications and evidence-based non-pharmacological advice. [138]

Although the need for pharmacy weight management programs has been accepted, in 2002 in Australia only 8.7 per cent of pharmacy staff had been trained in weight management and only 30.3 per cent of pharmacies provided a weight management program.[116] A recent article published in the Australian Journal of Pharmacy highlighted the importance of pharmacists in Australia becoming more involved in weight management through health promotion.[139]

2.4.4 Advantages of using a pharmacy setting

Over the last decade, the need for pharmacist involvement in weight management has been increasingly noted. Lloyd *et al.* mentioned that it is the pharmacist's accessibility, consumer trust in pharmacists and their view that pharmacists are highly trained health professionals, that make pharmacists ideal health professionals to become more involved in the treatment of obesity.[140] Furthermore, consumers purchase the majority of their weight loss products and other medications used to treat obesity-related conditions from pharmacies, thus placing pharmacists in an ideal position to offer advice on weight management.[140]

Pharmacists are able to provide expert advice on issues that often present with overweight and obesity, such as hypertension and type 2 diabetes. During weight management consultations pharmacists are able to review the patient's medications and health and use their expertise to determine which patients need referral to dietitians, GPs and exercise consultants, and which patients are able to be adequately treated in a pharmacy setting.

Pharmacists are in a unique position to target women-specific weight management concerns as their consumer group is 60 to 80 per cent women.[141, 142] They are able to utilise their easy accessibility, health promotion tools and expertise to target women who would not normally visit other healthcare professionals.

2.4.5 Review of community pharmacy weight management interventions

Internationally and locally there have been several studies exploring weight management interventions in community pharmacies.[71, 140, 143-150] These studies have investigated the use of pharmacies as the primary setting to assist patients to lose weight. A review identified that pharmacies can be seen as promising locations to implement weight management interventions but further studies are needed to evaluate cost-effectiveness.[151] In a more recent review regarding community pharmacy services promoting healthy living, the authors concluded that only weak evidence exists on the positive impact pharmacists have on weight management and that more work is required in this area.[152]

Conrad *et al*. recently highlighted the role of a clinical pharmacist in the Obesity, Weight Loss and Management Bariatric Clinic in New Orleans, USA.[149] This report explores how a pharmacist can be incorporated in a multidisciplinary care team with doctors, dietitians, psychiatrists and nurses. The role of the pharmacist in this clinic is to:[149]

1. Maintain accurate medication records;
2. Report if any medications the patient is taking may be associated with weight gain;
3. Identify drug interactions;
4. Recommend weight loss medications;
5. Track weight loss and recommend dose adjustments of medications if necessary; and

6. Assist in enrolling patients in medication assistance programs.

In addition, at the first visit to the clinic, if the patient has not seen the dietitian, the pharmacist is responsible for providing nutrition counselling to the patient. The authors of the article highlight the importance of incorporating a pharmacist into a multidisciplinary team to enhance patient outcomes.

Table 7 provides a detailed summary of community pharmacy-based interventions that have been investigated. Results have shown adequate weight loss with positive changes in health outcomes, including decreased blood pressure. Follow-up periods for these programs were low and most had high dropout rates. Dropout rates have been attributed to the participants reaching their goal weight before the end of the program and thus feeling that they did not need to continue to be involved or because these services are often provided for free. All pharmacy weight loss programs that have been studied have shown statistically significant weight loss outcomes, which indicates that pharmacies may be a potential location to assist consumers to lose and maintain their weight.

Table 7: Summary of community pharmacy-based weight management interventions

Study Title, Author(s), Country, Date	Type of study methodology, and participants' demographics/characteristics	Interventions	Main findings
Effects of Weight Reduction Interventions by Community Pharmacists[144] **Ahrens *et al.*** **Iowa, USA** **2003**	• Randomised, controlled open-label trial. • 22 week program. • 95 participants (87% women) randomly assigned to the calorie controlled meal replacement (MR) group or reduced calorie diet (RCD) group. • 88 participants eligible to be analysed; MR group n= 45, and RCD group n=43. • Average BMI was 29.5 kg/m^2 for the MR group and 29.0 kg/m^2 for the RCD group. No statistically significant differences between groups.	• 10 week active weight loss phase followed by a 12 week weight maintenance phase using a pharmacy setting and pharmacist as a first point of contact. • Program and meal replacements were free. • Participants visited the pharmacy to speak to the pharmacist at baseline for 45 minutes, and then had fortnightly 15 minute appointments with the pharmacist.	• No significant differences in weight loss between the MR and RCD groups; 6.36% weight loss in MR group compared to 5.45% weight loss in RCD group (P = 0.3). • In the active weight loss phase 52% of patients in the MR group lost 7% of their initial weight compared to 32% in the RCD group, however this was not statistically significant. • Significant reductions in blood pressure were observed, but no changes in LDL and HDL.

Study Title, Author(s), Country, Date	Type of study methodology, and participants' demographics/characteristics	Interventions	Main findings
Pharmacist Intervention Enhances Adherence to Orlistat Therapy[143] **Malone *et al.*** **USA** **2003**	• Prospective cohort study. • Patients allocated to groups based on location. Patients who lived close to the service were assigned to the intervention group (n=15), those without access to the service were assigned to the control group (n=15). • Participants were mainly female (87%) with a mean age of 43.8 years. The mean BMI of intervention group was 48.4 kg/m^2 higher than the control group mean BMI of 42.8 kg/m^2. This was not statistically significant. • Duration was 26 weeks.	• The control group patients were prescribed orlistat by doctors at an outpatient nutrition clinic with follow up clinic visits every 4-6 weeks. • The intervention group had access to pharmacists who had undergone a 1-day weight management training program. The intervention group was counselled by the pharmacist each time their prescription for orlistat was filled, received a phone call from the pharmacist 2 weeks after starting orlistat to assess their response, offer support and answer any questions.	• The main outcomes measured were persistence with orlistat therapy, amount of weight lost on orlistat therapy, and reasons for stopping orlistat therapy. • The mean number of weeks that the intervention group continued to take orlistat (18.5 weeks) was significantly higher than control group (7.8 weeks). • The mean percentage of patients who lost > 3% of their body weight was not statistically significant; 40% in the intervention group and 20% in the control group. • More patients in the intervention group (47%) completed the 26-week program compared to those in the control group (13%).

Study Title, Author(s), Country, Date	Type of study methodology, and participants' demographics/characteristics	Interventions	Main findings
The Lifestyle Challenge Program: A Multidisciplinary Approach to Weight Management[71] **Malone *et al.*** **USA** **2005**	• Observational study. • 90 participants (82% women) with a mean age of 48.4 years. • Participants had a baseline BMI > 27 kg/m^2 with a mean BMI of 37.1 kg/m^2. • 20 week program.	• Prior to commencing participants were asked to complete Short Form (SF)-36 to assess their quality of life. They were also assessed using the Gormally Binge Eating Scale (BES) and Beck Depression Inventory (BDI). • The participants paid $200 to join this program. Those unable to pay the joining fee were unable to participate. • This was a 20-week program that included one-hour group based meetings every week. These group meetings were focused on discussing different topics related to weight management. Different healthcare professionals, including a physician specialising in nutrition, a psychologist and a pharmacist facilitated these weekly sessions.	• The main outcomes for this study included percentage weight loss, increased quality of life, decreased binge eating behaviour and decreased depressive symptoms. • Patients who missed 2 consecutive weekly sessions without any reason were classed as having withdrawn. At 10 weeks 83 participants remained, at the end of the 20 week program 59 people remained. • The weight change for participants at week 10 was between 2.5% weight gain to 12.2% weight loss (mean= 3.6% weight loss). At week 20 the weight change was 5.9% weight gain to up to 17.1% weight loss (mean = 4.8% weight loss). • Participants had significant improvements ($P < 0.05$) in the SF-36, scores noting an increase in their quality of life, especially in the areas of vitality, general health and perceived health. BES and BDI scores also significantly decreased, thus indicating a decrease in binge eating behaviour as well as decreased depressive symptoms amongst participants.

Study Title, Author(s), Country, Date	Type of study methodology, and participants' demographics/characteristics	Interventions	Main findings

Implementation of a Weight Management Pharmaceutical Care Service[140]
 	
Lloyd K B, *et al.*
 	
Alabama, USA
 	
2007
	• Prospective observational study between January 2000 and December 2004.
	• 289 patients enrolled in the "Healthy Habits program" at Auburn University Pharmaceutical Care Centre.
	• This program was free of charge to Auburn University employees on an insurance plan.
	• Participants were mainly educated women (79%) and average age was 43 years. The participants starting BMI was 18.5 - 40 kg/m^2, with 33.2% of patients being in the overweight BMI category 25-29.9 kg/m^2.
		• Program offered education to patients on weight loss methods i.e. healthy eating, increasing physical activity and behavioural advice to reduce stress and increase social support.
		• Program involved face-to-face interviews with pharmacists and final year pharmacy students.
		• Information obtained at the initial consultations allowed the pharmacist or pharmacy student to develop a personal exercise and nutrition plan specific to each patient.
		• Follow-up visits were held every fortnight.
		• This program also included ongoing weight management education via newsletters.
			• Findings were reported in two ways:
			  o Weight loss between the first appointment and the final appointment.
			  o Weight loss between the first appointment and the appointment that recorded the lowest weight for the patient.
			• The mean weight loss for patients between the first appointment and the final appointment was 3.6 kg per patient ($P < 0.0001$).
			• The mean weight loss between the first appointment and the appointment with the lowest recorded weight was 5.5 kg ($P< 0.0001$).
			• By the end of the study 13% of the patients had lost at least 10% of their body weight.
			• In addition, 60% of patients at the start of the program who had uncontrolled blood pressure had controlled blood pressure by their last visit ($P<0.0001$).

Study Title, Author(s), Country, Date	Type of study methodology, and participants' demographics/characteristics	Interventions	Main findings
Change of body weight and lifestyle of persons at risk for diabetes after screening and counseling in pharmacies[146] **Botomino A, *et al.*** **2007** **Switzerland**	• Prospective cohort study. • 3800 participants were recruited and assigned to three groups of pharmacy lifestyle counselling: standard counselling, intensive counselling or high risk counselling. The assigning was done in accordance with patients' risk factors for developing type 2 diabetes. • There were statistically significant differences in age, weight, BMI, and systolic blood pressure in the high risk counseling group compared to the standard counselling group or the intensive counseling group. • 15 month study; data collection points 3, 9 and 15 months after initiation.	• Pharmacists were involved in counselling patients on lifestyle behaviour. • Standard counselling included nonspecific advice on lifestyle modification. • Intensive counselling was specific to the patient and enabled patients to set goals. • High risk counselling involved referring patients to GP for further check-ups as well as giving them intensive counselling.	• There was a high dropout rate and only 1370 subjects were able to be included in the analysis at 15 months. • At 15 months all counselling groups showed a significant decrease in weight loss ($P < 0.001$). • The high risk counselling group showed the highest weight loss with 18.5% of the high risk counselling group losing more than 5% of their initial body weight.

Study Title, Author(s), Country, Date	Type of study methodology, and participants' demographics/characteristics	Interventions	Main findings
Obesity management in primary care; the Conventry Project- a report to the Chief Pharmacist- ***From the book- The Obesity Epidemic and its Management.***[2] **Maguire T *et al*.** **2010** **UK**	• Prospective observational study. • 112 participants were enrolled. • Participants were over 18, had a BMI between 30-38 kg/m^2, and had one additional risk factor. • Participants were monitored over a 12 month period.	• Pharmacists were trained in weight management, approaches and motivational techniques. • Program involved fortnightly visits for 1 month, monthly visits for 5 months and then bi-monthly visits for the last 6 months. • At each visit, exercise, diet and behavioural techniques to assist weight management were discussed, and weight measurements were taken.	• At 12 months 70% of participants had dropped out. • The average change in weight loss at 12 months was 3.7 kg with 26 participants achieving a 5% weight loss at 12 months. • The average reduction in WC measurement at 12 months was 6.6 cm. • Pharmacists were also able to refer patients to appropriate healthcare professionals to assess blood pressure, blood glucose and other obesity-related conditions.

Study Title, Author(s), Country, Date	Type of study methodology, and participants' demographics/characteristics	Interventions	Main findings
Summary - evaluation of NHS Central Lancashire's pilot pharmacy weight management service **Vohra, S** **2010** **UK**	• Prospective observational study. • 58 participants enrolled and monitored over a 12 month period. • Participants had to be over 18 years old with a BMI > 25 kg/m^2, and <40 kg/m^2.	• Trained pharmacists provided a weight management service over a 12 month period. Pharmacists conducted 12 face-to-face appointments with the consumer over a 12 month period. • At each appointment assessment of weight, goals, and motivational factors occurred. Information on nutrition, physical activity and healthy behavioural lifestyle changes was also delivered.	• Dropout rates were incredibly high. At 3 months follow-up n=42, at 12 months n=5. • At 12 months average weight loss since first assessment was 2.88 kg (n=5). At 3 months average weight loss since first assessment was 2.06 kg (n=42).

Study Title, Author(s), Country, Date	Type of study methodology, and participants' demographics/characteristics	Interventions	Main findings
Evaluation of the Heart of Birmingham teaching Primary Care Trust (HoBtPCT) My Choice Weight Management Program[150] **Bush *et al.*** **2011** **UK**	• Prospective observational study (comparison study). • 269 participants were enrolled in GP clinics, and 183 participants were enrolled in pharmacies. • Participants were followed over a 6 month period. • Participants were enrolled if they had a BMI > 28 kg/m^2 with comorbidities or a BMI ≥ 30 kg/m^2 with/without comorbidities (participants of Asian descent could have a BMI > 23 kg/m^2 with comorbidities or a BMI ≥ 25 kg/m^2 with/without comorbidities).	• Enrolled consumers had to attend weekly appointments at the GP clinic or community pharmacy over a 12 week period and then attend three follow-up appointments over a 6 month period. • Consumers were assessed at each appointment (weight, WC) and provided with healthy behaviour counselling regarding nutrition and physical activity. • Trained healthcare workers at the GP clinic (healthcare assistant, practice nurse) and community pharmacy (pharmacy assistant) provided the service.	• The majority of participants were women (86%), with an average age of 41 years. There was a significant difference ($P < 0.05$) in age and ethnic background of the participants between the consumers in the GP intervention group and the consumers enrolled in the community pharmacies. • At the end of the 12 weeks, participants in the GP program had significantly greater weight loss percentage compared to participants in the pharmacy program (3.8% compared with 2.8%). • At the end of 6 months, participants in the pharmacy led program had significantly greater weight loss percentage compared to the GP led program ($P < 0.05$; 4% compared with 2.2%). • Retention rate in the pharmacy program was much higher than the GP led program.

Study Title, Author(s), Country, Date	Type of study methodology, and participants' demographics/characteristics	Interventions	Main findings
A community pharmacy weight management programme: an evaluation of effectiveness[148] **Morrison *et al.*** **UK** **2013**	• Prospective observational study. • 458 people were enrolled, 314 completed 12 month program. • Participants were over 18, with a mean age of 54. • Participants were enrolled if they had a BMI > 28 kg/m^2 with comorbidities or a BMI ≥ 30 kg/m^2 with/without comorbidities. Three quarters of the participants were women and the mean BMI = 36.0 kg/m^2.	• 16 pharmacies delivered the Counterweight weight management programme. Training of pharmacists and pharmacy assistants (mostly pharmacy assistants) occurred prior to commencement of the study. Specialist dietitians conducted two, 4 hour training sessions. A further 3 hour training session was given at 6 months. • Intervention: pharmacy staff deliver advice, and provide information regarding healthy lifestyle behaviour. Participants had to commit to nine appointments over a 12 month period.	• At 12 months: o 10.2% (n=32) of patients had achieved a weight loss ≥ 5%. o 18% (n=57) had lost some weight. o 2% (n=15) had gained weight. • Men lost more weight than women (5.8 kg vs 4.3kg; P = 0.78). • No significant differences in weight loss outcomes were found amongst different BMI or age.

2.4.6 Community pharmacy weight management services

Studies in Ireland, Scotland, England, USA and Kuwait have investigated available community pharmacy weight management counselling and weight management services.[3, 153-157]

Newlands *et al*. examined healthy weight management services from community pharmacies in Grampian, Scotland in 2009 using a mailed questionnaire (response rate= 83/128).[153] This study showed that the majority of pharmacies stocked weight loss products (n=69, 83.1%) and provided advice on weight loss medications (n=68, 82.9%). Calculation of BMI was available in 67.4 per cent (n=56) of pharmacies and advice on healthy eating in 71.9 per cent (n=59) and physical activity in 65.4 per cent (n=53). The majority of respondents (n=56, 67.5%) felt there was a need to provide healthy weight management services in pharmacy. Additional training in estimation of body fat, delivery of one-on-one healthy weight management consultations, advice on weight loss products and medications were highlighted amongst the respondents, with the majority only having had training in weight management from pharmaceutical companies (n=52, 62.7%). Overall, the authors highlighted that the pharmacist respondents had positive attitudes about providing healthy weight management services to their community and the majority felt confident providing these services.

This study identified that pharmacies in one area in Scotland provided a wide range of healthy weight management services.[153] This contrasted with a previous study conducted in Scotland in 2007, exploring obesity services provided by different healthcare professionals including pharmacists.[158] The study, unlike the Newlands *et al.* study, found that only 15.5 per cent of pharmacists (65/425) provided weight management services to their consumers and less than 20 per cent of pharmacists had access to appropriate training (n=69/354).[158]

In Texas, USA, Dastani *et al.* investigated weight management counselling by pharmacists (response rate= 139/395) using a mailed questionnaire.[3] This study found that the majority of pharmacists only counselled their consumers on obesity management rarely to sometimes; frequency of counselling increased with increased perceived comfort of counselling obese consumers. Respondents in this study appeared to be most confident in achieving positive outcomes in areas related to dispensing of medication. Dastani *et al.* found that pharmacists counselled consumers on herbal therapies the least and acknowledged that pharmacists may be less comfortable counselling on these products due to their lack of effectiveness.[3] Nevertheless, due to the increased availability of these products in community pharmacies, the importance of pharmacists being able to counsel and monitor consumers on herbal therapies was noted in this study.

Awad *et al.* investigated counselling provided to obese consumers in Kuwait and perceived barriers to counselling by pharmacists (n=206) using a hand-delivered questionnaire.[155] This study found that pharmacists counselled consumers 'sometimes' to 'most of the time' regarding obesity management. Respondents counselled on diet and exercise with the highest frequency (mean (SD)= 4.22 (1.06); from a five point Likert scale [1= rarely, 5=always]). Similar to the study by Dastani *et al*., this study found that there was a significant positive correlation between the frequency of counselling and the perceived comfort level when counselling obese consumers.[3, 155]

In 2004, pharmacists (n=163) in Dublin, Ireland were surveyed using a mailed questionnaire that explored healthy weight management services provided in community pharmacies.[154] This study found that the majority of pharmacists (n=98) provided proactive advice on diet to their

consumers. The majority of pharmacists also said that they would provide advice on healthy eating and physical activity (n=128) if a consumer requested a weight loss product.

Studies have also investigated weight management services provided in pharmacies in two Primary Care Trust (PCT) areas in England: Sefton and Liverpool.[156, 157] Krska *et al.* investigated weight management services provided by community pharmacies (response rate= 49/66) in the Sefton PCT area, using a questionnaire completed via face-to-face interviews with the community pharmacists.[156] This study showed that a high number of pharmacies stocked over-the-counter (OTC) products marketed for weight loss (n=38, 78%), and all pharmacies stocked prescription weight loss medications. The majority of the pharmacists (n=40) said that they would offer general dietary advice to their consumers, and eight pharmacists highlighted that their pharmacy offered a weight management clinic. Similar results were found in the Liverpool PCT area in the study by Andronicou *et al*.[157] This study aimed to determine the number and type of OTC weight management products in community pharmacies (n=123) and the knowledge of pharmacists (n=78) regarding OTC weight loss products. Andronicou *et al.* found that the majority of pharmacies (n= 85, 69%) stocked OTC weight loss products. Similar to other studies, the majority of the training received on weight loss products had come from pharmaceutical companies.[153,154] The importance of pharmacists providing accurate information regarding the efficacy and potential adverse effects and drug interactions of OTC weight loss products was highlighted.

All of the above studies have only surveyed pharmacists and have not investigated the provision of pharmacy weight management services by pharmacy assistants. Pharmacy assistants are the group of people with whom pharmacy consumers have most contact. Many of the weight management products available in pharmacies are available as OTC products

without requiring a qualified pharmacist's assistance. Information on the supply of OTC weight management products by pharmacy assistants and the training they receive in this area is lacking.

2.4.7 Weight management services in Australian pharmacy

A recent review of weight management programs in Australian community pharmacies identified 13 programs.[159] These programs differed in their meal plans, advice given, support options and also in staff training. There has been no research done to compare the weight loss outcomes from these programs and no published studies regarding the attitudes, opinions and involvement of pharmacists and consumers in these programs.

These programs mostly relied on meal replacement products and the use of weekly weigh-ins and consultations to provide patients with the support they need. The majority of the services depended on trained pharmacy assistants to provide information and advice, very few utilised pharmacists' expertise and thus missed out on key opportunities to counsel critical patients. All programs utilised online support groups, which have been shown to be a successful medium for patients to obtain information.[160, 161] Staff training varied greatly with some having a single training session and others having bimonthly training sessions to keep knowledge up-to-date.[159]

Choice, the Australian consumer watch dog, reviewed some of the more popular pharmacy weight management programs, including Tony Ferguson®, Kate Morgan®, Xndo®, Alphaslim®, Betty Baxter®, Meditrim®, Ultralite® and Dr. Tim's Success®, and found that these programs were highly variable, and did not offer the privacy, time and support required to adequately provide a satisfactory weight management program.[162] They concluded that overall these programs should not be recommended to Australian consumers. Choice investigators felt that

these programs were structured for pharmacies to receive a financial benefit and were not really considering the health of the consumer. They highlighted that there should be a national accreditation system to ensure that consultants are adequately trained in giving evidence-based advice and have the time and facilities to provide patients with adequate care.[162]

None of the programs mentioned above focused on the specific needs of women and lacked initial counselling to determine patient barriers to weight loss (which as discussed earlier is a crucial requirement for a successful weight loss intervention). Hughes *et al.* recently investigated nutrition and physical activity counselling by pharmacists (n=51) and pharmacy assistants (n=55) to women in the perinatal stages.[163] Compared to general practitioners (GPs) and nurses, pharmacists and pharmacy assistants were less likely to understand the importance of physical activity in pregnancy and after birth. Pharmacists and pharmacy assistants were also significantly less likely ($P \leq 0.001$) to feel confident in offering nutrition and physical activity advice to their women consumers compared to GPs and nurses.[163] Hughes *et al.* highlighted that pharmacists and pharmacy assistants were currently underutilised in primary care and should be trained to offer nutrition and physical activity advice.[163] Maher *et al.* further emphasised this finding, and highlighted that community pharmacies are an accessible healthcare destination that should be used to offer nutrition and physical activity health promotion and advice.[142]

An Australian study found that pharmacists were happy to provide a weight management service for their consumers if they had sufficient training in an accredited program that offered up-to-date evidence-based information on products and advice for patients.[164] This is currently lacking and needs to be developed. Um *et al*. investigated the role of pharmacists in weight management using semi-structured interviews with 12 experts (dietitians, exercise

physiologists, physicians, psychiatrists and members of pharmacy professional organisations) in weight management in New South Wales, Australia.[165] This study found that the majority of experts felt that pharmacists had a role in the management of overweight and obesity and could be involved by providing health promotion or health education or by delivering an individualised weight management program. The importance of training and upskilling of pharmacists in weight management was further emphasised in this study.[165] In addition, the role of pharmacists in a multidisciplinary care team was highlighted with experts recommending pharmacists work alongside other members of the primary care team to assess, advise, monitor and refer consumers as needed.[165]

A study conducted in Gippsland, Victoria investigated a dietitian run *waist* management program located in a community pharmacy in a rural area.[166] Participants in this study were referred to the dietitian run program by pharmacy assistants, pharmacists and GPs. Once the participants were enrolled they each had to attend a scheduled monthly appointment with the dietitian at the pharmacy. At each appointment the participant's weight was assessed and healthy eating behavioural counselling was provided. Participants were followed for a total of 12 months. At the end of the study, a significant reduction in body weight (3.8 ± 6.7 kg) and waist circumference (3.9 ± 6.5 cm) was found. Even though this study was conducted in only one pharmacy and enrolled a small number of participants (n=40), the author concluded that the community pharmacy provides an accessible location for the provision of health services.[166]

As previously mentioned (Section 2.4.3), in Australia, a study investigating enhanced pharmacy services offered in community pharmacies in 2002, found only 8.7 per cent of pharmacy staff had been trained in weight management and only 30.3 per cent of pharmacies provided a weight management program.[116] These results are now over ten years old and more recent

information on current weight management services, counselling provided by pharmacists and training is warranted.

2.4.8 The barriers identified by pharmacists to providing weight management services in pharmacy

2.4.8.1 Internationally

It has been recognised that pharmacists may feel uncomfortable approaching patients to discuss the issue of weight management with it being such a sensitive issue [167]. In addition, a study conducted in Texas, using a mailed questionnaire to 400 randomly selected pharmacies, found that of the 139 community pharmacists who responded, the three most acknowledged barriers to counselling on weight management were lack of time (76.8%), lack of patient demand (55.8%) and lack of reimbursement (49.3%). Increasing pharmacists' knowledge and resources about weight management counselling, as well as increasing the public's awareness on the role of pharmacists in weight management, were seen as good methods to overcome the above barriers.[168] In addition, lack of privacy and staffing issues have all been identified as possible barriers to weight management services in community pharmacies.[168]

2.4.8.2 Australia

A recent study conducted using semi-structured interviews with 20 pharmacists all residing in Sydney, New South Wales illustrated that Australian pharmacists experience similar barriers to their international colleagues.[164] Other barriers that were identified included the possibility of a conflict of interest with providing weight management advice and selling weight management products, and the lack of current evidence-based knowledge and pharmacy weight management training sessions available in Australia.[164]

Another perceived barrier to pharmacists providing a weight management service is the increased requirement for pharmacists to be aware of the evidence behind regularly purchased OTC weight loss and weight maintenance products. It has been noted that pharmacists need to understand which products can be used for long periods of time and which should only be used short-term for consumers to get the best possible weight management outcome.[169]

Larger national studies need to be conducted to obtain a clear insight into pharmacists' perceived barriers to providing a weight management service. At present no Australian study has focussed on evaluating pharmacists' knowledge of weight management interventions. Since lack of knowledge has been identified as one of the key barriers, research is needed to determine in what areas pharmacists need further education. In addition, no study has identified the barriers to pharmacy assistants providing weight management services to their consumers, their knowledge of weight management products and their weight management training requirements.

2.4.9 Community pharmacy weight management models

Studies have investigated how best to incorporate weight management interventions in community pharmacies. In 2005, Rieck *et al.* conducted a study to investigate the potential role of pharmacists in weight management and to develop a weight management model for community pharmacies in Australia.[170] The research conducted as part of the "Community Pharmacy Weight Management Program" concluded that community pharmacy weight management programs can be successful if certain factors are taken into consideration, including remuneration, business and professional needs of the pharmacies and training and accreditation of pharmacists. A community pharmacy weight management program model was developed based on a critical literature review, the NHMRC clinical practice weight

management guidelines available at the time and government policies.[5] The program was unfortunately never implemented or evaluated. The importance of training and accreditation was highlighted throughout the research findings.[170] Um *et al.* has recently conducted further studies investigating key areas that should be included in the training and accreditation of pharmacists to deliver a community pharmacy weight management program.[165] These results are discussed in Section 2.7.

2.5 Women and weight management

2.5.1 Why women?

Women are faced with increases in body weight throughout the course of their life, with specific causes of overweight and obesity identified, including polycystic ovary disease, [171, 172] hormonal changes, [173] pregnancy, [174, 175] and menopause, [26, 176, 177] which are all specifically related to women. In addition, overweight and obesity poses an increased risk of infertility in women and an increased risk of pregnancy complications.[171, 178, 179] It is therefore essential to investigate women in more detail to be able to devise an appropriate weight management intervention to target this group.

Even though there is a higher prevalence of overweight and obesity in males than women in Australia, there is a much higher number of women (40%) with a WC measurement of over 88 cm compared to males with a WC measurement of over 102 cm (29.6%). Those 40 per cent of women with a WC measurement of greater than 88 cm are placed at a substantially increased risk of developing type 2 diabetes.[28] The Ausdiab study also indicated that over the five year follow-up period women on average had a WC measurement increase of 2.5 cm compared to males who had an average increase of 1.6 cm.[38]

Compared to males, women are at a greater risk of weight gain caused by aging, pregnancy, menopause, smoking cessation and lifestyle changes (increased energy intake, decreased physical activity). [180, 181] In addition, sex-specific hormones play a significant role in obesity in women.[182] Studies have shown that the changes in hormones during a woman's menstrual cycle can affect energy expenditure as well as cravings for calorie intake.[183]

An Australian prospective cohort study of 8071 mid-age (45 to 55 years old) women showed that on average over a five year follow-up period, women gained 2.42 kg.[180] Women who sat for greater than 4.5 hours a day ($P < 0.0001$), had a hysterectomy ($P < 0.0001$), had gone through menopause ($P < 0.0001$), had quit smoking ($P < 0.0001$) and had a high energy intake and were overweight and obese at the start of the study ($P < 0.0001$) were more likely to gain more than 5 kg in the five year period. Based on these calculations it was noted that the women who had gained weight had only slight energy imbalances of approximately 10 kcal (40 KJ) per day. Although this study was based on self-reported data and women have been known to underestimate their weight and energy intake, it was able to show that small changes in energy consumption and physical activity could prevent weight gain in mid-aged women.

It has been shown that women have an increased risk of developing conditions such as cardiovascular diseases, type 2 diabetes and certain cancers in the same BMI category as men, [184] so changes in diet, lifestyle and behavioural modification will be of significant benefit to this population. Table 8 shows the differences in relative risk (RR) of disease in obese males compared to obese women

Table 8: RR of disease in obesity (BMI ≥ 30 kg/m^2) of women compared to males[1, 2]

	T2DM*	HT*	MI*	Colon cancer	Angina	Gall bladder disease	Ovarian cancer	OA*	Stroke
Women	12.7	4.2	3.2	2.7	1.8	1.8	1.7	1.4	1.3
Men	5.2	2.6	1.5	3.0	1.8	1.8	-	1.9	1.3

*T2DM (Type 2 diabetes mellitus), HT (Hypertension), MI (Myocardial infarction), OA (Osteoarthritis)

The benefits of weight loss in women are great, with studies showing that a weight loss of greater than 9 kg been associated with a 25 per cent reduction of all-cause mortality from cardiovascular disease, diabetes and cancer.[64]

2.5.2 Changes in weight at different ages

The Australian Institute of Health and Welfare (AIHW) 2010 report shows that after the age of 18 women continually gain more weight until they reach 65 years of age.[28] In Table 9 it can be seen that the percentage of women who are overweight and obese continues to increase until they reach 65; at 65 more women are classified as overweight and there is a decrease in the percentage of women who are obese. However, as discussed previously (Section 2.1.2.1) BMI is not the best indicator for fat mass in the elderly population as BMI can be underestimated due to the elderly having decreased lean mass, so a better indicator would be to use both the BMI and WC measurements. Waist circumference measurements in women continue to rise after the age of 18,[28] therefore indicating that as women age the risk of co-morbidities due to increased abdominal mass increases (Table 10).

Table 9: BMI and percentage of women at different age groups [28]

	18-24 y/o	25-34 y/o	35-44 y/o	45-54 y/o	55-64 y/o	65-74 y/o	>75 y/o
Underweight ***BMI < 18.5kg/m²***	7.2	3.4	1.9	2.0	1.2	1.3	2.8
Normal ***BMI: 18.5-24.9 kg/m²***	57.7	52.2	42.8	39.2	30.9	27.5	40.5
Overweight ***BMI: 25-29.9 kg/m²***	20.7	26.5	32.5	32.5	34.7	41.9	32.5
Obese ***BMI: ≥30 kg/m²***	14.4	18.0	22.8	26.4	33.2	29.3	24.2

Table 10: WC measurements and percentage of women at different age groups[28]

	18-24 y/o	25-34 y/o	35-44 y/o	45-54 y/o	55-64 y/o	65-74 y/o	> 75 y/o
Not at risk ***WC < 80cm***	66.7	45.7	37.7	33.2	22.0	16.6	20.6
Increased risk ***WC ≥ 80cm***	14.6	22.2	23.8	24.2	22.0	28.3	22.3
Substantially increased risk ***WC ≥ 88cm***	18.7	32.1	38.5	42.6	55.9	55.1	57.2

From Table 10 it is evident that the greatest increase WC occurs after the age of 24, which is the time women generally begin to conceive, and also again after the age of 54, which is the time when the majority of women have reached menopause.[177] These two critical periods of a woman's life therefore need to be targeted with appropriate weight management approaches.

Table 11 outlines the different life-stages when women are at an increased risk of weight gain and possible explanations. Pregnancy, postpartum and menopause have also been discussed further in the section below.

Table 11: Risk factors that predispose women to weight gain throughout their lifespan[185, 186]

Life stage	Risk factors
Adolescence	At this age young women begin to have more independence and are able to make individual decisions regarding their food intake. This can mean irregular meals, changes in food habits and times of physical inactivity. Physiological changes at this age also promotes accumulation of fat.
Early adulthood	Reduced physical activity is seen during this age group due to the changes in lifestyle, whether it be moving out of home, starting a job or getting married.
Pregnancy	Excess weight gain in pregnancy has been shown to increase the likelihood of obesity.
Postpartum	Weight retention is greatest amongst women who are overweight or obese. Women are also more likely to gain excess weight with each successive pregnancy if weight gained in pregnancy is not lost prior to conceiving again. In addition, women with children are at risk of weight gain due to the certain barriers that include lack of time, social isolation or lack of childcare.
Menopause	Women are at an increased risk of weight gain as they get older due to hormonal changes and also decreased physical activity. In menopause fat deposits increase around the abdomen, which greatly increases the risk of certain heath conditions.

2.5.3 Weight related health issues in women

This section provides a brief overview on weight related health issues that are relevant to women at different stages of life.

2.5.3.1 Contraception

There are conflicting results regarding the efficacy of hormonal contraception in obesity. Data from a large, prospective cohort study in the US with 52,218 participants found that there were small, but significant (adjusted HR= 1.5 (95% CI 1.3–1.8)), increases in contraception failure in women who were obese (BMI > 35 kg/m^2) and taking the oral contraceptive pill.[187] On the other hand, a recent large cohort study in Europe reported no difference in contraception failure rates amongst women who were overweight and obese compared to women in the healthy weight range taking the oral contraceptive pill.[188] A recent Cochrane review concluded that studies regarding the effectiveness of hormonal contraception in women with a BMI more than 25 kg/m^2 were limited and future studies need to be conducted with overweight and obese women to determine the effectiveness and risks of side effects with hormonal contraceptives.[189]

Hormonal contraception is no longer believed to have an effect on weight gain in women.[190] Thus, risk of weight gain should no longer be seen as a reason to not prescribe hormonal contraceptives to women who are overweight and obese. Women who are overweight or obese, however, do have an increased risk of thrombosis, which may be further increased when they are taking hormonal contraceptives.[191]

Shaw *et al*. highlighted the importance of clinicians understanding the risks and benefits of using oral contraceptive pills in women who are overweight and obese.[191] The importance of counselling overweight and obese women on the most appropriate contraceptive measure was emphasised.[191] Furthermore, pharmacists in particular are considered to be the medication-experts and need to be aware of the benefits, risks and potential reduced effectiveness of

hormonal contraceptives so they can advice and provide adequate counselling to their women consumers.

2.5.3.2 Polycystic ovary disease (PCOS)

Polycystic ovary disease, an endocrine disorder categorised by amenorrhoea/olgiomenorrhoea, hyperandrogenism and polycystic ovaries, affects around 400,000 women in Australia.[172, 192, 193] It involves insulin resistance in about 60 to 80 per cent of women,[172] excess weight in 40 to 60 per cent of women,[194] increased risk of developing type 2 diabetes and metabolic syndrome,[172] fertility problems,[172, 194] and psychological issues.[172]

Excess weight in women has been known to exacerbate the clinical features of PCOS including infertility, pregnancy difficulties, hirsuitism and hyperandrogenism. [171, 178] Overweight and obesity also independently increases the risk of type 2 diabetes, cardiovascular disease and metabolic syndrome.[64] The risk of type 2 diabetes in women with PCOS increases four- to seven-fold[172] and it has been recognised that 90 per cent of women with PCOS who have fertility problems are overweight.[172] Bates *et al.* reviewed long-term management of obesity in PCOS and recommended that lifestyle modification of decreased calorie intake and increased physical activity in combination with behavioural modification should be considered first-line.[193] Weight losses of 2 to 5 per cent have been shown to decrease free testosterone by 21 per cent, lead to resumption of regular ovulation in 50 per cent of women and improve fertility.[195] Thus it is essential that weight is appropriately managed and evidence-based interventions are developed.

2.5.3.3 Pre-conception

As approximately 40 per cent of the Australian female population aged 18 to 44 are considered overweight or obese,[28] this poses an increased risk of fertility and pregnancy complications and

thus substantial financial and health costs.[171, 178, 179] Small weight losses can be associated with significant health benefits[196] and thus it has been highlighted that advice on weight management needs to be addressed at fertility, pre-pregnancy clinics and in primary care.[182, 197, 198]

In an Australian study by Clark *et al.* that investigated a weight loss intervention for infertile obese women (N=67) it was found that after successful weight loss of an average of 10.2 kg, 77.6 per cent were able to conceive.[196] Ninety per cent of the 69 women classified as anovulatory at the start of the study resumed spontaneous ovulation by the end of the study. In addition, there was a statistically significant decline in the rate of miscarriage in the women after the weight loss ($P < 0.01$). Clark *et al.* also highlighted the cost effectiveness of pre-conception weight loss; the cost of delivering a baby after the weight loss intervention was $4600 per baby as opposed to $270,000 per baby for women who had delivered a baby prior to the program.[196]

The importance of obesity screening in reproductive-aged women has been noted.[199-201] Clinicians are recommended to routinely check BMI in this population group and give advice on overweight and obesity management if needed.[199] This allows women who are at a high risk of pregnancy complications to be identified prior to conceiving and also educates women on the potential risks of being overweight and obese if they become pregnant. A study has shown that women are twice as likely to commence weight loss interventions, such as decreased calorie intake and increased physical activity, if their healthcare professional has diagnosed them with obesity compared to women who do not have a formal diagnosis.[200] An Australian study that surveyed 412 women in early pregnancy about the perceived risk of different pregnancy and neonatal complications in obese women found that the majority of the women surveyed (57%)

were able to correctly identify the increased risk of maternal complications in very obese women.[201] The study by Nitert *et al*. recommended that BMI be routinely checked at pre-pregnancy health checks and education regarding weight management prior to conception be provided.[201] Currently, according to an Australian study, only 26 per cent of overweight or obese pregnant women received advice to lose weight, even though this advice could have been from doctors, family or friends.[202] Women also underestimate their weight and thus underestimate the health risk that being overweight or obese poses to themselves or their baby.[202]

Women of child-bearing age need consistent advice from their healthcare professionals to adequately manage their weight; healthcare professionals also need to be better informed about the health risks that being overweight or obese has on the health of the expectant mother and her baby.

2.5.3.4 Pregnancy

Overweight and obesity in pregnancy is associated with increased risk of complications for the mother as well as the child (Table 12).[203-205] It has been shown that by controlling gestational weight gain, favourable pregnancy outcomes are more likely to occur. A systematic review identified that women who gain weight according to recommended gestational weight guidelines are more likely to have positive birth and infant outcomes.[197]

Table 12: Health risks associated with maternal obesity[204]

Risk	Increased risk of:
Antenatal	Still birth
Medical	Mortality Type 2 diabetes Gestational diabetes Preeclampsia Obstructive sleep apnoea Depression Thromboembolic disease
Intrapartum	Caesarean section Difficult vaginal birth Shoulder dystocia Obstructed labour
Postpartum	Haemorrhage Endometritis Infections Reduction in breastfeeding
Neonatal	Preterm birth Macrosomia Congenital malformations
Childhood	Obesity

The above complications can be reduced, not only by decreasing weight prior to conception, but also by controlling gestational weight gain.[204] Current guidelines on gestational weight gain are listed in Table 13. The weight increases depend on the BMI of the woman prior to conception. Often healthcare professionals do not give a clear indication about how much weight gain is appropriate, and it has been shown that women who have not been told how much weight to gain have increased gestational weight gain compared to the recommended values.[74, 204]

Table 13: Recommended gestational weight gain according to BMI [204, 206]

Prepregnancy category and BMI (kg/m^2)	Total weight gain (kg)	First trimester (kg)	Rate of weight gain in the 2nd and 3rd trimester (kg/week)
Underweight < 18.5	12.5-18	0.5-2	0.45
Normal weight 18.5-24.9	11.5-16	0.5-2	0.45
Overweight 25.0-29.9	7-11.5	0.5-2	0.28
Obese ≥30	5-9	0.5-2	0.22

A clear outline of how much weight a woman should gain during pregnancy needs to be identified and discussed with her. Currently it is not recommended that overweight or obese women take any weight loss products (prescription medication or other) during pregnancy.[204] There is no clear evidence as to whether weight loss during pregnancy is harmful; the Queensland Statewide Maternal and Neonatal guidelines on pregnancy indicate that weight loss using a healthy lifestyle may be acceptable.[204]

A study conducted in the UK that surveyed 6226 women found that 63 per cent had not received information about weight management and gestational weight gain at their first antenatal visit, with 84 per cent suggesting that advice on weight management given was poor.[207] Another smaller UK study had similar findings and showed that many women relied on information gathered from the internet rather than their healthcare professional. [208] An online questionnaire, surveying midwives regarding their current provision of weight management advice for obese women during pregnancy, found that all respondents (n=78) felt that all women should receive advice on weight management during pregnancy regardless of their

BMI.[209] Lack of time, training and resources were commonly noted as barriers to providing women with appropriate gestational weight gain advice.[209]

With the available evidence suggesting that weight management in pregnancy provides positive health benefits, further research is needed to develop appropriate educational resources for healthcare professionals so that consistent and up-to-date information can be provided in a timely manner.

2.5.3.5 Post-partum

Not surprisingly, women who gain greater than the recommended weight in pregnancy have an increased risk of retaining the weight they gained compared to women who gain weight at the recommended level.[174]

Failure to reduce weight gained in pregnancy increases the chance of women having increased BMIs in later life. A study showed that by 6 to 18 months postpartum, nearly 20 per cent of women gain more than 5 kg.[210] It has been suggested that weight gained during pregnancy should be lost within the first six months after birth to decrease the chance of having an increased BMI later on.[174]

Breastfeeding has a positive impact on past partum weight loss, especially in the long-term, with women who breastfed for at least three months having lower weight gain over an 8.5 year period.[174]

Many reasons for post-partum weight gain have been studied; a few factors that have been thought to increase the risk of weight gain postpartum include smoking, gestational weight gain above recommended levels, age of mother, education level, social class, ethnicity and multiple births. [210-212]

Weight loss programs or increased physical activity in this population do not harm the mother and have also been shown to have no effect on breastfeeding or breastfed babies. [213]

2.5.3.6 Menopause

Menopause is another period in a woman's life that has been shown to be associated with significant weight gain.[214] It has been suggested that it may not be menopause as such that causes the increase in weight gain, but more the age of the woman and changes in lifestyle.[5] It is well recognised though, that as oestrogen levels fall, fat is distributed differently and it shifts to the abdominal area,[26] which ultimately increases the risk of developing type 2 diabetes, cardiovascular disease and some cancers.[5]

Numerous studies have shown that through decreased energy intake and increased physical activity, weight gain and fat redistribution during the menopausal years can be prevented or reduced, thus decreasing the risk of associated co-morbidities.[214-216]

2.5.4 The importance of weight management interventions for women

As described above, women are prone to many unique obesity risk factors and thus the need for personalised weight management interventions for the treatment and prevention of obesity in women has been recently highlighted in various studies.[182, 198, 217] In addition, the need to target young women, and not just those in the pregnancy or menopause life-stages is seen as a necessity, as major weight gain over a ten year period occurs between the ages of 25 to 34.[182] Women should be aware of their specific risk factors and have preventative strategies in place from a young age.

Yang *et al.* noted the importance of individualised health risk assessments, and, in particular, understanding the risk factors that predispose women of different ages to obesity.[182] Yang and

her team highlighted that by primary healthcare providers, specialists and stakeholders understanding these risks, better informed decisions regarding prevention and treatment of obesity in women can be made.[182] These interventions aim to prevent obesity-related conditions, delay their onset or reduce the impact to the individuals. Furthermore, a review of obesity and women's health demonstrated the importance of all healthcare professionals counselling women on the negative association of obesity on their health so that women recognise the importance of weight management and the life stages that may predispose them to excess weight gain.[198]

Primary healthcare workers often mentioned as being in the ideal position to assist women in weight management treatment and prevention are dietitians, midwives and nurses. However, a recent study by Smith identified pharmacists as being uniquely placed to counsel women on obesity risk factors, prevention and treatment.[218]

According to the 2012 Australian Health Survey the proportion of women living in the most disadvantaged areas of Australia were more likely to be overweight or obese (63.8%) compared to women living in the least disadvantaged areas (47.7%).[29] Men did not follow the same pattern with similar proportions of overweight and obesity observed in both areas. The differences observed between the women highlights the need for accessible weight management interventions for women in all areas including disadvantaged and non-disadvantaged locations. Primary healthcare workers, in particular pharmacists, can play a major role in providing the much needed care for overweight and obese women in disadvantaged locations due to their high level of accessibility, patient trust and their ability to attract both healthy and non-healthy individuals.

Finally, women are often seen as the "decision makers" around nutrition and lifestyle in a household, and consequently impact on weight management for the entire family.[219] Thus, it is recognised that promoting healthier lifestyles and better food choices to women will benefit not just the women themselves, but may also help all the individuals in their households.

2.6 Overview of consumers' experiences with weight management services

An important component of developing successful weight management interventions is to involve consumers, draw from their experiences, and take into account their attitudes towards weight management approaches.[98] A large number of international and local studies have investigated consumers' weight management practices, perceptions and approaches. [98, 157, 220-237] These studies explored the use of available products/interventions, the perceived barriers, the limitations of these products/interventions and also the reasons for wanting to lose weight and consumers' views on pharmacy weight management services. These studies are discussed below.

2.6.1 Consumers' attitudes and experiences with general weight loss services

2.6.1.1 Weight

It is important to recognise that overweight and obesity is a complex, multifactorial health condition that needs to be addressed appropriately. Overweight and obese individuals can sometimes feel separated from their current society, feel discriminated against and have low self- esteem, [98, 222, 223, 229] so it is vital for healthcare professionals to be able to address the issue

in a non-judgemental, sensitive manner that is targeted at an individual level. A recent study showed that individuals who are overweight or obese prefer healthcare professionals to address their weight problem by using the word "weight" and not by referring to it as "excess fat", "fatness" or "obesity".[238]

It is widely accepted that both men and women underestimate their weight,[39, 40] and that many individuals, whether in the overweight or obese BMI category, underestimate the health risks involved with having excess weight.[223, 230, 231] In addition, physicians are less likely to address individuals in the overweight BMI category[222, 225, 228, 231] about their weight, even though it has been shown that individuals who are told by their healthcare practitioner to lose weight are more likely to attempt weight loss.[228, 239] This may be because the healthcare practitioner increases an individual's perception of the health risks involved with excess weight and thus motivates them to take control of their weight.[230]

The health beliefs between obese and severely obese (BMI > 40 kg/m^2) individuals also vary greatly, with severely obese individuals generally blaming themselves and feeling more helpless.[223] This is important as it illustrates that severely obese individuals have more complex issues to address and need support from a multidisciplinary team. Further studies need to be undertaken to identify the best weight management approaches for these individuals.

2.6.1.2 Attitudes towards current weight management interventions

A recent Australian study investigated consumers' perception of different weight management interventions.[98] Although the study involved mostly educated middle-aged women, it gave an insight into how Australians view certain interventions, including the regulation of junk food and junk food advertising, media campaigns and public health interventions. In line with other studies, it showed that most people (61%) found that regulation was an effective weight

management intervention. However, some felt that it takes away their rights to make their own decisions and their individual choice. Media campaigns were seen as being ineffective by more than 66 per cent of the participants, often being viewed as unfair and a way to alienate obese people from society.

2.6.1.3 Using the available products/programs

With so many weight management products and programs available on the market, it is not surprising that individuals have differing opinions on the use and availability of these products. In a large Australian cohort study involving middle-aged women (N= 11,589), it was shown that 73.8 per cent of women had tried a weight management intervention to control their weight in the previous year.[226] It was found that 93.6 per cent of women trying to lose or maintain their weight had used a method that involved dieting.[226] This is similar to results published internationally.[227, 232, 233] Although a high number of women have previously been found to use dieting as a weight management method, in the study by Thomas *et al.,* it was found that only 18 per cent of people thought dieting was an effective weight management intervention.[98] The negative perception towards this popular weight management approach needs to be addressed through further education, which should be targeted at highlighting the benefits of dietary restriction and the correct dieting approaches for each individual in accordance with relevant dietary guidelines.[240]

Combinations of products and programs are most often used by individuals trying to lose or maintain their weight with diet and exercise being the most popular choice.[226, 227, 231, 233] Experiences of friends and family with certain weight loss products and programs were viewed as important parameters when making weight management decisions.[98, 157]

Using harmful products (laxatives or diuretics) or approaches (starvation or induced vomiting) to lose or maintain weight are most often used by young women.[233] People who have used damaging weight management approaches were most likely to have seen a net gain in their weight over time.[226]

Studies show that the percentage of individuals trying to lose or maintain their weight increases as BMI increases,[232, 233] with women trying to lose weight at lower BMI's than males.[232]

2.6.1.4 The limitations of these products/programs

As mentioned earlier (Section 2.1.4), Australia and the rest of the world is seeing an increase in the overweight and obese adult population, with a large number of individuals reportedly trying to lose or maintain their weight at any given time. At present there are limitations to the current weight management approaches that have been identified in a number of studies, including the side effects of the weight management approaches such as fatigue, emotional distress, dizziness, and gastro-intestinal upset,[227] the realisation that when the program ends the weight is regained,[220] lack of realistic goals i.e. too rapid weight loss,[220, 227] healthcare professionals not being clear about specific ways of losing weight,[220, 231] and the physical capability required to exercise.[220]

2.6.1.5 The perceived barriers

Barriers to losing or maintaining weight have been extensively studied and continue to be reviewed. One of the main barriers that is often cited is the financial cost of the product, program or gym membership.[220, 222] Individuals feel that a lot of the available products and programs in today's society are there purely for money-making purposes and make false claims that target the most vulnerable.[222]

Inconsistent advice from varying sources, including healthcare professionals, books, television, newspapers, magazines and the internet, also creates a barrier as individuals feel confused, lost and unable to make appropriate weight management decisions.

Other key barriers identified include lack of support from healthcare professionals, family and friends,[220, 222] failed previous weight loss attempts, failure to lose weight early in the weight loss approach and ending a weight management approach too early.[227]

2.6.1.6 Online weight management services

A recent Australian study showed that people who are obese readily use the internet to obtain information about new weight loss strategies.[241] The main motivators for searching online were the perceived lack of healthcare professional support, desperation and wanting information on fashionable diets.[241] This study concluded that the public is in need of a website that is trusted, contains information that is unbiased, offers advice about healthy living, not merely weight loss, and has a strong support network that allows the person to feel part of a community, and is free of shame, guilt and failure.[241] Material available online or in a smart phone application has been utilised by a large number of companies as well as by healthcare insurance providers to provide readily accessible healthcare information. Indeed, health topics are often researched online by the general public, however, studies have found that people use general search engines and are unaware of the credibility of the sites they visit and the accuracy of the information provided.[242] It has been shown that health information that is obtained online is not discussed with health professionals who then remain unaware of what information is being obtained by the patient, and whether it is reputable.[242]

In a recent US study, 60 per cent of adults had browsed health information online and 20 per cent had browsed information on their phone.[243] It was also found that 15 per cent of adults

between the ages of 18-29 had an application on their phone to assist them with calorie counting or exercise regimens.[243] A recent Australian study by Hearn *et al.* also found that women in the perinatal period frequently use the Google® search engine and online chat rooms to find information on healthy lifestyle behaviours. Women in this study highlighted the reliability of currently available websites was a barrier to them accessing consistent information.[244]

2.6.2 Consumers' attitudes and experiences with community pharmacy services

2.6.2.1 Enhanced pharmacy services

A recent systemic review of consumer views on pharmacy led public health interventions found that consumers had generally positive attitudes towards pharmacists.[245] Two studies found that the majority of consumers had neither been offered health advice nor expected to receive it from a pharmacist.[245-247] The review highlighted that consumers who had previously received a public health service from their community pharmacist were more likely to perceive pharmacists as a good source of health advice and the review recommended that community pharmacists continue to offer these services.[245]

A study in Australia exploring consumer perceptions on the role of pharmacists in cardiovascular disease found that the majority of the consumers interviewed felt that community pharmacists were capable of providing hypertension and diabetes screening.[248] Over 75 per cent of the consumers interviewed in this study (n=383/504) strongly agreed that pharmacists were capable of providing lifestyle advice.[248] A study by Krska *et al.* investigating the views of the general public (n= 300) on the community pharmacy's role in public health services found that more women were likely to utilise pharmacies than men.[249] The majority of

participants had previously asked for medication/health advice from their community pharmacist. Consumers thought that the best source of public health advice was from GPs (n=147), pharmacies (n=69) and the internet (n=28). Advice on healthy eating and alcohol use were viewed as the lowest rated roles for pharmacy.[249] The views that pharmacists are well suited to deliver public health advice were higher amongst consumers who visited the pharmacy frequently, which is similar to results seen in other studies.[245, 250] Barriers to pharmacists providing public health advice were lack of time, business of the pharmacist, lack of space and privacy and also lack of awareness about the role of pharmacists in public health.[245]

2.6.2.2 Pharmacy-based weight management services

Recent studies investigating consumer views on pharmacy-based weight management services are presented in Table 14.[142, 156, 250-254] There are various opinions on weight management services delivered by pharmacies. Overall, consumers feel that pharmacies provide accessible locations for weight management services but more training is currently required for pharmacists and pharmacy staff to offer these services.

Table 14: Consumers' views and experiences with pharmacy-based weight management services

Study (Title, Author(s), Date, Country)	Type of study methodology, and participants demographics/ characteristics	Main findings
Community pharmacy contribution to weight management[156] **Krska *et al.*** **2009** **UK**	• Cross-sectional study. • Face-to-face questionnaire with 177 members of the public (69.5% were female). • Participants were recruited from shopping centres and high streets in one Primary Care Trust (PCT) in the UK (Sefton). • Pharmacy consumers were specifically not targeted. • Participants had to be over 18 and had to live in the PCT to be involved in the study.	• Over 70% of the respondents had attempted to lose weight in the past (n=132), significantly (P < 0.001) more women (108) than males (24). • Weight loss approaches were significantly different between genders: males were significantly more likely (P < 0.001) to choose exercise and women were significantly more likely (P < 0.001) to use decreased calorie intake. • All respondents (n=30, 16.9%) who had used OTC weight loss products were women and 10 had purchased the products from a pharmacy. • The most citied location to receive weight loss advice were gyms (n=65, 36.7%), 32.3% (n=57) selected their GP and only one person selected their pharmacy. Just over 15% of respondents (n=28) selected pharmacy as their least preferred source for weight loss advice. • Pharmacy was the preferred venue for a weight management clinic for two participants; the majority of the other participants selected a leisure centre or gym.

Study (Title, Author(s), Date, Country)	Type of study methodology, and participants demographics/ characteristics	Main findings
Views and use of over-the-counter weight loss products among the general public[251] **Andronicou *et al.*** **2009** **UK**	• Cross-sectional study. • Face-to-face questionnaire with 469 members of the public (51.4% were female). • Participants were recruited from shopping centres, universities, railway stations and busy public places in North West England. • Participants had to be over 18 and not pregnant to participate.	• Over 70% of respondents (336, 71.6%) had attempted to lose weight in the past, significantly more women (n=200) than males (n=136). • Over 90% of respondents had attempted to lose weight to improve their body figure. • Similar to the study by Krska *et al.* women were significantly more likely (P < 0.001)to try reduced calorie intake to lose weight compared to males who were significantly more likely (P = 0.016) to try increased physical activity. • Just over 20% (n=113) of respondents had tried a weight loss product previously. Of those respondents having tried OTC weight loss products, only 19.5% (n=22) had been assessed prior to buying the product. • The majority of respondents expected their height, weight, diet and fat measurement to be assessed prior to the sale of these products.
A study of university students and pharmacists' perspectives on weight management[252] **Luevorasirikul *et al*.** **2010** **UK**	• Cross-sectional study. • Semi-structured interviews with 20 university students, and 8 pharmacists in Midlands, UK.	• More women stated that they had attempted to lose weight, whereas more men stated they had tried strategies to gain muscle. • Compared to young adults, pharmacists were less likely to feel negative towards weight loss products and fad diets.

Study (Title, Author(s), Date, Country)	Type of study methodology, and participants demographics/ characteristics	Main findings
Consumer perspectives about weight management services in a community pharmacy setting in NSW, Australia[250] **Um *et al.*** **2011** **Australia**	• Online cross sectional consumer survey. • 403 participants (response rate= 25.2%; n=403/1600) from New South Wales (NSW), Australia. • Participants had to be over 18 and live in NSW to complete the questionnaire.	• Majority had not sought pharmacist's advice on weight management (86.1%). • Advice on products and nutrition were the most commonly sought information by consumers who had sought advice from their pharmacist (n=56). Half of the participants who previously sought advice in the pharmacy had received advice from the pharmacy assistant. • Majority of the consumers felt that pharmacies offer weight management services to gain a profit from the sale of products, with almost half of the participants not willing to pay for a pharmacy-led weight management service. • A third of the participants strongly agreed that: the community pharmacy is a suitable environment for the delivery of weight management services; the pharmacist has skills to offer a weight management service; and the pharmacist should provide a dedicated weight management program.

Study (Title, Author(s), Date, Country)	Type of study methodology, and participants demographics/ characteristics	Main findings
Views of the Scottish general public on community pharmacy weight management services: International implications[253] **Weidmann *et al.*** **2012** **UK**	• Cross sectional survey. • Mailed questionnaire to 6000 randomly selected members of the Scottish general population (response rate= 20.6%, n=1236). Reminders were sent at 2 weeks and 4 weeks post initial mail-out to non-respondents. • Participants had to be over 18 to participate in the study.	• Majority of the respondents were not aware of general public health services available in pharmacy. • Over 30% of the respondents (n=35%) felt that it was more convenient to obtain weight management advice from their pharmacist than their GP. • Over 30% felt confident that the pharmacist was able to manage weight loss (n=746), but only 25% (n=320) felt comfortable discussing weight management with a pharmacist. • Majority of respondents felt more comfortable discussing weight with their GP, dietitian or weight loss advisor. • Barriers to pharmacists providing weight management services included lack of time, commercial bias, screening concerns and advertising.

Study (Title, Author(s), Date, Country)	Type of study methodology, and participants demographics/ characteristics	Main findings
An exploratory investigation amongst Australian mothers regarding pharmacies and opportunities for nutrition promotion[142] **Maher *et al.*** **2013** **Australia**	• Qualitative study. • Semi-structured telephone interviews with women (n=28). • Women were recruited from child-care centres and playgrounds. • Participants had to be women, over 18, with at least one child < 5 years and be able to read and write English to participate.	• Women identified the pharmacist as the healthcare professional who had product knowledge and could provide education regarding medications. • Pharmacy assistants were seen as having the role of providing information regarding OTC products and referring to the pharmacist during more complicated consultations. This study highlighted that women seemed to be more aware of the role of the pharmacy assistants than the role of pharmacists. • Participants were positive regarding community pharmacies involvement in nutrition promotion but highlighted the importance of additional training in this area. • Similar to the above studies, some women believed that there was financial gain from the sale of products and thought for example there was a conflict of interest in promoting healthy living and then selling diet shakes.
Patients' perceptions of a pharmacies-managed weight management clinic in community setting[254] **O'Neal *et al.*** **2013** **USA**	• Cross-sectional survey. • Mailed questionnaire to 1000 consumers aged over 18 from five community pharmacies in Oklahoma (participant lists were chosen from the prescription database from each pharmacy).	• Response rate was low (n=97/819), 181 were undeliverable. • Most consumers had above-average knowledge of health risks associated with being overweight or obese. • Over a third of respondents had an interest in weight management services, 91% of these respondents were overweight or obese. • A small number of respondents (13%) said that they were wiling to pay for a pharmacist-delivered weight management service.

To date there is no information about Australian pharmacy consumers' experiences, attitudes and perceptions about different weight management approaches. Considering the recent increase in pharmacy involvement in weight management, and the increase in weight management programs and products available in Australian pharmacies, this information is essential to ensure pharmacies deliver weight management advice that is targeted to meet their women consumers' needs. In 2010, women over 30 were the biggest spenders on weight loss products, with meal replacement products and foods (that can be regularly purchased in pharmacies) being the most sought after.[45]

2.7 Summary of Australian and international guidelines and educational resources for the treatment of overweight and obesity

2.7.1 The importance of developing guidelines and educational resources

Clinical guidelines have been developed widely over the world with the intention of offering up-to-date, evidence-based recommendations that will provide consumers across different areas of a region with similar and consistent healthcare. Guidelines offer healthcare professionals a way to ensure that their recommendations are in line with current research and provide them with the reassurance that they are treating their patients appropriately.[255]

There are, however, limitations to clinical guidelines. There is a chance that healthcare professionals will generalise treatment options for consumers and not take into account individual patient factors when choosing a treatment regimen. Guidelines that are developed are sometimes done quickly with insufficient resources and do not cover all the

available evidence, thus producing information that falls short of the appropriate recommendations for that particular health condition.[255]

2.7.2 Summary of general guidelines and educational resources

Until recently the most up-to-date evidence-based weight management guidelines in Australia were the 2003 Clinical Practice Guidelines for the Management of Overweight and Obesity in Adults.[5] These guidelines were targeted at GPs and were not aimed at pharmacists or other allied and primary care health professionals. They also did not identify specific approaches to assist women to lose weight in certain periods of life such as pregnancy and menopause. In 2013, the new NHMRC clinical practice guidelines for overweight and obesity were released.[6] These guidelines have changed substantially from the 2003 guidelines and are targeted at primary healthcare professionals, but unfortunately, the role of the pharmacist is again not mentioned in these guidelines. The NHMRC guidelines have been discussed in greater detail earlier in this review (Section 2.2).

The New Zealand Ministry of Health released weight management guidelines for adults in late 2009;[54] unlike the Australian guidelines these guidelines have specific sections for the indigenous Pacific Islander and Maori populations. Based on evidence of certain approaches that have, and have not, worked in the past, these sections recognise that different cultures will adhere to weight management services differently. Once again, these guidelines do not include the pharmacist's role and lack specific sections on how to approach weight management in polycystic ovary disease, pregnancy and menopause. In 2010, the Scottish Intercollege Guidelines Network released a national clinical guideline on the management of obesity.[88] These guidelines targeted primary healthcare workers. Very similar information to the New Zealand clinical guidelines is provided, but again pharmacists are not mentioned. Finally, the National Institute for Health and Care Excellence in the UK published weight management guidelines for primary healthcare

professionals in 2006.[89] These guidelines recognise pharmacists as important primary healthcare professionals in the management of overweight and obesity, however, their role in weight management is not specifically considered.

2.7.3 Summary of women-specific guidelines and educational resources

The National Institute for Health and Care Excellence has recently developed weight management pregnancy, pre-pregnancy and post-partum guidelines that explain how primary healthcare professionals including, pharmacists, can help care for women in the perinatal period.[256] The guidelines offer advice on how to assess women, what advice to offer at each stage and also when to refer. Brief guidelines by the Queensland Council have been developed for healthcare professionals and offer advice on how to manage a women's weight during pregnancy. These are specialised guidelines for healthcare professional use; they therefore cannot be used independently by women seeking further information.[204]

The Australian National Polycystic Ovary Disease Alliance developed the first guidelines for the management of polycystic ovary disease in 2011.[257] These guidelines encompass dietary, physical activity and behavioural intervention recommendations for women with the condition.

Currently no guidelines or educational resources specific to pre-pregnancy, pregnancy, post-partum or menopausal women are available for pharmacy use. This period has been recognised as a critical period for weight fluctuations and women have been shown to be frequent pharmacy users.[5] Developing educational resources for this population group for use by pharmacy staff will likely be of substantial benefit to pharmacists and their women consumers.

2.7.4 Summary of pharmacy-specific weight management guidelines and educational resources

Currently there are no evidence-based weight management guidelines for pharmacists. In addition, the weight management educational resources available in community pharmacies are limited and include the Pharmaceutical Society of Australia (PSA) provision for Orlistat information sheet[258], PSA self-care card[259] as well as a small summary found in the Australian Pharmaceutical Formulary (APF) and Handbook[260] to which every pharmacy in Australia is required to have access. No women-specific educational resources are available.

Treatment algorithms have been published [136, 261] to assist pharmacists in treating and counselling patients who are overweight and obese, but no official set of guidelines with/without education, have been released. Also, no treatment algorithm focuses on women and women-specific conditions.

In Australia, in 2005, Rieck developed a weight management request decision tool that outlines the steps a pharmacist should take when recommending a weight loss product/program.[136] This flowchart outlines the different steps involved in counselling a consumer on weight management and includes information about diet, exercise and the different products available to recommend. This tool does not mention the different BMI categories for different ethnic groups, including Aboriginal and Asian populations, and there is also no mention of how long the initial consultation should be and how frequently the follow-up appointments should be made.

Hussainy has also developed a treatment algorithm,[261] however, unlike Rieck's weight management request tool where the consumer requests weight management advice or products, Hussainy's algorithm starts with the pharmacists including weight management advice in the patient's regular medication counselling process. The algorithm includes

information on what pharmacists should do if patients are overweight or obese or if patients are in the normal weight range based on BMI and WC measurements. There is no mention, however, of the different target BMI's for different cultural groups. The algorithm also requires specific information on correct dietary, physical activity and lifestyle modification advice and exactly what products to recommend for different patient groups.

2.7.5 Weight management guidelines and educational resources: what do pharmacists and consumers want?

2.7.5.1 Pharmacists

As mentioned throughout this review, the need to provide training for pharmacists in weight management is essential. Um *et al.* identified additional training pharmacists required in communication skills to provide weight management services.[164] This included information on nutrition, exercise, behavioural therapy, weight loss medications and obesity related chronic conditions.[164] The participants in this study identified that combination approaches of online training modules as well as face-to-face workshops would be ideal.[164] In another study by Um *et al.* that explored expert opinions on pharmacist-led weight management services, participants felt that pharmacists required additional training in treatment options, principles and benefits of weight loss, OTC products, communication, motivational and goal setting skills and also in assessment, history-taking and knowing when to refer.[165] Rieck *et al.* had previously highlighted that pharmacists would require at least 15 hours of weight management training prior to delivering a weight management service and that training would need to be reinforced and supplemented with online or telephone based resources.[170]

A recent three-arm RCT conducted in Iran investigated the efficacy of continuing education in improving pharmacists' competencies for providing weight management services.[262] Three groups were compared to identify the most effective method to increase knowledge

and competence: 60 pharmacists attended two, two-hour lectures only; 60 pharmacists attended two, one-hour lectures with case discussions; and 60 pharmacists attended two, one hour lectures and attended small group training workshops on the same day. Pharmacists who attended lectures and were part of small group training workshops reported the highest level of satisfaction regarding its interactivity and motivating factors. At the four-week follow-up all pharmacists from all three arms of the study had a higher level of knowledge, with the pharmacists who attended the lectures with workshops obtaining significantly higher knowledge scores.[262] This study provides useful information on future weight management continuing education for pharmacists.

2.7.5.2 Women consumers

A few studies have investigated what women consumers want in an information resource.[244, 263] Wilkinson *et al.* surveyed antenatal women (n=309) and postnatal women (n=102) using a researcher-administered questionnaire at antenatal care clinics and in-hospital post childbirth.[263] Wilkinson *et al.* explored the women's education delivery preferences and found that the majority of women in both the antenatal stage and postnatal stage wanted nutrition information. Women in both the antenatal and post-natal stages in this study wanted information to be delivered through individualised consultations (35%), written information (31.7%), in workshops (16.2%) or through lectures (16.2%). Overall, information on healthy eating, physical activity and appropriate gestational weight gain was seen as necessary to include in educational resources.

Similarly, Hearn *et al.* utilised interviews and focus groups to determine what support and online health information was required by women in the perinatal stage.[244] Women in this study were found to regularly use the internet to obtain information regarding healthy behaviours and highlighted that often they would check multiple sites to ensure consistency of information. Women in this study emphasised that they could trust sites

delivered by their own healthcare provider, and that they currently trust Australian government sites and university sites as they feel that those sites are regulated and regularly updated. Hearn *et al.* found that women want an online resource that is accessible, trustworthy and that can be personalised. Women desire a site that is basic, easy to read with healthy eating tools, tips to lose weight, appropriate exercise and the ability to communicate with a healthcare provider via email or other technological means.[244]

No study has specifically investigated what women pharmacy consumers want in a weight management educational resource and how they would want that resource to be delivered. This information would be fundamental prior to developing educational resources or guidelines for this population group.

2.7.6 Online educational resources

Development and implementation of e-health technology, such as online health information, health information websites, support groups, health education programs, communication programs, mobile health groups and smart phone applications, has great potential to increase consumer awareness of health services and healthy behaviours.[264, 265] Ngyugen highlighted the need for an online accessible, relevant information source on chronic conditions with relevant strategies so that consumers can better manage their condition.[266] Even though the internet provides a valuable medium to disseminate health information to a diverse consumer group, concerns still surround the reliability of the information from some online sources.[264] Online resources also allow individuals to track their own progress, personalise their program and track their goals.[267] It allows for a more tailored approach and a more effective way to bring about behaviour change.[244, 267] Interactive online resources have been shown to provide support and a cost effective way

to promote healthy behaviours such as nutrition, physical activity, smoking cessation and diabetes management.[244, 268]

2.8 Summary

2.8.1 Summary and gaps in the research

A wide range of weight loss products and programs are available in pharmacies. The majority of these products, however, lack evidence as outlined by the NHMRC Clinical Practice Guidelines for the Management of Overweight and Obesity.[6] In addition, NHMRC guidelines are not widely applied in pharmacies and also lack recommendations specific to women.

Given that the role of pharmacy in this area is increasing, and reports suggest that more women than men access weight loss treatments, it is important that pharmacists provide evidence-based services that consider women's needs. This gap in care exists and could be addressed via development of pharmacy-specific educational resources and/or guidelines. Since community pharmacies are being recognised as a key location for health promotion due their easy accessibility, long trading hours and diverse consumer group, they are in a prime position to support overweight and obese women to manage their weight.

Developing evidence-based educational resources specific to women will allow pharmacists (and pharmacy assistants) to have a clearer understanding of the different risks associated with women being overweight and obese, and will also provide them with the resources to better support this group of consumers.

Through education and evidence-based weight management recommendations for women, it is proposed that pharmacists will be able to:

1. Diagnose a person with overweight or obesity;

2. Intervene in a primary care setting; and

3. Know when to refer to other healthcare professionals.

Prior to developing weight management educational resources it is vital, however, to address the gaps identified in this literature review. These gaps include:

- No research exploring experiences and attitudes of women pharmacy consumers' to available weight management products and programs;
- No research exploring women pharmacy consumers' opinions of pharmacy involvement in weight management;
- Limited research exploring weight management services provided by Australian community pharmacies;
- Limited research investigating Australian pharmacists' experiences with, and knowledge of, weight management programs and products;
- No research investigating Australian pharmacy assistants' experiences with, and knowledge of, weight management programs and products;
- No research exploring pharmacists' and pharmacy assistants' weight management practices, including recommendations and advice provided, to women of different life stages and BMIs;
- Limited research investigating weight management educational requirements of women pharmacy consumers, pharmacists and pharmacy assistants; and
- No research exploring how best to deliver weight management educational resources to women pharmacy consumers, pharmacists and pharmacy assistants.

To address the above knowledge gaps and therefore improve weight management recommendations provided to women pharmacy consumers by pharmacists and pharmacy assistants, the research reported in this thesis was conducted.

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CHAPTER 3

VIEWPOINT ARTICLE - WOMEN, PHARMACY AND THE WORLD WIDE WEB: COULD THEY BE THE ANSWER TO THE OBESITY EPIDEMIC?

Introduction to Chapter 3

The previous chapter provided an overview of the literature, which focused on community pharmacy weight management services and why women specifically need to be considered when developing a weight management intervention.

This chapter presents a personal view article that explores how giving women access to weight management information through pharmacies, and by utilising the internet, women can receive the support they need to help prevent and treat overweight and obesity.

Chapter 3 has been published in the International Journal of Pharmacy Practice.

Published manuscript:

Fakih S, Hussainy SY, Marriott JL. Women, pharmacy and the World Wide Web: could they be the answer to the obesity epidemic? International Journal of Pharmacy Practice; 2013 Jan 31. DOI: 10.1111/ijpp.12020.

3.1 Declaration for Thesis Chapter 3

Declaration by candidate

In the case of Chapter 3, the nature and extent of my contribution to the work was the following:

Nature of contribution	Extent of contribution (%)
Reviewed literature; prepared manuscript	80%

The following co-authors contributed to the work:

Name	Nature of contribution
Dr Safeera Hussainy	Reviewed manuscript.
A/Prof Jennifer Marriott	Reviewed manuscript.

Candidate's Signature		**Date**

Declaration by co-authors

The undersigned hereby certify that:

1. the above declaration correctly reflects the nature and extent of the candidate's contribution to this work, and the nature of the contribution of each of the co-authors.
2. they meet the criteria for authorship in that they have participated in the conception, execution, or interpretation, of at least that part of the publication in their field of expertise;
3. they take public responsibility for their part of the publication, except for the responsible author who accepts overall responsibility for the publication;
4. there are no other authors of the publication according to these criteria;
5. potential conflicts of interest have been disclosed to (a) granting bodies, (b) the editor or publisher of journals or other publications, and (c) the head of the responsible academic unit; and
6. the original data are stored at the following location(s) and will be held for at least five years from the date indicated below:

Location	**Centre for Medicine Use and Safety, Faculty of Pharmacy and Pharmaceutical Sciences, Monash University, Parkville, Victoria 3052**

		Date
Dr Safeera Hussainy		
A/Prof Jennifer Marriott		

3.2 Research article

IJPP INTERNATIONAL JOURNAL OF Pharmacy Practice

IJPP International Journal of Pharmacy Practice

Personal View

International Journal of Pharmacy Practice 2013, ••, pp. ••–••

Women, pharmacy and the World Wide Web: could they be the answer to the obesity epidemic?

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Keywords
community pharmacy services; online pharmaceutical services; weight loss; women; World Wide Web

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Abstract

Objectives The objective of this article is to explore how giving women access to evidence-based information in weight management through pharmacies, and by utilising the World Wide Web, is a much needed step towards dealing with the obesity crisis.

Key findings Women's needs should be considered when developing evidence-based information on weight. Excess weight places them at high risk of diabetes and cardiovascular disease, infertility and complications following pregnancy and giving birth. Women are also an important population group because they influence decision-making around meal choices for their families and are the biggest consumers of weight-loss products, many of which can be purchased in pharmacies. Pharmacies are readily accessible primary healthcare locations and given the pharmacist's expertise in being able to recognise underlying causes of obesity (e.g. medications, certain disease states), pharmacies are an ideal location to provide women with evidence-based information on all facets of weight management. Considering the exponential rise in the use of the World Wide Web, this information could be delivered as an online educational resource supported by other flexible formats.

Conclusions The time has come for the development of an online, evidence-based educational resource on weight management, which is combined with other flexible formats and targeted at women in general and according to different phases of their lives (pregnancy, post-partum, menopause). By empowering women with this knowledge it will allow them and their families to take better control of their health and wellbeing, and it may just be the much needed answer to complement already existing resources to help curb the obesity epidemic.

When you think about the USA, the UK and Australia you might think of tourist destinations, the economy, theme parks, politics or beautiful gardens and beaches. However, these three countries have more in common than just pretty landscapes and political opinions. These countries are now considered to have the most obese populations in the world, with the highest percentage of English-speaking obese adults worldwide. Across these three countries over 60% of the adult population is considered overweight or obese based on body mass index (BMI).[1] The high percentage of adult obesity in these countries has negatively impacted on the cost of health care and the cultural pressures these countries face, and has given these nations the task of preventing the rise in obesity. Every year money equivalent to billions of US dollars is spent by consumers, mostly women, on weight-loss products, weight-management programmes, gym memberships and other weight-reducing methods to help tackle this ever increasing problem, many of which lack evidence of benefit. Even with this substantial amount of expenditure on weight-loss products and services, these nations are continuing to see a rise in the proportion of obese people in their population.

Genetics, hormones, environmental, psychological, endocrine and metabolic diseases, as well as certain medications, all predispose certain people to becoming overweight or obese. There are also causes of overweight and obesity that are specifically related to women, including polycystic ovary disease, hormonal changes, pregnancy and menopause.[2] In women, overweight and obesity poses an increased risk of infertility, pregnancy complications and childhood obesity in the unborn child.[2] It has also been shown that women have

an increased risk at the same BMI as men of developing conditions such as cardiovascular diseases, type 2 diabetes and certain cancers.[3] Modest weight losses of 5–10% body weight have been shown to have significant benefits on overweight and obesity-related health conditions, including decreased blood pressure, cholesterol, blood glucose levels and more specifically in younger women, decreased fertility problems and complications in pregnancy and delivery.[4]

Women are an important population group not only for the reasons above but also because they are often the 'decision makers' around nutrition and lifestyle in a household, consequently impacting on weight management for the entire family. Women who eat well also have the opportunity to influence their partners and their children to do the same and thus have the ability to positively impact on their entire household. Women are usually responsible for selecting groceries and preparing meals for their families and as mentioned earlier, are the biggest spenders on weight-loss products in the USA, UK and Australia.

One of the major problems in today's society is that almost every week, advertisements regarding the 'next biggest breakthrough' in overweight and obesity treatment appear on television, in women's magazines and various other media outlets, creating false hope for many who are battling with a weight problem. When new weight-loss treatments become available, it is often the most vulnerable who will seek information from media sources or ask for advice from family and friends. This content is almost always lacking rigorous evidence, usually has no benefit and can at times cause harm and make the consumer play the 'guilt game' by making them feel that they are to blame if the new 'fashionable' or 'trendy' diet does not work. It is therefore crucial that an up-to-date, easily accessible resource is available that is able to be tailored to individual needs to advise consumers about evidence-based weight management. In particular, women need readily available, unbiased and current information that also focuses on female-related conditions or life events such as polycystic ovary disease, pregnancy, post-partum events and menopause. It is also vital that women have information that is free from bias that they can share with their partners, families and friends so that achievable and healthy weight-loss goals and treatments are spoken about in a social environment.

Women are not only the biggest spenders on weight-loss products, but they also make up a large proportion of the consumer group that purchase weight-loss products and other related medications from community pharmacies. Community pharmacies are an ideal primary healthcare setting for women to receive weight-management advice because they are open long hours without the need for appointments, and attract both healthy and non-healthy individuals.

Pharmacists are also medication experts and are able to recognise the different medications that can slow down weight loss or exacerbate weight gain, and can calculate and recommend appropriate doses of medications taking into consideration their altered metabolism in overweight or obese individuals. A recent systematic review showed that commonly prescribed medications, including beta-blockers for cardiovascular disease, sulfonylureas for diabetes and the majority of anti-psychotic and anxiolytic medications can all cause weight gain.[5] The need for community-based weight-management interventions was noted in this study to help decrease weight gain caused by these medications, however, to date there is no appropriate programme or intervention. Currently in community pharmacies and other primary care settings in the USA, UK and Australia there are no weight-management resources specific to women that pharmacists and other health professionals could access and use to help guide and support women during their weight loss or maintenance journey. By providing advice and information to their women consumers, health professionals will also be able to indirectly target the rest of the household, including partners and children.

Therefore, for primary care professionals such as pharmacists to provide evidence-based, up-to-date weight-management advice, educational resources urgently need to be developed. Material available online or for a smartphone application has recently been utilised by a large number of companies and government bodies as well as by healthcare insurance providers to provide readily accessible healthcare information. In the UK, Australia and the USA government bodies have developed websites[6–8] that deliver weight-management advice, and hence some may argue that the need for a new website is outdated and unnecessary; however, these government websites often lack information about weight-management strategies for specific female-related conditions (pregnancy, post-partum, menopause, polycystic ovary disease etc.), have very little information about trendy diets and can be difficult to navigate if the person is not familiar with the internet. Health topics are often researched online by the general public, but studies have found that people on the whole use general search engines and are unaware of whether the sites they visit provide credible and accurate information.[9] Lewis *et al.* found that the most commonly visited websites by obese people searching for weight-loss treatments were product based and those advertising commercial weight-loss programmes such as Weight Watchers.[10] It has also been shown that health information that is obtained online is not discussed with health professionals who then remain unaware of what information is being obtained by the patient and whether or not it is correct.

A recent Australian study showed that people who are obese readily use the internet to obtain information about new weight-loss strategies, with some even searching for a new weight-loss treatment up to twice a day.[10] The main motivators for searching online were the perceived lack of

healthcare professional support, desperation and wanting information on fashionable diets. This study concluded that the public is in need of a website that is trusted, contains information that is unbiased, offers advice about healthy living, not merely weight loss, has a strong support network that allows the person to feel part of a community, and is free of shame, guilt and failure. With pharmacists being one of the most trusted and highly accessible healthcare professionals, and pharmacies being a prime destination for people to seek weight-loss products or join weight-loss programmes, developing a web resource that can be accessed at home, at work, on a smartphone application and in pharmacies will allow wide distribution and access to a resource that is very much needed. Furthermore, by having a web resource that is accessible in pharmacies, it will enable wide circulation of educational materials available online in other flexible hard copy formats to those individuals who do not have access to the internet. It will also allow pharmacists and pharmacy staff to have readily available evidence-based information about products and programmes that are widely sold in pharmacies but are not appropriately regulated.[11]

It is apparent that the time has come for the development of an evidence-based, independent, online educational resource on diet, exercise, weight management, medications, programmes and products, which is combined with other flexible formats such as printed resources or phone applications. These resources should be targeted at women in general and according to different phases in their life, so that women, their partners and families have the information they require to help them manage their weight. Having these resources also available from community pharmacies, where most of the weight management products are available, will enable access to evidence-based information on weight management at the time that product requests are made. This will assist pharmacists and pharmacy support staff to provide individualised, accurate assistance to support women and their families to lose weight, maintain a healthy weight and improve their general wellness. By providing women with this knowledge it will empower them to take better control of their health and wellbeing, and it may be the much needed answer to complement already existing resources to help curb the obesity epidemic.

Declarations

Conflict of interest

The Author(s) declare(s) that they have no conflicts of interest to disclose.

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11. Hackett A, Krska J. Is it time to regulate over-the-counter weight-loss formulations? *Int J Pharm Pract* 2012; 20: 199–202.

PHASE ONE

WOMEN PHARMACY CONSUMERS' EXPERIENCES WITH WEIGHT LOSS PRODUCTS AND PROGRAMS

Introduction to Phase 1: Women pharmacy consumers' experiences with weight loss products and programs

Chapters 2 and 3 describe the importance of developing interventions targeting women's needs. To date no research has been conducted investigating women pharmacy consumers' experiences with available weight loss products and programs or their views on pharmacy involvement in weight management.

Phase 1 utilised a researcher-administered questionnaire to explore current weight management experiences and attitudes of women pharmacy consumers in Victoria, Australia and Nottingham, England.

The objectives of this phase were to:

- identify women pharmacy consumers' current weight management experiences, attitudes, knowledge and views of an ideal weight management program;
- identify the differences and similarities between Australian and English women pharmacy consumers' attitudes and experiences with weight management approaches; and
- determine whether there is the potential for educational resources developed in Australia to be utilised in England.

Chapter 4 describes women pharmacy consumers' experiences in Victoria, Australia. Chapter 5 highlights the similarities and differences between women pharmacy consumers' experiences in Victoria, Australia and Nottingham, England.

Two manuscripts have been completed:

1. A manuscript, detailing the results from the Victorian study, has been published in the International of Clinical Pharmacy and is presented in Chapter 4.
2. A manuscript, comparing the results from the Victoria and Nottingham study, has been submitted to BMC Public Health and has been reproduced in Chapter 5.

Chapter 4 - Published manuscript:

Fakih S, Hussainy SY, Marriott JL. Women pharmacy consumers' experiences with weight loss treatment across Victoria, Australia. International Journal of Clinical Pharmacy. 2013;35(6):1120-1129.

Chapter 5 - Submitted manuscript:

Fakih S, Marriott JL, Boardman H, Anderson C, Hussainy SY. Comparing Women Pharmacy Consumers' Experiences with Weight Loss Treatment in Victoria and Nottingham: A Cross-Sectional Study. BMC Public Health (submitted January 2014)

Note: This work was approved by the Monash University Human Research Ethics Committee and the University of Nottingham Ethics Committee (Appendix 1). Copies of the pharmacy permission statements, questionnaires and explanatory statements have been provided in Appendix 2 (Victoria) and Appendix 3 (Nottingham).

CHAPTER 4

WOMEN PHARMACY CONSUMERS' EXPERIENCES WITH WEIGHT LOSS TREATMENT ACROSS VICTORIA, AUSTRALIA

4.1 Declaration for Thesis Chapter 4

Declaration by candidate

In the case of Chapter 4, the nature and extent of my contribution to the work was the following:

Nature of contribution	Extent of contribution (%)
Reviewed literature; designed methods; coordinated the ethics application; developed study materials; carried out recruitment; undertook data collection; performed data analysis; and prepared manuscript.	75%

The following co-authors contributed to the work:

Name	Nature of contribution
Dr Safeera Hussainy	Designed methodology; reviewed ethics application, study materials, data analysis and manuscript.
A/Prof Jennifer Marriott	Designed methodology; reviewed ethics application, study materials, data analysis and manuscript.

Candidate's Signature		**Date**

Declaration by co-authors

The undersigned hereby certify that:

1. the above declaration correctly reflects the nature and extent of the candidate's contribution to this work, and the nature of the contribution of each of the co-authors.
2. they meet the criteria for authorship in that they have participated in the conception, execution, or interpretation, of at least that part of the publication in their field of expertise;
3. they take public responsibility for their part of the publication, except for the responsible author who accepts overall responsibility for the publication;
4. there are no other authors of the publication according to these criteria;
5. potential conflicts of interest have been disclosed to (a) granting bodies, (b) the editor or publisher of journals or other publications, and (c) the head of the responsible academic unit; and
6. the original data are stored at the following location(s) and will be held for at least five years from the date indicated below:

Location	**Centre for Medicine Use and Safety, Faculty of Pharmacy and Pharmaceutical Sciences, Monash University, Parkville, Victoria 3052**

		Date
Dr Safeera Hussainy		
A/Prof Jennifer Marriott		

4.2 Research article

Int J Clin Pharm
DOI 10.1007/s11096-013-9835-3

RESEARCH ARTICLE

Women pharmacy consumers' experiences with weight loss treatment across Victoria, Australia

Souhiela Fakih · Safeera Y. Hussainy · Jennifer L. Marriott

Received: 16 August 2012 / Accepted: 5 August 2013

Abstract *Background* Given the role of pharmacy in weight management is increasing, anecdotally weight loss treatments are consumed by more women than men, and there are some causes of overweight and obesity specific to women, it is important that pharmacists provide evidence-based services that consider women's needs as a basis for a future population based approach. *Objectives* To determine what weight management options are preferred by women pharmacy consumers, how they feel about pharmacists providing advice in this area, and what they desire in a weight management program. *Methods* A random sample of women pharmacy consumers were asked to complete a questionnaire in randomly selected pharmacies across Victoria. Questionnaires were self-completed or with assistance from the researcher. Logistic regression analysis was used to determine any significant associations between demographic characteristics and previous weight loss attempts, pharmacy specific outcomes and what women want in their ideal weight management program. *Setting* Community pharmacies across Victoria, Australia. *Main outcome measure* The views and opinions of women pharmacy consumers across Victoria regarding pharmacy involvement in weight management and currently available weight management products and/or programs. *Results* The response rate was high: 86 % (395/460). Approximately 48 % (153/319) of women were in the overweight, obese or severely obese body mass index category (BMI). 71.1 % (281/395) of women had attempted to lose weight in the past. Women in the overweight BMI category were 2.6 times more likely to have attempted to lose weight (95 % CI 1.4, 4.9), and women in the obese BMI category were 10.6 times more likely to have attempted to lose weight (95 % CI 4.1, 27.7) compared to the women with a BMI <25 kg/m^2. Approximately 80 % (230/281) of women felt comfortable receiving advice from pharmacists with 42 % (117/281) wanting a pharmacist in their ideal weight management program and 42 % (118/281) wanting their program to be delivered in a pharmacy. *Conclusions* Women pharmacy consumers used a range of weight management approaches and had mainly positive views about the involvement of pharmacists in their ideal weight management program.

Keywords Australia · Body weight · Community pharmacy services · Health knowledge · Health services · Patient opinion · Patient attitude · Weight loss · Women

Impacts on practice

- Women pharmacy consumers feel comfortable obtaining weight management information from their community pharmacist in Australia. Pharmacists should therefore not perceive discomfort of their consumers as a potential barrier to providing weight loss advice.
- Pharmacy consumers are influenced by what pharmacies stock and thus pharmacists should be able to provide them with appropriate advice and information on products including meal replacement products and herbal products.
- Pharmacy consumers in Australia recognise the expanding role of pharmacists and pharmacies in the

Electronic supplementary material The online version of this article (doi:10.1007/s11096-013-9835-3) contains supplementary material, which is available to authorized users.

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Published online: 28 August 2013

weight management area, placing pharmacists in a good position to provide appropriate weight management advice.

Introduction

In 2008, Australian Health Ministers recognised obesity as a National Health Priority Area, acknowledging that it is a chronic condition that has a major impact on Australia's health [1]. Australia has one of the highest overweight and obese populations in the world, with an estimated combined overweight and obese adult population of 61 % [2]. In 2008 Australia spent $8.2 billion on overweight and obesity related costs [3].

Currently there are a large number of different weight management strategies that are advertised to help people lose or maintain their weight. However, specific weight management guidelines, including the National Health and Medicines Research Council (NHMRC) Clinical Practice Guidelines for the Management of Overweight and Obesity in Adults in Australia, conclude that combination approaches of diet, exercise and behavioural modification give optimal results and should therefore be considered first line [4]. These guidelines are intended to provide health care professionals (HCP) with the best evidence-based advice to better support their patients choice of weight management strategy.

Over the last decades there has been a shift in the skills of the pharmacy profession and pharmacists are now also recognised for their ability to assist in public health activities and the promotion of quality use of medicines [5–8]. Over the last 5 years consumers have seen an increase in the number of weight management services available in pharmacies [9], including an increase in a variety of pharmacy weight management programs. In this article pharmacy based weight management programs include any service provided to pharmacy consumers that is delivered in the pharmacy by pharmacists or pharmacy assistants. These include programs that involve meal replacement products and/or regular weight measurements, and/or behavioural modification techniques. The need for pharmacist involvement in weight management has been noted [10]. The characteristics of being approachable, trustworthy and well-trained professionals have made the community pharmacist ideal health care providers able to become more involved in obesity treatment [10]. In addition, consumers purchase the majority of their weight loss products and other related medications from pharmacies [10]. In 2010, women aged over 30 in Australia were the biggest spenders on weight loss products, with meal replacement products and foods (that can be regularly purchased in pharmacies) being the most sought after [11].

There are specific causes of overweight and obesity in women, which may be related to polycystic ovary disease, hormonal changes, pregnancy and menopause [12]. Overweight and obese women also have an increased risk of infertility and pregnancy complications [13]. For these reasons, more detailed research is required to better target weight loss interventions for overweight women [14]. It is well known that an important component of developing successful weight management interventions is to involve consumers, draw from their experiences, and take into account their attitudes towards weight management approaches [15]. To date there is no information about Australian women pharmacy consumers' experiences, attitudes and perceptions of different weight management approaches.

Aims of study

This study aimed to survey women pharmacy consumers to determine: their awareness of weight loss treatment evidence in the short and long term and the potential consequences of obesity; if they were currently using, or had used, weight loss treatments to lose weight; the treatment duration, perceived benefits and adherence to those weight loss treatments; the level of interaction with health care professionals during treatment; the advice given; and finally what they felt were important components of an ideal weight management program. Treatment was defined as the process of attempting to lose weight intentionally by any currently available pharmacological (meal replacement products, herbal products, prescription products) and/or non pharmacological means (decreased calorie intake, increased exercise, behavioural therapy).

Method

Survey design

Women pharmacy consumers were surveyed using a questionnaire consisting of four main sections that focused on the participants' demographics, general health, previous weight loss experiences and their ideal weight management program. The questionnaire was piloted in two stages for face and content validity by academics, pharmacists and women pharmacy consumers. Changes regarding formatting and wording of certain questions were made based on their feedback. The final questionnaire is shown in "Electronic supplementary material". Only women who had tried to lose weight at least once in their life completed the weight loss experience and the ideal weight management program questions. All women were asked to complete the sections on demographics and general health.

Study participants

Women pharmacy consumers were recruited from pharmacies across Victoria. The study was approved by the Monash University Human Research Ethics Committee. The overall aim was to collect data from 300 women throughout January–March 2011. The sample size was calculated based on available funding. The researchers aimed to survey ten women from pharmacies over a 10 weeks period i.e. three to four pharmacies were visited each week until the minimum sample size was reached. Pharmacies were randomly selected using information provided by the Pharmacy Board of Victoria. Pharmacies were visited on weekdays and weekends and during different times between 8 a.m. and 9 p.m. to ensure a representative sample of women pharmacy consumers would be recruited. Each pharmacy was only visited once for 8 h, on a date set by researchers. Only two pharmacies needed to reschedule survey visits, one due to building problems and one due to staffing issues.

Survey administration

The questionnaire was administered to women pharmacy consumers by one of the researchers (S.F.) or a research assistant (J.W.) during January–March 2011. Women over the age of 18 who were able to independently complete a questionnaire in English were asked to complete the study questionnaire in the pharmacy. Participants were approached at random: the first female, who walked into the pharmacy at each 45 min interval, regardless of her BMI status, was asked to complete the questionnaire. If that female declined, the female who next walked into the pharmacy was approached.

The questionnaire was either self-completed by the participant in the presence of the researcher or completed by the researcher on their behalf (i.e. researcher-administered). All questionnaires were returned to the researcher on the day they were administered.

All participants who completed the questionnaire received a $AU7.50 voucher to spend in the pharmacy on non-prescription products. The questionnaire took approximately 10–15 min to complete.

Data analysis

Data were analysed using SPSS version 19.0 and summarised using descriptive statistics. Multiple response questions were coded yes or no for each response i.e. multiple-dichotomy method. Pearson's Chi squared test was used to determine any significant relationships between two variables. The association between pharmacy specific outcomes such as wanting a pharmacist involved in an ideal weight management program and demographic characteristics were investigated using multivariate logistic regression. Univariate logistic regression was used to determine any significant associations between age and features of an ideal weight management program. The significance level was set at $p < 0.05$.

To explore relationships between different stages in a woman's life (pre-pregnancy–pregnancy, pregnancy–post-partum and menopause) the age categories for women were collapsed into three main categories: 18–30, 31–50 and over 50. BMI was calculated using height and weight provided, and categories were selected based on BMI cut-off points provided by the WHO [16].

Results

Of the 65 pharmacy businesses approached 34 agreed to participate. Time, space and lack of interest in the study were the most common reasons used by pharmacies that declined to participate.

Of 460 women approached, 395 completed the survey, a response rate of 86 %.

Characteristics of women

The demographic characteristics of all the participating women are presented in Table 1. Of all the women who completed the questionnaire, 71 % (281/395) had tried to lose weight at least once in the previous 5 years. A comparison of the demographic characteristics of the women who had tried to lose weight (n = 281) and the women who had never tried to lose weight (n = 114) are presented in Table 1.

Women who had completed post-graduate education were 3.8 times more likely to have attempted to lose weight compared to women who had completed secondary school education or less (95 % CI 1.3, 11.4). Women were significantly more likely to have attempted to lose weight with increasing BMI; with women in the overweight BMI category 2.6 times more likely to have attempted to lose weight (95 % CI 1.4, 4.9), and women in the obese BMI category 10.6 times more likely to have attempted to lose weight (95 % CI 4.1, 27.7) compared to the women with a BMI <25 kg/m^2.

The number of weight loss attempts made by women increased with increasing BMI with 71 % (281/395) having tried to lose weight at least once; 11 % (43/395) once, 30 % (119/395) 2–5 times, 9 % (36/395) 6–10 times and 21 % (83/395) more than 10 times.

Table 1 Demographic characteristics of participating women (N = 395) with a comparison between women who have tried to lose weight (N = 281) and women who have never tried to lose weight (N = 114)

Demographic characteristic	All women n (%); [a]N = 395	Women who have attempted to lose weight n (%); [b]N = 281	Women who have never attempted to lose weight n (%); [c]N = 114	OR (95 % CI)	*p* value
Age (in years)					
18–30	85 (21.5)	64 (23.0)	21 (18.4)	1.0	
31–50	149 (37.7)	106 (38.1)	43 (37.7)	0.8 (0.4, 1.5)	0.49
≥51	158 (40.0)	108 (38.8)	50 (43.9)	0.7 (0.4, 1.3)	0.26
Location					
Metropolitan	341 (86.0)	243 (86.0)	98 (85.0)	1.0	
Rural	54 (14.0)	37 (13.2)	17 (15.0)	0.9 (0.5, 1.8)	0.82
Education					
Secondary school or less	155 (39.3)	105 (37.4)	50 (43.8)	1.0	
Post secondary school certificate	78 (19.7)	57 (20.2)	21 (18.4)	1.3 (0.7, 2.4)	0.40
University student/graduate	124 (31.4)	85 (30.2)	39 (34.2)	1.0 (0.6, 1.7)	0.89
Post-graduate	36 (9.1)	32 (11.4)	4 (3.5)	3.8 (1.3, 11.4)	0.02
Country of birth					
Australia	269 (68.1)	203 (72.2)	66 (57.9)	1.0	
UK	17 (4.3)	11 (3.9)	6 (5.3)	0.6 (0.2, 1.7)	0.33
Italy	17 (4.3)	14 (5.0)	3 (2.6)	1.5 (0.4, 5.4)	0.52
New Zealand	13 (3.3)	8 (2.8)	5 (4.4)	0.5 (0.2, 1.6)	0.27
Other	79 (20.0)	45 (16.0)	34 (29.8)	0.4 (0.3, 0.7)	0.002
Medical conditions					
No	179 (45.3)	119 (43.0)	60 (52.6)	1.0	
Yes	212 (53.7)	158 (57.0)	54 (47.4)	1.5 (0.9, 2.3)	0.08
Medications					
No	271 (68.6)	76 (27.1)	47 (41.2)	1.0	
Yes	123 (31.1)	204 (72.9)	67 (58.8)	1.9 (1.2, 3.0)	0.007
Smoking					
Yes	71 (18.0)	54 (19.2)	17 (14.9)		
No	273 (69.1)	189 (67.5)	84 (73.7)	0.7 (0.4, 1.3)	0.26
Quit	50 (12.7)	37 (13.2)	13 (11.4)	0.9 (0.4, 1.2)	0.80
BMI (kg/m^2)[d]	*N = 319*	*N = 226*	*N = 93*		
<18.5 (underweight)[d]	9 (2.3)	3 (1.3)	6 (5.3)	1.0	
18.5–24.99 (healthy)	157 (39.7)	92 (40.7)	65 (57.0)		
25–29.99 (overweight)	77 (19.5)	60 (26.5)	17 (14.9)	2.6 (1.4, 4.9)	0.002
30–39.99 (obese)	68 (17.2)	64 (28.3)	4 (3.5)	10.6 (4.1, 27.7)	<0.001
>40 (severely obese)[d]	8 (20.0)	7 (3.1)	1 (0.9)		

OR odds ratio, *CI* confidence interval

[a] N = 395; totals do not total 395 due to missing responses, [b] N = 281; totals do not total 281 due to missing responses, [c] N = 114; totals do not total 114 due to missing responses; [d] BMI could only be calculated for the women who self-reported both their height and weight i.e. N = 319. Univariate logistic analysis was done using only three BMI categories due to small case numbers. The underweight BMI category was collapsed into the BMI <25 kg/m^2 category and the severely obese category was collapsed into BMI ≥30 kg/m^2 category

Weight loss: perceptions, methods used, experiences with treatments and advice received from health care professionals (HCPs)

Women were able to recognise benefits of losing weight (Fig. 1). The least recognised benefit of losing weight was decreased blood pressure.

Table 2 summarises the perceptions and experiences with weight loss treatments of the women who had attempted to lose weight at least once (N = 281).

Most weight loss methods used by the study sample were endorsed by the 2003 National Health Medicines Research Council (NMHRC) guidelines for overweight and obesity in adults [4], with 76 % (214/281) having tried diet

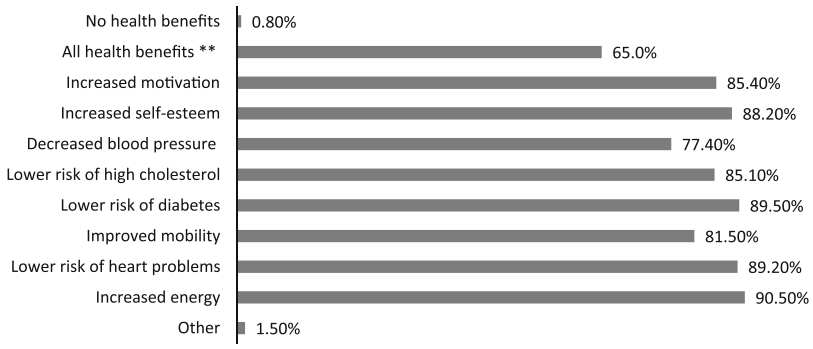

Fig. 1 Perceived benefits of weight loss by women. **All health benefits = Women who answered yes to increased motivation, increased self-esteem, decreased blood pressure, lower risk of high cholesterol, lower risk of diabetes, improved mobility, lower risk of heart problems and increased energy

and exercise in combination to help them lose weight in the previous 5 years.

More women stated that nothing was effective in the *short-term* for weight loss (18 %; 50/281), compared to a small percentage of women (1.4 %; 4/281) who also felt that nothing was effective in the *long-term*. More women viewed diet and exercise as the most effective in the *long-term* (85 and 92 %, respectively), compared to being the most effective in the *short-term* (54 and 56 %, respectively). Meal replacement products, including pharmacy based programs that involve meal replacement products, were more likely ($p < 0.001$) to be viewed favourably for *short-term* weight loss (18.6 %; 52/281) compared to *long-term* weight loss (3.6 %; 10/281).

Just over 50 % of women (134/258) achieved their weight loss goal (Fig. 2) in their last weight loss attempt. Women were significantly more likely ($p < 0.001$) to lose their goal amount of weight if they wanted to lose 10 kg or less.

Approximately 11 % (30/281) of women experienced some side effects from their last weight loss product/program. The biggest problems perceived by women when trying to lose or maintain their weight were lack of motivation (75.3 %; 212/281), lack of time (61.5 %; 173/281) and cost of the product and/or weight loss program (36.7 %; 103/281).

Those women who had been told by their HCP that they were in the overweight or obese BMI category were significantly more likely to have attempted to lose weight ($p = 0.04$). Of all the women who had tried to lose weight, only 32 % (91/281) had received advice on how to lose weight from their HCP in their last weight loss attempt (Table 2). Over 90 % of the advice given by HCPs was endorsed by the NHMRC guidelines, with over 90 % of the women who had received advice, finding the advice helpful.

Over 80 % (230/281) of women felt comfortable receiving advice about weight management from their community pharmacist. The most trusted source for weight loss advice by 54 % (152/281) of women was their HCP, with 20 % (30/152) specifically stating a pharmacist. Family and friends (32.3 %; 91/281), the internet (15 %; 42/281) and media (3.8 %; 11/281) were the other most trusted sources for weight loss advice.

Characteristics associated with pharmacy specific outcomes

In the multivariate logistic regression adjusted for age, medical conditions, medications, smoking status and BMI, no associations between these demographic characteristics and utilising a pharmacy-based program, feeling comfortable with a pharmacist advising on weight loss, wanting a pharmacist in an ideal weight management program or having an ideal weight management program located in a pharmacy were seen (Table 3).

The ideal weight management program

Women's views of the features of an ideal weight management program are presented in Table 4. Women over the age of 50 were significantly less likely to want information delivered via email (OR 0.1, 95 % CI 0.1, 0.3) or via mobile phone compared to women aged 18–30 years old. Women over the age of 50 were also significantly less likely to want to involve an exercise consultant in their ideal weight management program compared to women aged 18–30 (OR 0.3 95 % CI 0.2, 0.6). Three quarters of the women (74 %; 208/281) selected more than one health care professional to be involved in their ideal weight management program.

Discussion

This is the first Australian study that has investigated women pharmacy consumers experiences with available weight loss products in Australia. A major strength of the

Table 2 Women pharmacy consumers' weight loss perceptions, practices and interactions with health care professionals

Weight loss perceptions, practices and interactions with health care professionals	Percentage of women n (%)
Why did you want to lose weight?	
To look and feel good	162 (57.7)
For a special event	58 (20.6)
For my health	196 (70.0)
Someone told me to	12 (4.3)
Other e.g. wanted to fall pregnant	21 (7.5)
Weight loss methods used in the last 5 years	
Decreased calorie intake	240 (85.4)
Increased exercise	236 (84.0)
Jenny Craig® or weight watchers®	57 (20.3)
Meal replacement products e.g. Optifast®	35 (12.5)
Pharmacy based program e.g. Tony Ferguson®	33 (11.7)
Weight loss medication e.g. Xenical®	11 (3.9)
Vitamins/herbal products	29 (10.3)
Weight loss surgery	8 (2.8)
Other e.g. recreational drugs	6 (2.1)
Time since last weight loss attempt (months)	
Median (IQR)	12 (6–34)
Last place purchased weight loss method	
Not applicable	195 (69.3)
Supermarket	8 (2.8)
Pharmacy	49 (17.4)
Internet	3 (1.1)
Health food store	5 (1.8)
Other e.g. gym	6 (2.1)
Duration of weight loss attempt	
0–3 weeks	21 (7.5)
1–2 months	80 (28.5)
3–5 months	68 (24.2)
6–8 months	39 (13.9)
9–11 months	15 (5.3)
Over 1 year	33 (11.7)
Has the weight lost since been regained	
No	110 (39.1)
Yes	147 (52.3)
Time it took to regain weight (N = 147)	
0–3 weeks	21 (14.3)
1–3 months	67 (45.6)
4–6 months	21 (14.3)
7–11 months	5 (3.4)
1–2 years	15 (10.2)
Over 2 years	15 (10.2)
Reasons for regaining weight (N = 147)	
Stopping the weight loss method	105 (71.4)
Stress	47 (32.0)
Weight loss method did not work	4 (2.72)
Significant event e.g. divorce	14 (9.5)
Other e.g. pregnancy	43 (29.3)
Health care professional advice during last weight loss attempt	
No advice	182 (64.7)
Doctor	45 (16.0)
Exercise consultant	19 (6.7)
Dietitian	7 (2.5)
Pharmacist	23 (8.1)
Pharmacy assistant	6 (2.1)
Other e.g. weight watchers® consultant	15 (5.3)

[a] N = 281: totals do not total 281 due to missing responses

IQR, interquartile range

study is its high response rate [17]. In addition, the random sample of participants, and the different times the pharmacies were visited, allowed capture of the knowledge and experiences with weight loss products and programs from a broad cross-section of women pharmacy consumers in different BMI categories and from different backgrounds.

Overall, the women who completed the questionnaire were older than the average Australian population [2], had completed post-secondary school qualifications, lived in metropolitan areas and were born in Australia. The sample was slightly under-representative of the current Australian overweight and obese population, with just under 50 % of females being in the overweight or obese BMI categories [2]. This may be explained by the fact that self-reported height and weight values were collected, whereas previous studies have shown that women tend to underestimate their weight and overestimate their height, thus giving lower BMI values [18, 19]. In addition, approximately 20 % (77/395) of women did not provide enough information for their BMI to be calculated; this was due to either height and/or weight details not being provided. Height and weight facilities were available for women to use at each pharmacy but no woman requested to utilise them whilst completing the questionnaire.

The majority (71 %; 281/395) of women had tried to lose weight at least once in the last 5 years. The number of weight loss attempts increased with increasing BMI. Most women had tried more than one method of weight loss in their last weight loss attempt, with decreasing calorie intake and increasing exercise being the most utilised. This is similar to what has been reported in other studies [20–23], however, in the study reported here, more had tried meal replacement products, pharmacy-based programs and

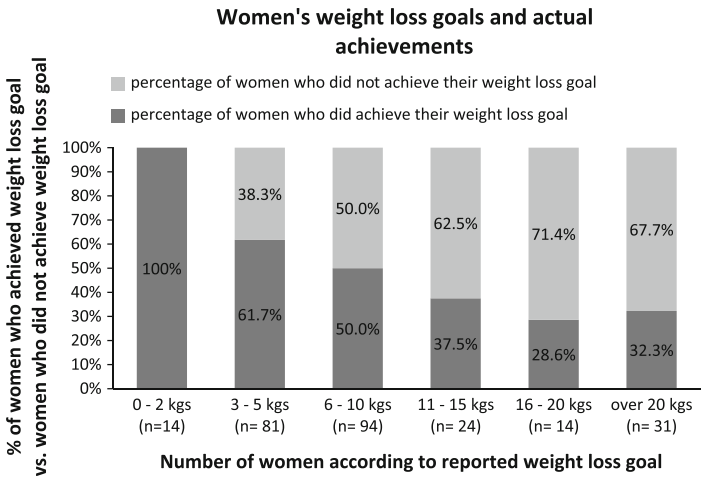

Fig. 2 Comparing the women's weight loss goals with their actual weight loss achievement

Table 3 Adjusted odds ratio (95 % CI) for associations between demographic characteristics and various pharmacy specific outcomes (N = 281)

	Utilised pharmacy weight management programs in the last 5 years (yes; n = 33) OR (95 % CI)	Feeling extremely comfortable[a] with pharmacists giving advice on weight loss (yes; n = 176) OR (95 % CI)	Wanting a pharmacist in an ideal weight management program (yes; n = 117) OR (95 % CI)	Wanting an ideal weight management program to be located in a pharmacy (yes; n = 118) OR (95 % CI)
Age				
18–30	1.0	1.0	1.0	1.0
31–50	1.6 (0.5, 5.0)	0.9 (0.4, 2.0)	0.8 (0.3, 1.8)	1.3 (0.6, 2.8)
≥50	0.9 (0.3, 3.2)	1.0 (0.5, 2.3)	1.6 (0.7, 3.6)	1.5 (0.7, 3.2)
Medical conditions				
No	1.0	1.0	1.0	1.0
Yes	1.6 (0.5, 5.2)	1.3 (0.6, 2.7)	1.1 (0.5, 2.3)	0.8 (0.4, 1.6)
Taking medications				
No	1.0	1.0	1.0	1.0
Yes	0.6 (0.2, 1.9)	0.7 (0.3, 1.7)	0.8 (0.4, 1.8)	1.0 (0.4, 2.2)
Currently smoking[b]				
No	1.0	1.0	1.0	1.0
Yes	0.1 (0.02, 1.1)	0.9 (0.5, 2.0)	0.9 (0.4, 1.8)	0.8 (0.4, 1.6)
BMI[c]				
<25 mg/kg^2	1.0	1.0	1.0	1.0
≥25 mg/kg^2	1.3 (0.6, 3.2)	1.4 (0.8, 2.6)	1.2 (0.7, 2.2)	1.2 (0.7, 2.2)

Adjusted for age, medical conditions, medications, smoking and BMI

OR odds ratio, *CI* confidence interval

[a] Feeling extremely comfortable: comfort level categories have been collapsed into two categories; feeling extremely comfortable and not feeling extremely comfortable (participants who were somewhat comfortable, unsure, not comfortable and extremely not comfortable)

[b] Smoking: Smoking categories have been collapsed into two categories; currently smoking and currently not smoking (includes participants who have quit smoking and who have never smoked)

[c] BMI: BMI categories have been collapsed into two categories; <25 and ≥25 mg/kg^2

herbal products compared to other studies [20–22]. The reason for this finding could be that this study specifically involved pharmacy consumers who may have tried products readily available in pharmacies, or because of the rapid increase in meal replacement products and pharmacy-based weight management programs in Australia.

Table 4 Characteristics of women pharmacy consumer's ideal weight management program (N = 281) and the differences amongst different age groups

Ideal feature	All women n (%) N = 281	Women 18–30 y/o n (%) N = 85 (ref)	Women 31–50 y/o n (%) N = 149	Women 31–50 y/o OR (95 % CI)	Women ≥51 y/o n (%) N = 158	Women ≥51 y/o OR (95 % CI)
Information delivery						
Face-to-face	214 (76.2)	52 (61.2)	76 (51.0)	0.5 (0.2, 1.2)	86 (58.1)	1.0 (0.4, 2.3)
Email	76 (27.0)	25 (29.4)	42 (28.2)	1.0 (0.5, 1.9)	9 (5.7)	0.1 (0.1, 0.3)
Telephone call	9 (3.2)	4 (4.7)	2 (1.3)	0.3 (0.1, 1.6)	3 (1.9)	0.4 (0.1, 2.0)
Mobile phone	11 (3.9)	8 (9.4)	3 (2.0)	0.2 (0.1, 0.8)	0 (0)	N/A
Postal letter	16 (5.7)	0 (0)	9 (6.0)	1.0 (ref)	7 (4.4)	0.8 (0.3, 2.0)
Other	8 (2.8)	0 (0)	4 (2.7)	1.0 (ref)	4 (2.5)	1.0 (0.3, 3.6)
HCPs needed						
None	20 (7.1)	5 (5.9)	7 (4.7)	0.8 (0.2, 2.7)	8 (5.0)	0.9 (0.3, 3.0)
Doctor	178 (63.3)	38 (44.7)	64 (43.0)	1.0 (0.5, 1.9)	76 (48.1)	1.7 (0.9, 3.6)
Dietitian	186 (66.2)	44 (51.8)	74 (49.7)	0.9 (0.5, 1.9)	68 (43.0)	0.8 (0.4, 1.5)
Pharmacist	117 (41.6)	23 (27.0)	40 (6.7)	1.0 (0.5, 2.0)	54 (34.1)	1.8 (0.9, 3.5)
Psychologist	35 (12.5)	10 (11.8)	13 (8.7)	0.7 (0.3, 1.8)	12 (7.6)	0.7 (0.3, 1.7)
Exercise-consultant	144 (51.2)	39 (45.9)	68 (45.6)	1.1 (0.6, 2.1)	37 (23.4)	0.3 (0.2, 0.6)
Nurses	14 (5.0)	3 (3.5)	5 (3.3)	1.0 (0.3, 4.2)	6 (3.8)	1.2 (0.3, 5,0)
Program location						
Doctor's clinic	100 (35.6)	17 (0.2)	36 (24.1)	1.4 (0.7, 2.8)	47 (29.7)	2.1 (1.1, 4.3)
Pharmacy	118 (42.0)	22 (25.9)	46 (30.9)	1.4 (0.7, 2.7)	50 (31.6)	1.6 (0.9, 3.1)
Gym	73 (26.0)	27 (31.7)	36 (24.2)	0.7 (0.4, 1.3)	10 (6.3)	0.1 (0.1, 0.3)
Workplace	12 (4.3)	4 (4.7)	6 (4.0)	0.9 (0.2, 3.3)	2 (1.3)	0.3 (0.1, 1.6)
Home	80 (28.5)	21 (24.7)	25 (16.8)	0.6 (0.3, 1.2)	34 (21.5)	0.9 (0.5, 1.8)
Community centre	35 (12.5)	8 (9.4)	12 (8.0)	0.9 (0.3, 2.3)	15 (9.5)	1.1 (0.4, 2.8)
Other (e.g. Weight Watchers® clinic)	12 (4.3)	1 (1.2)	2 (1.3)	1.1 (0.1, 13.4)	9 (5.7)	5.7 (0.7, 46.0)

OR odds ratio, *CI* confidence interval, *N/A* not applicable

(ref) = reference group unless otherwise specified

Similar to other non-pharmacy based population studies, almost half of the women expected to lose a higher amount of weight than what they actually lost and were also found to adhere to weight loss methods for short periods of time [20, 23–25]. The biggest problems with weight management were again similar to what has been previously reported, with time, motivation and the cost of products and programs being typical barriers [26]. This highlights the need for HCPs such as pharmacists to set realistic weight loss goals with women and employ motivational interviewing techniques that will empower them to maintain the weight they have lost for longer periods.

Overall women understood the benefits of weight loss, and the majority understood the effectiveness of weight loss methods in the short- and long-term. More emphasis, however, needs to be placed on the benefits of weight loss on blood pressure lowering and the importance of reduced calorie intake and exercise, even in the short-term. HCPs are well placed to do this and highlighting this information in public health promotion campaigns would be valuable. Women also reported that HCPs influence their weight loss habits. Similar to other studies [27], this study showed that women who had been told by their HCP that they needed to lose weight were more likely to try to lose weight. The advice HCPs were reportedly giving was in line with the NHMRC guidelines [4], and the majority of women found it useful. This is important as it shows that women react positively to advice given by HCPs and are receptive to evidence-based advice.

Women felt comfortable speaking to the pharmacist about weight management, contrasting with previous studies that surveyed the general public and found that people felt reluctant to speak to the pharmacist due to the lack of privacy and perceived pharmacist lack of knowledge in this area [28, 29]. Women of all ages also wanted their ideal weight management program to be located in a pharmacy and expressed a desire for a multidisciplinary team to oversee their care, with dietitians, doctors, exercise-consultants and pharmacists being nominated.

These findings contrast with what has previously been reported in studies by Krska et al. [30] and Um et al. [28] who found that people want their weight management clinic to involve mostly dietitians, exercise consultants and doctors. The differences may be explained by the fact that women pharmacy consumers were surveyed in the actual pharmacy premises.

Face-to-face information delivery was the most preferred method across all age groups. Younger women were more likely to want their ideal weight management program located at the gym and to involve an exercise consultant compared with women over 50 years old. This could be due to the perceived convenience of the gym and exercise consultants in the younger age group and their decreased need to attend a pharmacy for other matters. With such information generated, future weight management interventions can be targeted according to women's different life stages based on age.

A limitation is that the study only examined women pharmacy consumers' experiences whilst they were present in the pharmacy; thus some of the results may appear to be biased towards pharmacy involvement in the weight management area. The overall results, however, are similar to other studies that investigated similar weight loss issues in the general population [20, 31, 32]. Another potential limitation is that women who were surveyed were all English speaking and thus the views of the non-English speaking women pharmacy consumer population were not included. In addition, there were item non-responses for almost every question in the questionnaire; missing data for those questions were omitted. Finally, only 34 pharmacies across Victoria were visited, with the majority of pharmacies being in a highly accessible metropolitan region.

Conclusions

Women pharmacy consumers utilised a combination of weight management approaches and had mainly positive views about the involvement of pharmacists in their ideal weight management program.

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Conflicts of interest The author(s) declare(s) that they have no conflicts interest to disclose.

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CHAPTER 5

COMPARING WOMEN PHARMACY CONSUMERS' EXPERIENCES WITH WEIGHT LOSS TREATMENT IN VICTORIA AND NOTTINGHAM: A CROSS-SECTIONAL STUDY

5.1 Declaration for Thesis Chapter 5

Declaration by candidate

In the case of Chapter 5, the nature and extent of my contribution to the work was the following:

Nature of contribution	Extent of contribution (%)
Reviewed literature; designed methods; coordinated the ethics application; developed study materials; carried out recruitment; undertook data collection; performed data analysis; and prepared manuscript.	75%

The following co-authors contributed to the work:

Name	Nature of contribution
Dr Safeera Hussainy	Designed methodology; reviewed ethics application, study materials, data analysis and manuscript.
A/Prof Jennifer Marriott	Designed methodology; reviewed ethics application, study materials, data analysis and manuscript.
Dr Helen Boardman	Reviewed ethics application, study materials, data analysis and manuscript.
Prof Claire Anderson	Reviewed ethics application, study materials, data analysis and manuscript.

Candidate's Signature		**Date**

Declaration by co-authors

The undersigned hereby certify that:

1. the above declaration correctly reflects the nature and extent of the candidate's contribution to this work, and the nature of the contribution of each of the co-authors.
2. they meet the criteria for authorship in that they have participated in the conception, execution, or interpretation, of at least that part of the publication in their field of expertise;
3. they take public responsibility for their part of the publication, except for the responsible author who accepts overall responsibility for the publication;
4. there are no other authors of the publication according to these criteria;
5. potential conflicts of interest have been disclosed to (a) granting bodies, (b) the editor or publisher of journals or other publications, and (c) the head of the responsible academic unit; and
6. the original data are stored at the following location(s) and will be held for at least five years from the date indicated below:

Location	**Centre for Medicine Use and Safety, Faculty of Pharmacy and Pharmaceutical Sciences, Monash University, Parkville, Victoria 3052**

		Date
Dr Safeera Hussainy		
A/Prof Jennifer Marriott		
Dr Helen Boardman		03/01/2014
Prof Claire Anderson		06/01/2014

5.2 Research article

Title

Comparing Women Pharmacy Consumers' Experiences with Weight Loss Treatment in Victoria and Nottingham: A Cross-Sectional Study

Abstract

Background

There has been a recent increase in weight management services available in pharmacies across Australia and England. Given that these countries have similar demographics and pharmaceutical care services, this study was designed to identify the similarities and differences between women pharmacy consumers' experiences with weight loss in Victoria, Australia and Nottingham, England. The aim was to determine the following between women in Victoria and Nottingham: similarities and differences of what weight management options are preferred by women pharmacy consumers; how they feel about pharmacists providing advice in this area; and what they desire in a weight management program.

Method

Women pharmacy consumers in Victoria and Nottingham were randomly approached by a researcher and asked to complete a questionnaire regarding their own weight management experiences. The questionnaire was self-completed or researcher-administered. Data was entered in SPSS 19 and logistic regression was used to identify any differences in weight loss experiences between women.

Results

The response rates were high: 86% (395/460) in Victoria and 98% in Nottingham (215/220). Overall, women in Victoria and Nottingham were similar with comparable demographics. Approximately 50% (250/507) of women were in the overweight or obese body mass index category, with over 70% (436/610) of women having attempted to lose weight in the past, the majority having tried multiple weight loss methods. Of these women, approximately 30% (128/436) had received advice from their healthcare professional, with more women in Victoria having received advice. Over 80% stated the advice received was helpful. The majority of women (334/436) felt comfortable receiving advice from pharmacists, with 40% (171/436) wanting a pharmacist in their ideal weight management program and 36% (157/436) wanting their program to be delivered in a pharmacy.

Conclusion

Results from this study have provided information on possible ideal pharmacy weight management programs in both Victoria and Nottingham. Although differences were seen between the two populations, similarities between ideal weight management programs and comfort level with pharmacist interaction were noted. This study also highlighted the potential for future weight management educational resources developed for women pharmacy consumers in Australia or England to be used interchangeably.

Key words:

Women; body weight; weight loss; health services; community pharmacy services; health knowledge, attitudes, practice

Background

According to the World Health Organization (WHO) one billion adults are overweight and at least 300 million adults are obese worldwide [1]. Australia has one of the highest overweight and obese populations in the world, with over two-thirds of the population being considered overweight or obese [2]. Similarly, in England, an estimated 41 per cent of males and 33 per cent of females are considered overweight and 24 per cent of males and 26 per cent of females are estimated to be obese [3]. With the rising prevalence of overweight and obesity in both Australia and England, key stakeholders and government bodies have communicated the urgency of developing public health interventions to target this epidemic [4, 5].

In both Australia and England, a plethora of products and programs are marketed for weight loss, with many now offered in community pharmacies. However, even with the increase in weight management options available, combination approaches of diet, exercise and behavioural modification are still considered first line [6, 7, 8]. Many of the over-the-counter (OTC) products, such as herbal supplements, which are marketed for weight loss, lack evidence and are not recommended in weight management guidelines [6, 8].

Women are said to be the major purchasers of weight loss products and programs, and reportedly try to lose weight more frequently than their male counterparts [9]. There are specific causes of overweight and obesity specifically related to women, including polycystic ovary disease, hormonal changes, pregnancy and menopause [10]. In women, overweight and obesity increases the risk of infertility and pregnancy complications [11]. It is for these reasons that specifically investigating women's needs, to devise an appropriate weight management intervention for women, has been recommended [12].

Community pharmacists have been increasingly recognised as key health care professionals to help combat the overweight and obesity issue due to their easy accessibility, diverse

clientele and high level of patient trust [13-17]. Consumers visit community pharmacies on a regular basis, with reports documenting that the average Australian visits a pharmacy up to 14 times a year [18]. More specifically, in Australia, pharmacy staff (pharmacists and pharmacy assistants) come into contact with women in the pre-pregnancy, pregnancy and post-partum stages more than any other primary health care professional, including general practitioners and nurses [19]. In the UK, consumer access to pharmacies and pharmacists is similar to Australia, with 60 to 80 per cent of pharmacy consumers reported to be women [20].

Recent studies have reported the need for increased training of pharmacists and pharmacy assistants in the weight management area so that pharmacies can provide an ideal health destination for consumers to receive evidence-based services and advice [19, 21, 22]. It is well known that before any interventions or education resources are developed, an important component is to involve consumers, draw from their experiences, and take into account their attitudes towards weight management approaches [23]. Previous studies have focussed on the general public's perceptions of weight management services offered by community pharmacies, with little focus on actual pharmacy consumers [24-26]. To date, Fakih *et al.* are the only research group who have previously explored women pharmacy consumers' experiences with weight management approaches in Australia [27]. They highlighted women pharmacy consumers' positive attitudes towards pharmacy involvement in weight management counselling and emphasised the importance of adequately trained health care professionals in weight management.

With England and Australia offering similar pharmacy services, the primary aim of this study was to determine whether women pharmacy consumers in both countries have similar experiences with, and attitudes towards, weight management, specifically:

- their awareness of potential consequences of obesity;

- their experience using weight loss treatments;
- treatment duration, perceived benefits and adherence;
- level of interaction with health professionals during treatment;
- advice given; and
- components of an ideal weight management program.

The secondary aim of this study was to determine whether future weight management interventions, guidelines or educational resources could be developed for use in either country.

Methods

Survey development

Women pharmacy consumers were surveyed using a questionnaire comprising four main sections that focused on the participant's general health, previous weight loss experiences, their ideal weight management program and their demographics. Two questionnaires were developed; one for women in Victoria, Australia to complete and one for women in Nottingham, England. The questionnaires were very similar, with the only differences being the units of measurement used and the names of weight loss products. Only women who had previously attempted to lose weight were required to complete the sections regarding previous weight loss experiences and their ideal weight management program.

The first drafts of the questionnaires were piloted for face and content validity by academics, pharmacists and consumers. Changes regarding formatting and wording of certain questions were made based on their feedback. The questionnaires were then piloted in two pharmacies with women pharmacy consumers (n=20). Any issues, mostly formatting and space given to open ended questions, were then addressed and the final questionnaires were printed (refer to Appendix 3).

Study participants

As this was an exploratory study, the sample size was determined based on allocated resources. The aim was to collect data from 300 women over a three-month data collection period (January-March 2011) in Victoria and 200 women over a six-week data collection period in Nottingham (February-March 2011).

Women pharmacy consumers were recruited from 34 pharmacies across Victoria and 15 pharmacies around Nottingham. Pharmacies were randomly selected using the Pharmacy Board of Victoria pharmacy premises list or the National Health Service Nottingham pharmacy list. Sixty-five pharmacies from Victoria were contacted and 34 pharmacies agreed to be involved. In Nottingham, recruitment was more difficult; the researcher (S.F.) was unable to administer the questionnaire in large pharmacy chains such as Boots® because of delays in permission by the chain group pharmacies. S.F. could therefore only recruit independently owned community pharmacies in Nottingham. Twenty-four independently owned pharmacies were contacted and 15 agreed to participate. Pharmacies were visited on weekdays and weekends and during different times between 8 am to 9 pm to ensure a representative sample of women pharmacy consumers would be recruited. Each pharmacy was only visited once for 6-to hours on a mutually convenient date.

Survey administration

The survey was administered to women pharmacy consumers in Victoria by one of the researchers (S.F.) or a research assistant (J.W.) during January-March 2011. In Nottingham, the survey was administered during February to March 2011 by S.F. Women over the age of 18 who were able to independently complete a questionnaire in English were asked to complete the study questionnaire in the pharmacy. Participants were approached at random and were asked to complete the questionnaire, regardless of whether they were underweight, healthy or overweight.

Participants were given the choice of having the questionnaire filled in by the researcher on their behalf (researcher-administered) or self-completing the questionnaire. Participants were not given the opportunity to complete the questionnaire in any other location or at any other time.

All participants who completed the questionnaire received an AU $7.50 voucher in Victoria or a £5 voucher in Nottingham to spend in the pharmacy on non-prescription products.

Data analysis

Data were analysed using SPSS version 19.0 (IBM, USA) and summarised using descriptive statistics. Multiple response questions were coded yes or no for each response i.e. multiple-dichotomy method. Pearson's chi-squared test was used to determine any significant relationships between women in Victoria and Nottingham. The association between pharmacy-specific outcomes, such as wanting a pharmacist involved in an ideal weight management program and demographic characteristics, were investigated using multivariate logistic regression. The significance level was set at $P < 0.05$.

To explore relationships between different stages in a woman's life (pre-pregnancy, pregnancy, pregnancy, post-partum and menopause) the age categories for women were collapsed into three main categories: 18-30, 31-50 and over 50. Body mass index (BMI) was calculated using height and weight provided, and categories were selected based on BMI cut-off points provided by the WHO.[1]

The study was approved by the Monash University Human Research Ethics Committee and the University Of Nottingham School Of Pharmacy Ethics Committee.

Results

In total, there were 610 participating women in Victoria and Nottingham. The overall response rate was 86% in Victoria (395 completed surveys from 460 women approached) and 98% in Nottingham (215 completed surveys from 220 women approached).

Characteristics of women

The characteristics of the participating women in Victoria and Nottingham were comparable and the results are shown in Table 1. With increasing age women's BMI also increased. This trend was seen in both Victoria and Nottingham.

Table 1: Demographic characteristics of participating women

Demographic characteristic	Percentage of women Victoria n (%); [a]N=395	Percentage of women Nottingham n (%); [a]N=215	*P*-value
Age (in years)			
18-30	85 (21.7)	48 (22.4)	0.80
31-50	149 (38.0)	91 (42.5)	0.22
≥51	158 (40.3)	75 (35.0)	0.23
Education			
Secondary school or less	155 (39.4)	100 (46.5)	0.08
Post-secondary school certificate	78 (19.8)	56 (26.8)	0.05
University student/graduate	124 (31.6)	36 (16.7)	***<0.001***
Post-graduate	36 (9.2)	17 (8.1)	0.67
BMI kg/m^2**	*N= 319*	*N= 188*	
Underweight *< 18.5*	9 (2.8)	6 (3.2)	0.82
Healthy *18.5-24.9*	157 (49.2)	85 (45.2)	0.36
Overweight *25.0-29.9*	77 (24.1)	57 (30.3)	0.11
Obese *30.0-39.9*	68 (21.3)	38 (20.2)	0.75
Severely obese *> 40*	8 (2.5)	2 (1.1)	0.26

Demographic characteristic	Percentage of women Victoria n (%); [a]N=395	Percentage of women Nottingham n (%); [a]N=215	*P*-value
Smoking status			
Current	71 (18.0)	53 (24.8)	***0.05***
Never	273 (69.3)	100 (46.7)	***<0.001***
Former	50 (12.7)	61 (28.5)	***<0.001***
Medical conditions			
Yes	212 (54.2)	126 (58.9)	0.27
Medications			
Yes	271 (68.8)	144 (68.6)	0.96
Health care professional(s) (HCP) visited in the last 12 months			
Doctor	369 (93.7)	189 (88.3)	***0.02***
Pharmacist	296 (75.1)	106 (49.5)	***<0.001***
Dentist	219 (55.6)	134 (62.6)	0.09
Optometrist	138 (35.0)	64 (29.9)	0.20
Dietitian	29 (7.4)	4 (1.9)	***0.004***
Physiotherapist	69 (17.5)	15 (7.0)	***<0.001***
[c]Other	163 (41.4)	42 (19.6)	***<0.001***
Most visited HCP in the last 12 months			
Doctor	226 (58.1)	125 (59.2)	0.786
Pharmacist	78 (20.1)	44 (20.9)	0.816
[d]Other	83 (21.3)	42 (19.9)	0.680
Previously attempted to lose weight			
Yes	281 (71.1)	155 (72.1)	0.803

[a]N= 395; totals do not total 395 due to missing responses, [b]N= 215; totals do not total 215 due to missing responses

**BMI could only be calculated for the women who self-reported both their height and weight

[c]Other= podiatrist, psychologist and "other" responses

[d]Other= all other health care professionals including, dentist, psychologist, physiotherapist, dietitian, optometrist and podiatrist

Similarities and differences between women in Victoria and Nottingham: Weight loss perceptions, methods used, experiences with treatments and advice received from health care professionals (HCPs)

Table 2 shows that women in Victoria were significantly more likely (P = 0.005) to utilise increased exercise and decreased calorie intake as part of their weight loss method compared to women in Nottingham who were more likely to be involved in a weight loss support group (P < 0.001). Women in Victoria were also significantly more likely to utilise pharmacy based programs compared to women in Nottingham (P = 0.006).

Women in Victoria were significantly less likely to want to lose more than 10 kg in their last weight loss attempt compared to women in Nottingham (P < 0.001). Women in Victoria were also less likely to have lost more than 10 kg in their last weight loss attempt compared to women in Nottingham (P < 0.001). Furthermore, women in Victoria were less likely to state that they had used their last weight loss method for six months and over compared to women in Nottingham (P = 0.002).

More women in Victoria (90/272) received advice from a health care professional in their last weight loss attempt compared to women in Nottingham (27/153). Advice received from health care professionals was in line with national guidelines for both women in Victoria and women in Nottingham, with approximately 80% of health care professionals recommending diet and exercise (Victoria: 77.8%, (70/90); Nottingham: 81.5%, (22/27)). The majority of women in both Victoria (93.3%; 84/90) and Nottingham (88.9%; 24/27) who received advice from a health care professional also found the advice helpful. Both groups felt somewhat comfortable or extremely comfortable with receiving advice on weight management from their community pharmacist (Victoria 82.2%, (231/281); Nottingham, 74.2% (115/155)).

Table 2: Comparison between weight loss experiences in women from Victoria, Australia and women in Nottingham, England

Weight loss perceptions, practices and interactions with health care professionals	Victoria [a]N=281; n(%)	Nottingham [b]N=155; n(%)	*P*-value
Why did you want to lose weight?			
To look and feel good	162 (58.1)	112 (73.7)	***0.001***
For a special event	58 (20.8)	24 (15.8)	0.21
For my health	196 (70.3)	95 (62.5)	0.10
Someone told me to	12 (4.3)	6 (3.9)	0.86
Other e.g. wanted to fall pregnant	21 (7.5)	6 (3.9)	0.14
Weight loss methods used in the last five years			
Decreased calorie intake	240 (86.3)	126 (81.8)	0.21
Increased exercise	236 (84.9)	105 (68.6)	***<0.001***
Decreased calorie intake and increased exercise	212 (76.3)	96 (62.7)	***0.005***
Weight loss support group e.g. Jenny Craig® or Weight Watchers®	57 (20.5)	57 (37.0)	***<0.001***
Decreased calorie intake, increased exercise and weight loss support group	44 (15.8)	34 (22.2)	***0.022***
Meal replacement products e.g. Optifast®	35 (12.6)	24 (15.6)	0.39
Pharmacy based program e.g. Tony Ferguson ®	33 (11.9)	6 (3.9)	***0.006***
Weight loss medication e.g. Xenical®	11 (4.0)	8 (5.2)	0.55
Vitamins/herbal products	29 (10.4)	9 (5.8)	0.11
Other e.g. recreational drugs, weight loss surgery	14 (5.0)	5 (3.2)	0.39
Time since last weight loss attempt (months) Median (IQR)	12 (6-34)	12 (6-25.5)	0.83
Last place purchased weight loss method			
Not applicable	195 (73.3)	102 (69.4)	0.40
Supermarket	8 (3.0)	16 (10.9)	***0.001***
Pharmacy	49 (18.4)	14 (9.5)	***0.02***
Other e.g. internet, health food store	14 (5.3)	15 (10.2)	0.06
How much weight was wanting to be lost			
0-2 kg	17 (6.4)	10 (6.5)	0.97
3-5 kg	81 (30.7)	28 (18.3)	***0.006***
6-10 kg	95 (36.0)	45 (29.4)	0.17

Weight loss perceptions, practices and interactions with health care professionals	Victoria [a]N=281; n(%)	Nottingham [b]N=155; n(%)	*P*-value
How much weight was wanting to be lost			
11-15 kg	24 (9.1)	26 (17.0)	***0.02***
16-20 kg	14 (5.3)	18 (11.8)	***0.01***
Over 20 kg	33 (12.5)	26 (17.0)	0.20
How much weight was lost			
0-2 kg	68 (26.2)	31 (20.7)	0.21
3-5 kg	97 (37.3)	35 (23.3)	***0.004***
6-10 kg	59 (22.7)	38 (25.3)	0.54
11-15 kg	13 (5.0)	23 (15.3)	***<0.001***
16-20 kg	11 (4.2)	7 (4.7)	0.84
Over 20 kg	12 (4.6)	18 (10.7)	***0.006***
Duration of weight loss attempt			
0-3 weeks	21 (8.2)	16 (10.5)	0.44
1-2 months	80 (31.3)	35 (22.9)	***0.07***
3-5 months	68 (26.6)	26 (17.0)	***0.03***
6-8 months	39 (15.2)	30 (19.6)	0.25
9-11 months	15 (5.9)	19 (12.4)	***0.02***
Over 1 year	33 (12.9)	27 (17.6)	0.19
Has the weight lost since been regained			
Yes	147 (57.2)	80 (53.3)	0.45
Health care professional advice during last weight loss attempt			
No advice	182 (67.4)	126 (82.4)	***0.001***
Doctor	45 (16.7)	9 (5.9)	***0.001***
Exercise consultant	19 (7.0)	9 (5.9)	0.65
Dietitian	7 (2.6)	2 (1.3)	0.38
Pharmacist	23 (8.5)	5 (3.3)	***0.04***
Pharmacy assistant	6 (2.2)	4 (2.6)	0.80
Other e.g. Weight Watchers® consultant	15 (5.6)	5 (3.3)	0.29
Most trusted source for weight management advice			
Family/friends	86 (32.3)	39 (26.2)	0.19
Internet	40 (15.0)	10 (6.8)	***0.01***

Weight loss perceptions, practices and interactions with health care professionals	Victoria [a]N=281; n(%)	Nottingham [b]N=155; n(%)	*P*-value
Most trusted source for weight management advice			
TV/radio	10 (3.8)	5 (3.4)	0.84
Exercise consultant	30 (11.3)	9 (6.1)	***0.08***
Health care professional	143 (53.8)	24 (16.2)	***<0.001***
No one	33 (12.4)	52 (35.1)	***<0.001***
Biggest problems in weight management			
No problems	15 (5.5)	19 (12.3)	***0.01***
Lack of motivation	207 (75.3)	96 (61.9)	***0.004***
Lack of support from family/friends	14 (5.1)	12 (7.7)	0.27
Lack of time	169 (61.5)	70 (45.2)	***0.001***
Lack of support from HCP	1 (0.4)	3 (1.9)	0.10
Cost of product or program	101 (36.7)	28 (18.1)	***<0.001***
Currently available products don't work	5 (1.8)	4 (2.6)	0.60
Not enough information	10 (3.6)	3 (1.9)	0.32
Side effects	6 (2.2)	7 (4.5)	0.18
[a]N= 281; totals do not total 281 due to missing responses, [b]N= 155; totals do not total 155 due to missing responses			

Overall, women in Victoria were significantly more likely to recognise the health benefits of losing weight compared to women in Nottingham (Figure 1). In both groups, the least recognised benefit was decreased blood pressure.

Differences and similarities between pharmacy-specific outcomes

Table 3 shows that women who had sought a pharmacist's advice on health, in the last 12 months, were significantly more likely to want a pharmacist in their ideal weight management program (OR: 2.29 CI: 1.35, 3.90) and preferred their ideal weight management program to be located in a pharmacy (OR: 3.11 CI: 1.75, 5.53) compared to women who had not sought advice from a pharmacist.

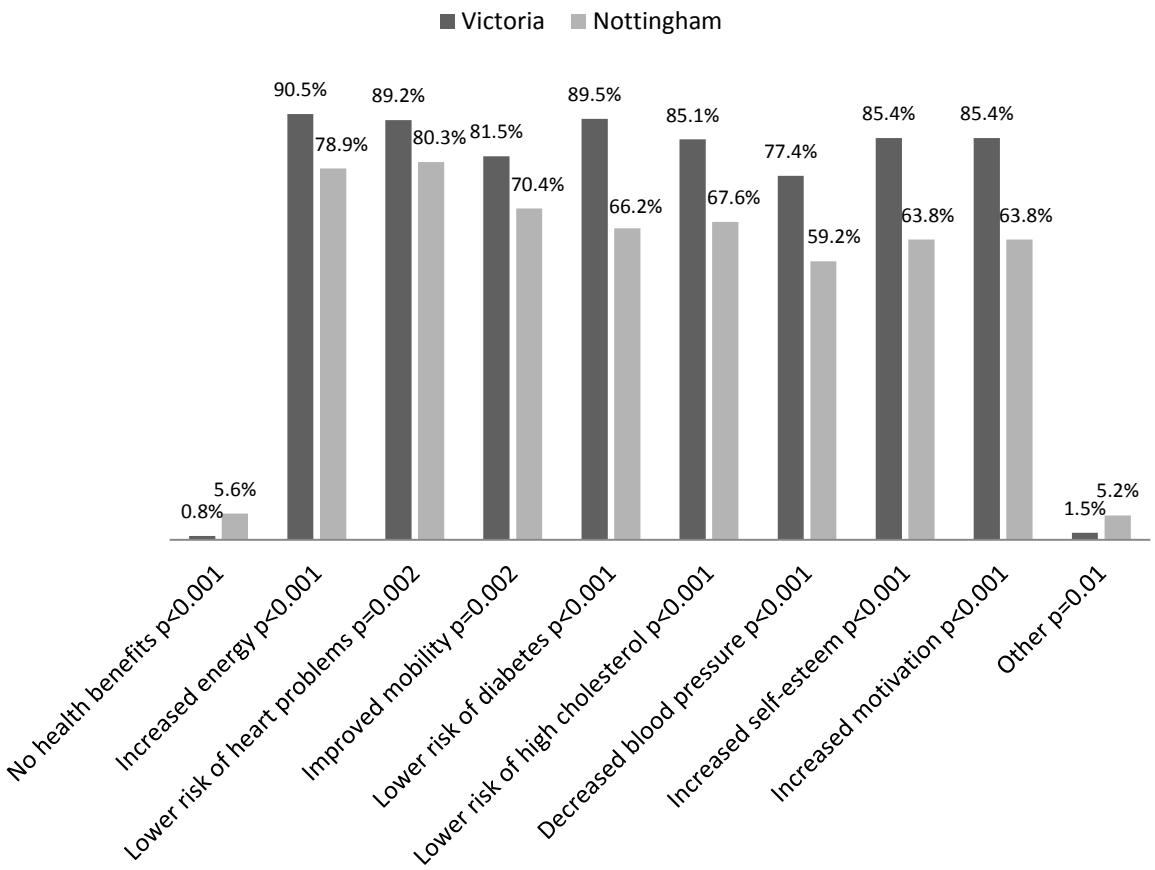

Figure 1: Perceived benefits of weight loss by women

Table 3 highlights that women in Nottingham were significantly less likely to have utilised a pharmacy weight management program in the last five years (OR: 0.23 CI 0.08, 0.63) and were significantly less likely to want an ideal weight management program located in a pharmacy (OR: 0.49 CI: 0.30, 0.82) compared to women in Victoria. No other significant associations between demographic characteristics and utilising a pharmacy-based program, feeling comfortable with a pharmacist advising on weight loss, wanting a pharmacist in an ideal weight management program or having an ideal weight management program located in a pharmacy were found.

Table 3: Adjusted odds ratio (95% CI) for associations between demographic characteristics and various pharmacy-specific outcomes (N= 436)**

	Utilised pharmacy weight management programs in the last five years (yes; n= 39) OR (95% CI)	Feeling comfortable[a] with pharmacists giving advice on weight loss (yes; n= 334) OR (95% CI)	Wanting a pharmacist in an ideal weight management program (yes; n=171) OR (95% CI)	Wanting an ideal weight management program to be located in a pharmacy (yes; n=157) OR (95% CI)
Location survey was administered				
Victoria	1.0	1.0	1.0	1.0
Nottingham	**0.23 (0.08, 0.63)**	0.67 (0.39, 1.16)	0.71 (0.44, 1.12)	**0.49 (0.30, 0.82)**
Age				
18-30	1.0	1.0	1.0	1.0
31-50	1.12 (0.42, 3.0)	0.56 (0.26, 1.23)	0.45 (0.26, 0.88)	0.85 (0.45, 1.62)
≥50	0.72 (0.24, 2.13)	0.60 (0.26, 1.38)	0.83 (0.43, 1.58)	0.84 (0.42, 1.65)
Medical conditions				
No	1.0	1.0	1.0	1.0
Yes	1.36 (0.51, 3.61)	1.18 (0.59, 2.34)	0.93 (0.52, 1.68)	0.61 (0.32, 1.14)
Taking medications				
No	1.0	1.0	1.0	1.0
Yes	0.85 (0.37, 1.96)	0.98 (0.42, 2.01)	0.77 (0.42, 1.45)	1.11 (0.57, 2.16)

	Utilised pharmacy weight management programs in the last five years (yes; n= 39) OR (95% CI)	Feeling comfortable[a] with pharmacists giving advice on weight loss (yes; n= 334) OR (95% CI)	Wanting a pharmacist in an ideal weight management program (yes; n=171) OR (95% CI)	Wanting an ideal weight management program to be located in a pharmacy (yes; n=157) OR (95% CI)
Visited pharmacist in the last 12 months				
No	1.0	1.0	1.0	1.0
Yes	0.85 (0.37, 1.96)	1.57 (0.88, 2.80)	**2.29 (1.35, 3.90)**	**3.11 (1.75, 5.53)**
BMI[c]				
< 25 kg/m^2	1.0	1.0	1.0	1.0
≥ 25 kg/m^2	1.70 (0.76, 3.79)	1.0 (0.57, 1.77)	1.13 (0.70, 1.82)	1.1 (0.66, 1.81)

Note: OR= odds ratio; CI= confidence interval

** Adjusted for location, age, medical conditions, medications, if visited pharmacist in the last 12 months and BMI

[a]Feeling comfortable: comfort level categories have been collapsed into two categories; feeling comfortable (participants who were somewhat comfortable or extremely comfortable) and not feeling comfortable (participants who were, unsure, not comfortable and extremely not comfortable)

[c]BMI : BMI categories have been collapsed into two categories; < 25kg/m^2 and ≥ 25kg/m^2

Ideal weight management program

Women's views on the features of an ideal weight management program are presented in Table 4. Overall, results were comparable amongst the women in Victoria and Nottingham. Women in both Victoria and Nottingham and across all age groups wanted information on weight management to be delivered face-to-face. Women in Victoria were more likely to want a health care professional involved in their ideal weight management program compared to women in Nottingham (P = 0.008). Women in Nottingham were more likely to want their program to be located in their workplace than in a pharmacy (P = 0.04). Differences in an ideal weight management program were seen between age groups. This pattern was the same for women in both Victoria and Nottingham. Table 4 highlights women pharmacy consumers' ideal weight management program in Victoria and Nottingham and the differences seen amongst women in varying age groups

Table 4: Women pharmacy consumers' ideal weight management program in Victoria and Nottingham according to different age-groups

Ideal feature	Victoria [a]N=281; n(%)	Nottingham [b]N=155; n(%)	*P*-value
Information delivery			
Face-to-face	215 (79.9)	117 (76.0)	0.34
18-30	52 (83.9)	25 (75.8)	0.34
31-50	76 (73.8)	52 (77.6)	0.57
≥51	86 (83.5)	40 (75.5)	0.23
Email	76 (28.3)	41 (26.6)	0.72
18-30	25 (40.3)	12 (36.4)	0.71
31-50	42 (40.8)	23 (34.3)	0.40
≥51	9 (8.7)	6 (11.3)	0.60
Telephone call	9 (3.3)	11 (7.1)	0.77
18-30	4 (6.5)	3 (9.1)	0.64
31-50	2 (1.9)	5 (7.5)	0.08
≥51	3 (2.9)	3 (5.7)	0.40

Ideal feature	Victoria [a]N=281; n(%)	Nottingham [b]N=155; n(%)	*P*-value
Information delivery			
Mobile phone	11 (4.1)	11 (7.1)	0.17
18-30	8 (12.9)	7 (21.2)	0.29
31-50	3 (2.9)	4 (6.0)	0.33
≥51	0	0	1
Postal letter	16 (5.9)	17 (11.0)	0.06
18-30	0	5 (15.2)	***0.002***
31-50	9 (8.7)	7 (10.4)	0.71
≥51	7 (6.8)	4 (7.5)	0.86
HCPs needed			
None	20 (7.4)	24 (15.6)	***0.008***
18-30	5 (8.2)	2 (6.1)	0.71
31-50	7 (6.7)	15 (22.4)	***0.003***
≥51	8 (7.8)	6 (11.3)	0.46
Doctor	178 (65.9)	50 (32.5)	***<0.001***
18-30	38 (62.3)	9 (27.3)	***0.001***
31-50	64 (61.5)	20 (29.9)	***<0.001***
≥51	76 (73.8)	21 (39.6)	***<0.001***
Dietitian	188 (69.6)	74 (48.1)	***<0.001***
18-30	44 (72.1)	20 (41.6)	0.25
31-50	74 (71.2)	31 (46.3)	***0.001***
≥51	68 (66.0)	23 (43.4)	***0.007***
Pharmacist	117 (43.3)	54 (35.1)	0.10
18-30	23 (37.7)	17 (51.5)	0.20
31-50	40 (38.5)	20 (29.9)	0.25
≥51	54 (52.4)	17 (32.1)	***0.016***
Psychologist	36 (13.3)	6 (3.9)	***0.002***
18-30	10 (16.4)	1 (3.0)	0.05
31-50	13 (12.5)	4 (6.0)	0.16
≥51	12 (11.7)	1 (1.9)	***0.04***

Ideal feature	Victoria [a]N=281; n(%)	Nottingham [b]N=155; n(%)	*P*-value
HCPs needed			
Exercise-consultant	145 (53.7)	47 (30.5)	***<0.001***
18-30	39 (63.9)	65 (48.5)	0.15
31-50	68 (65.4)	22 (32.8)	**<0.001**
≥51	37 (35.9)	9 (17.0)	**0.01**
Nurses	14 (5.2)	18 (11.7)	***0.015***
18-30	3 (4.9)	5 (15.2)	0.09
31-50	5 (4.8)	9 (13.4)	***0.04***
≥51	6 (5.8)	4 (7.5)	0.68
Program location			
Doctor's clinic	100 (37.2)	46 (31.3)	0.23
18-30	17 (27.9)	6 (18.8)	0.33
31-50	36 (35.0)	24 (39.3)	0.57
≥51	47 (45.6)	15 (28.3)	***0.04***
Pharmacy	*118 (43.7)*	*39 (26.5)*	***0.001***
18-30	22 (36.1)	11 (34.4)	0.87
31-50	46 (44.7)	17 (27.9)	**0.03**
≥51	50 (48.1)	11 (20.8)	**0.001**
Gym	74 (27.4)	41 (27.9)	0.92
18-30	27 (44.3)	16 (50.0)	0.60
31-50	36 (35.0)	16 (26.2)	0.25
≥51	10 (9.6)	9 (17.0)	0.18
Workplace	12 (4.5)	14 (9.5)	***0.04***
18-30	4 (6.6)	2 (6.3)	0.95
31-50	6 (5.9)	9 (14.8)	0.06
≥51	2 (1.9)	3 (5.7)	0.21
Home	81 (30.0)	40 (27.2)	0.55
18-30	21 (34.4)	10 (31.3)	0.76
31-50	25 (24.3)	16 (26.2)	0.78
≥51	34 (32.7)	14 (26.4)	0.42

Ideal feature	Victoria [a]N=281; n(%)	Nottingham [b]N=155; n(%)	*P*-value
Program location			
Community centre	35 (13.0)	26 (17.7)	0.19
18-30	8 (13.1)	8 (25.0)	0.15
31-50	12 (11.7)	12 (19.7)	0.16
≥51	15 (14.4)	6 (11.3)	0.59
Other (e.g. Weight Watchers® clinic)	12 (4.4)	4 (2.7)	0.38
18-30	1 (1.6)	0	0.47
31-50	2 (1.9)	3 (4.9)	0.25
≥51	9 (8.7)	1 (1.9)	0.10

Discussion

This study explored the attitudes, perceptions and experiences of women pharmacy consumers in Victoria, Australia and Nottingham, England with currently available weight management products. Overall, similar groups of women in Victoria and Nottingham were surveyed. Approximately 50 per cent of women in Victoria (153/319; 47.9%) and Nottingham (97/188; 51.6%) were classified in the overweight or obese BMI category. The sample is slightly under-representative of the overweight and obese population, which may be explained by the use of self-reported height and weight to calculate the women's BMI. Studies have previously shown that self-reported height tends to be overestimated and weight is underestimated [28, 29]. Furthermore, approximately 20% (77/395) of women in Victoria and 12.5 per cent of women in Nottingham (27/215) did not provide enough information for their BMI to be calculated.

Women in Nottingham were found to have visited a health care professional in the last 12 months, significantly less than women in Victoria. In Nottingham, close to 50 per cent of women reported visiting their pharmacist for health advice in the last 12 months,

significantly less ($P < 0.001$) than the women in Victoria. In England, it is estimated that 95 per cent of the population visit their community pharmacy once a year [20]. Pharmacy visits are not always related to health and can be for non-medicine purchases such as toiletries. Our result indicates that visits to the pharmacy may still be associated with prescription drop-off and pick-up rather than a location to receive health care advice. Women who had visited the pharmacist to seek health advice in the last 12 months were significantly more likely to want a pharmacist involved in their ideal weight management program or for their ideal weight management program to be located in a pharmacy. This is in line with previous studies that found people who have had positive experiences with pharmacy services are more likely to feel comfortable approaching pharmacists about health advice [30, 31]. Um *et al*. [25] also highlighted that members of the general public were more likely to indicate pharmacies as a potential weight management program location if they had previously received weight management advice by their community pharmacist [25]. Collectively, these results highlight the importance of promoting pharmacists as public health advisors.

Women in Victoria were significantly more likely to be able to demonstrate an understanding of what the benefits of weight loss are in an overweight or obese person. This could be due to the population group in Victoria being significantly more tertiary educated than the women in Nottingham. Decreased blood pressure was the least recognised benefit of weight loss in both women in Victoria and Nottingham. This result is similar to a study conducted in Germany that found obese individuals aged 50 to 62 were significantly more likely to underestimate their risks of arthritis and hypertension [32]; thus, indicating that people may not understand the importance of weight control on blood pressure and health in general. Pharmacists are in an ideal position to provide information and awareness regarding the benefits of weight loss in an overweight or obese person. Pharmacists should include brief diet and exercise counselling every time they dispense a medication for a condition related to overweight and obesity including commonly

dispensed antihypertensive medications. This would encourage a wider understanding of the benefits of weight loss on an overweight or obese person's health, and for individuals who are in the healthy weight category it would provide a greater understanding of the importance of weight maintenance.

Over 70 per cent of both groups had attempted to lose weight in the past. As in other studies, diet and exercise were commonly used to help achieve weight loss [33-36]. In Victoria, women were significantly more likely to utilise physical activity as part of their weight management strategy compared to women in Nottingham ($P < 0.001$). Reasons for this finding may include the differences in demographics; women in Victoria were more likely to be educated to a higher level and thus may recognise the importance of including physical activity in a weight management program more readily than the women in Nottingham [37]. Other reasons may include the differences in locations and differences in weather patterns; women in Victoria may be exposed to more parks and outdoor exercise options than women in Nottingham.

Women in Victoria were significantly more likely to utilise pharmacy based programs in the last five years compared to women in Nottingham ($P = 0.006$). A recent review in Australia revealed 13 different pharmacy weight management programs [38]. The differences between the number of women utilising pharmacy weight management programs in Victoria and Nottingham could be related to the types of pharmacies in which women were surveyed. In Nottingham, women were surveyed only at independently owned pharmacies, whereas in Victoria both privately owned pharmacies and those that are part of a buying group were visited. Women pharmacy consumers surveyed in pharmacies that are part of a group may have utilised pharmacy-based weight management programs more frequently, as many of these programs are run through pharmacy groups and are not available through privately owned pharmacies. Compared to other studies investigating weight management

strategies, women in this study were more likely to state that they had utilised herbal products to assist in weight loss in the last five years [33-35]. This could be due to the population sampled. Women pharmacy consumers may be more influenced by the types of products pharmacies sell and thus may be more likely to utilise pharmacy based weight management programs or herbal products compared to the general population.

The weight loss goals, weight loss attainment and duration of the last weight loss attempts differed between the two population groups. Compared to women in Victoria, women in Nottingham were significantly more likely to want to lose more than 10 kg in their last weight loss attempt ($P < 0.001$), were significantly more likely to have lost more than 10 kg ($P < 0.001$) and were significantly more likely to use their last weight loss method for longer than six months ($P=0.002$). Weight loss goal setting has been shown to be a positive influence on achieving weight loss, with national guidelines advising that individuals be encouraged to set realistic weight loss goals (5 to 10 per cent of their body weight) prior to commencing a weight loss approach [6, 8]. Women in Nottingham were also significantly more likely to utilise weight loss support meetings in their weight loss attempt compared to women in Victoria, a strategy that has been shown to achieve more weight loss than diet and/or exercise alone [39, 40]. These meetings offer a support network, and provide participants with an environment to learn about different foods, calorie intakes, exercise activities, goal setting, behavioural modification techniques and motivational strategies. Pharmacists and other health care providers can play a role in helping women set realistic weight management goals, offering motivational techniques and strategies to help change behaviour. Pharmacists also see individuals on a regular basis and thus can play a special role in supporting them throughout their weight loss journey. Maher *et al*. found that women viewed pharmacies as a convenient location to receive nutrition advice but

highlighted the need to change pharmacy settings, so that they are able to have a more active and supportive role in health prevention [41].

Women in Victoria were significantly more likely to have received advice in their last weight loss attempt from any health care professional (P = 0.001). Nevertheless, the majority of women in both population groups had not received any advice from their health care professional. Primary health care providers are in a special position to offer women weight loss advice. Studies have shown that individuals who have received advice from a health care professional are more likely to be successful in their weight loss approaches [42, 43]. Pharmacists, unlike other primary health care providers, also come into contact with both healthy and non-healthy individuals and thus are able to interact with a large population group. Unlike results reported in other studies, women in Nottingham and Victoria felt comfortable receiving advice from their community pharmacist regarding weight management [24, 25, 30]. The difference may be due to the population group in this study being solely pharmacy consumers, already exposed to the pharmacy environment and likely to be more receptive to receiving advice from their pharmacist. Nevertheless, this shows that pharmacists should feel comfortable offering weight management advice to their consumers. Studies have shown that pharmacists and pharmacy staff may feel uncomfortable providing weight management advice to their consumers due to their lack of training [19, 21, 22, 44]. Increased pharmacy-specific training and education in weight management strategies has been highlighted as an important strategy to improve pharmacy involvement in weight management [19, 21].

Overall, women in Victoria and Nottingham had similar ideas on what they wanted in their ideal weight management program. Although women in Nottingham were significantly less likely to want a health care professional involved in their program compared to the women in Victoria, the majority of the women wanted advice to be received face-to-face, involve a

multidisciplinary health care team with doctors, dietitians, pharmacists and exercise consultants, and for the program to be available at a convenient location. In addition, the results from this study have shown that future weight management educational resources developed for women pharmacy consumers in Australia or England have the potential to be used in either country.

This study only surveyed women pharmacy consumers and thus one of its limitations includes the potential bias towards pharmacy involvement in weight management. A further limitation of this study is that the questionnaires relied on participants remembering information regarding their last weight loss attempt and thus recall bias may be present. The results are, however, similar to other studies that have surveyed the general population regarding previous weight loss experiences [33, 45, 46].

Conclusion

This study highlighted the potential for future weight management educational resources developed for women pharmacy consumers in Australia or England to be used interchangeably. Although differences were seen between the two populations, similarities between ideal weight management programs and comfort level with pharmacist interaction were noted. Future educational resources for both populations should focus on evidence-based weight management approaches, weight loss goals, weight loss duration and benefits of weight loss. Results from this study have provided information on possible ideal pharmacy weight management programs in both Victoria and Nottingham, which, when developed and implemented, will specifically target the needs of women pharmacy consumers.

Declarations

Competing interests

The author(s) declare that they have no competing interests

Authors' contribution

SH was responsible for the design of the study in collaboration with JM, CA and HB. SF designed the questionnaire and was responsible for recruitment, analysis of the data and drafting of the manuscript. SH, JM, CA and HB supervised the data-collection and assisted with data analysis. All authors reviewed and revised the draft manuscript. All the authors read and approved the final manuscript.

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PHASE TWO

EXPLORING PHARMACY WEIGHT MANAGEMENT SERVICES ACROSS AUSTRALIAN COMMUNITY PHARMACIES

Introduction to Phase 2: Exploring pharmacy weight management services across Australian community pharmacies

The need to explore weight management services in community pharmacies across Australia was highlighted in Chapter 2. Phase 2 was therefore designed to explore general weight management services provided to consumers by pharmacists and pharmacy assistants across Australia by utilising a mailed questionnaire.

The objectives of this study were to:

- determine the current weight management services provided by Australian community pharmacies;
- determine the knowledge and practices of Australian pharmacists and pharmacy assistants concerning weight loss programs and products; and
- determine future training areas needed to assist pharmacists and pharmacy assistants in weight management.

A manuscript describing this work has been accepted for publication in the Australian Journal of Primary Health and is presented as Chapter 6.

Chapter 6 - Accepted manuscript:

Fakih S, Hussainy SY, Marriott JL. A national mailed-survey exploring weight management services across Australian community pharmacies. Australian Journal of Primary Health; 2014 (accepted 3rd January 2014)

Note: This work was approved by the Monash University Human Research Ethics Committee (Appendix 4). Copies of the questionnaires and explanatory statements are provided in Appendix 5 (Pharmacists) and Appendix 6 (Pharmacy assistants).

CHAPTER 6

A NATIONAL MAILED-SURVEY EXPLORING WEIGHT MANAGEMENT SERVICES ACROSS AUSTRALIAN COMMUNITY PHARMACIES

6.1 Declaration for Thesis Chapter 6

Declaration by candidate

In the case of Chapter 6, the nature and extent of my contribution to the work was the following:

Nature of contribution	Extent of contribution (%)
Reviewed literature; designed methods; coordinated the ethics application; developed study materials; undertook data collection; performed data analysis; and prepared manuscript	80%

The following co-authors contributed to the work:

Name	Nature of contribution
Dr Safeera Hussainy	Designed methodology; reviewed ethics application, study materials, data analysis and manuscript.
A/Prof Jennifer Marriott	Designed methodology; reviewed ethics application, study materials, data analysis and manuscript.

Candidate's Signature		**Date**

Declaration by co-authors

The undersigned hereby certify that:

1. the above declaration correctly reflects the nature and extent of the candidate's contribution to this work, and the nature of the contribution of each of the co-authors.
2. they meet the criteria for authorship in that they have participated in the conception, execution, or interpretation, of at least that part of the publication in their field of expertise;
3. they take public responsibility for their part of the publication, except for the responsible author who accepts overall responsibility for the publication;
4. there are no other authors of the publication according to these criteria;
5. potential conflicts of interest have been disclosed to (a) granting bodies, (b) the editor or publisher of journals or other publications, and (c) the head of the responsible academic unit; and
6. the original data are stored at the following location(s) and will be held for at least five years from the date indicated below:

Location	**Centre for Medicine Use and Safety, Faculty of Pharmacy and Pharmaceutical Sciences, Monash University, Parkville, Victoria 3052**

		Date
Dr Safeera Hussainy		
A/Prof Jennifer Marriott		

6.2 Research article

Title

A national mailed-survey exploring weight management services across Australian community pharmacies.

Abstract

This study investigated pharmacists and pharmacy assistants' current weight management recommendations to consumers across Australian community pharmacies using a mailed questionnaire. Two questionnaires were developed, one for pharmacists and one for pharmacy assistants, each divided into five sections. One pharmacist and pharmacy assistant questionnaire were mailed in November 2011 to a systematic sample of 3000 pharmacies across Australia for one pharmacist and pharmacy assistant each to complete. A total of 537 pharmacist and 403 pharmacy assistant responses, from 880 different pharmacies were received. Overall 94.5% (n=832/880) of associated pharmacies stocked weight loss products and 48.2% (n=424/880) offered a weight management program. Both pharmacists and pharmacy assistants felt that the development of pharmacy-specific educational resources and additional training would help improve their ability to provide weight management services. Australian pharmacists and pharmacy assistants currently appear to be providing weight management services to consumers, however, not all of their recommendations are evidence-based. The need for additional training for pharmacy staff in areas identified as lacking and the development of pharmacy weight management educational resources needs to be addressed.

Key words:

Pharmacy, Pharmacists, Pharmacists' Aides, Australia, Weight reduction programs

Summary statement

What is known about the topic?

Community pharmacies have become increasingly involved in providing health promotion and primary care services to consumers, especially as the overweight and obese population increases. More specifically there has been a recent growth in pharmacy involvement in providing weight management services to Australian consumers.

What does this paper add?

Australian pharmacies are providing weight management services to consumers in various ways, not all evidence-based. Increased training and development of educational resources is therefore a necessity if pharmacies are to be promoted as weight management service providers.

Introduction

In developed, high income countries such as Australia, overweight and obesity are considered to be the third preventable risk factor for non-communicable diseases, preceded by smoking and high blood pressure (Lopez et al., 2006). Currently in Australia, 42 per cent of males and 35 per cent of females are overweight and 28 per cent of both males and females are obese (Australian Bureau of Statistics, 2012). The prevalence of overweight and obesity in Australia continues to increase, with a recent study estimating that by 2025, over 80 per cent of males and 75 per cent of females aged 20 and over will be overweight or obese (Haby et al., 2012). Colagiuri *et al.* estimated that the annual total direct costs of overweight and obesity in Australia in 2005 was $21 billion and the total direct and indirect costs of overweight and obesity could have been as high as $56.6 billion (Colagiuri et al., 2010).

Due to the increased health risks overweight and obesity pose and their increased prevalence in Australia, obesity was made an Australian National Health Priority Area in 2008 (AIHW, 2008). Furthermore, in 2008 the Australian Government formed the National Preventative Health Taskforce to recommend key actions to help stop and reverse the prevalence of overweight and obesity in Australia. Recommendations to help make Australia "the healthiest county by 2020" were outlined in the "Obesity in Australia: a need for urgent action" report. The need to support and train primary health care providers, so that they can inform consumers to make healthier decisions, was seen as a key priority to help prevent and treat overweight and obesity (National Preventative Health Taskforce, 2008).

All weight management guidelines currently recommend diet, exercise and behavioural modification therapy to be considered first line in the prevention and treatment of overweight and obesity (National Health and Medical Research Council, 2013; Scottish Intercollegiate Guidelines Network, February 2010; Ministry of Health, 2009). The National Health and Medical Research Council (NHMRC) weight management guidelines for health care professionals have recently been updated and released (National Health and Medical Research Council, 2013). The purpose of these guidelines is to offer primary health care professionals with evidence-based weight management recommendations for the assessment and management of overweight and obesity in adults, adolescents and children. The 2013 NHMRC guidelines recommend health care professionals calculate a person's body mass index (BMI) to determine treatment options. The guidelines also include an overweight and obesity management model for adults based on BMI. It should be noted that pharmacists are not mentioned in the NHMRC guidelines, even though they have previously been identified as important primary health care providers to help prevent and treat overweight and obesity in Australia through education, health promotion and the

supply of evidence-based medications and non-pharmacological advice (Bereznicki and Peterson, 2008).

Australia has seen an increase in the number of weight management products and programs being offered in community pharmacies. Currently, information about the number, type and location of community pharmacies offering weight management services is lacking. In addition, a large number of these weight management products and/or programs are available over-the-counter in self-selection areas, and are sold by pharmacy staff members (pharmacy assistants, pharmacy technicians), without pharmacist intervention. In Australia, pharmacy assistants do not need to complete a formal training program to sell over-the-counter products and thus training and experience varies widely.

Nutrition training amongst pharmacists also varies. Little is known about what nutritional training is provided to practising pharmacists and pharmacy students. A South Australian university research team identified gaps in nutrition knowledge amongst practicing pharmacists (Pearce and Cross, 2013). In an Australian study using semi-structured interviews with 20 pharmacists, participants expressed the need for additional training in areas of nutrition and physical activity (Um et al., 2010). Um *et al.* found that pharmacists were happy to provide weight management services for consumers if they had sufficient training in an accredited program that offered up-to-date evidence-based information on products and programs, and contained information regarding suitable weight management recommendations (Um et al., 2010).

Although studies of this type have been conducted overseas, no study has previously investigated weight management recommendations made by pharmacists and pharmacy assistants in Australia (Bradley, 2009; Newlands et al., 2011; Awad and Waheedi, 2012; Dastani et al., 2004). The aims of this study were therefore to:

- determine the current weight management services provided by Australian community pharmacies;
- determine the knowledge, and practices of Australian *pharmacy staff (pharmacists and pharmacy assistants*[1]*)* towards weight loss programs and products and;
- gain an insight into pharmacy assistants' and pharmacists' current weight management recommendations, to help determine whether pharmacists and pharmacy assistants use recommendations outlined in the NHMRC weight loss guidelines for adults (National Health and Medical Research Council, 2003) and, if not, what recommendations they make.

Methods

Development of the survey questionnaire

The questionnaires used in this study were based on questionnaires used by Bradley (Bradley, 2009) and Newlands (Newlands et al., 2011), and refined to reflect Australian practice. Two questionnaires were developed - one for pharmacists and one for pharmacy assistants. Section A asked questions regarding the respondent's demographic characteristics, section B asked questions regarding weight management services provided at the pharmacy, section C focussed on current weight management recommendations provided by the respondent, section D focussed on future training areas and further support required, and section E contained one of five case vignettes that explored specific recommendations around common weight management scenarios. This paper reports the results from sections A to D.

[1] Pharmacy assistants in this study refer to all non-pharmacist staff members that are employed in a pharmacy and work behind the medicines counter. This includes general pharmacy assistants and pharmacy technicians.

The questionnaire was piloted for face and content validity by academics, pharmacists and pharmacy assistants. Changes were made based on their feedback to produce the final questionnaires (see Appendix 5 and 6).

Sample size and randomisation

To ensure that the sample proportion was within 0.05 of the population proportion with a level of 95% confidence, it was calculated that for each pharmacist and pharmacy assistant questionnaire, 357 questionnaires needed to be returned (Krejcie and Morgan, 1970). Of the 5000 pharmacies located in Australia, 3000 were randomly selected. Pharmacies were chosen at random from each State and Territory from the pharmacy premises list, which was obtained from the pharmacy premises regulatory authorities. A proportional number of pharmacies were chosen from each State and Territory i.e. 60 per cent of pharmacies from each State and Territory in Australia were randomly selected. Randomisation was performed using Microsoft Excel 2010. Each pharmacy was sent two questionnaires - one pharmacist questionnaire and one pharmacy assistant questionnaire - to complete and return.

Survey administration

The data were collected using an anonymous mailed questionnaire during November 2011. The Dilmann protocol was used for questionnaire distribution (Dillman, 1991).

Data analysis

Data were analysed using SPSS version 19.0 and summarised using descriptive statistics. Pearson's chi -squared test was used to determine any significant relationships between two categorical variables. The significance level was set at $P < 0.05$.

The study was approved by the Monash University Human Research Ethics Committee.

Results

The overall response rate was 18% (537/2972) for *pharmacists* and 13.5% (403/2972) for *pharmacy assistants*, exceeding the minimum sample size. There were responses from 880 pharmacies across Australia, giving a response rate for pharmacies of 30% (880/2972).

Respondent characteristics

Respondent characteristics are shown in Table 1. Of the 880 different pharmacies, 41.7% (367/880) were part of a buying group and 58.3% (513/880) were operated independently. The majority of the pharmacies (78.9%; 694/880) were classed as highly accessible based on the Pharmacy Access/Remoteness Index of Australia (Australian Population and Migration Research Centre).

Table 1: Pharmacist and pharmacy assistants' characteristics

Respondent characteristics	Pharmacists N= 537 % (n)	Respondent characteristics	Pharmacy assistants N= 403 % (n)
State/Territory		***State/Territory***	
New South Wales	29.4 (158)	New South Wales	28.5 (115)
Victoria	28.1 (151)	Victoria	26.6 (107)
Queensland	16.0 (86)	Queensland	17.6 (71)
Western Australia	11.4 (61)	Western Australia	11.4 (46)
South Australia	8.4 (45)	South Australia	7.9 (32)
Tasmania	4.1 (22)	Tasmania	4.7 (19)
Northern Territory	0.4 (2)	Northern Territory	0.5 (2)
Australian Capital Territory	2.2 (12)	Australian Capital Territory	2.7 (11)
Location of pharmacy based on PhARIA index[a]		***Location of pharmacy based on PhARIA index[a]***	
Highly accessible	76.2 (409)	Highly accessible	80.4 (324)
Accessible	12.7 (68)	Accessible	10.9 (44)

Respondent characteristics	Pharmacists N= 537 % (n)	Respondent characteristics	Pharmacy assistants N= 403 % (n)
Location of pharmacy based on PhARIA index[a]		***Location of pharmacy based on PhARIA index[a]***	
Moderately accessible	3.5 (19)	Moderately accessible	3.5 (14)
Remote and very remote	7.6 (41)	Remote and very remote	5.2 (21)
Pharmacy type		***Pharmacy type***	
Part of a group	40.2 (216)	Part of a group	43.4 (175)
Privately owned	59.8 (321)	Privately owned	56.6 (228)
Age		***Age***	
20-24	10.8 (58)	15-19	5.7 (23)
25-30	34.8 (187)	20-24	27.5 (111)
31-40	18.4 (99)	25-29	13.9 (56)
41-50	16.6 (89)	30-39	15.1 (61)
51-60	14.5 (78)	40-49	17.9 (72)
Over 60	4.8 (26)	Over 50	19.9 (80)
Sex		***Sex***	
Male	47.1 (253)	Male	4.2 (17)
Female	52.9 (284)	Female	95.7 (386)
Main role		**Main role**	
Pharmacy owner	36.3 (195)	Weight loss consultant	14.4 (58)
Pharmacy manager	27.9 (150)	Vitamin consultant	3 (12)
Employee pharmacist	35.8 (192)	Retail manager	16.9 (68)
		Dispensary technician	20.1 (81)
		General pharmacy assistant	45.6 (184)
Previous training in weight management		***Previous training in weight management***	
Yes	76.4 (410)	Yes	74.9 (302)
University	27.9 (150)	Pharmacist(s)	15.6 (63)

Respondent characteristics	Pharmacists N= 537 % (n)	Respondent characteristics	Pharmacy assistants N= 403 % (n)
Previous training in weight management		***Previous training in weight management***	
Pharmaceutical industry e.g. drug company	45.1 (242)	Pharmacy magazines e.g. Contact ®	65.3 (263)
Professional organisations e.g. The Pharmaceutical Society of Australia	35.6 (191)	Professional organisations e.g. The Pharmaceutical Society of Australia	47.6 (192)
[a]PhARIA index 2 (accessible A) and 3 (accessible B) have been collapsed into one variable called "accessible". PhARIA categories 5 (remote) and 6 (very remote) have been similarly collapsed into "remote and very remote".			

Pharmacy services provided

The majority of pharmacists (96%; 515/537) and pharmacy assistants (88.1%; 355/403) believed pharmacies have a role in the management of overweight and obesity in Australia.

Just over 40% (356/880) of pharmacies provided all weight management pharmacy services including providing literature on healthy eating and exercise (79%; 695/880), displaying posters for weight loss products/programs (70.6%; 621/880), stocking weight loss products (94.5%; 832/880) and providing a pharmacy weight management program (48.2%; 424/880).

There were no significant differences between the types of weight management services provided in Australian States and Territories. This was also true for location of pharmacy, with no significant differences found between the different PhARIA categories and services provided.

Weight loss products in pharmacies were sold behind-the-counter (35.7%; 314/880), in self-selection areas (61.4%; 540/880), both behind-the-counter and via self-selection (28.5%;

251/880) or in weight management consulting booths e.g. Tony Ferguson® Weight Loss Booth (2.9%; 26/880).

Just under 50% (424/880) of pharmacies provided a weight management program. A significantly (P = 0.02) higher number of group pharmacies (52.7%; 193/366) offered a weight management program compared to privately owned pharmacies (44.8%; 230/513) The reasons for pharmacies not offering a pharmacy weight management program included: time (35.3%; 161/456); cost (22.8%; 104/456); lack of staff knowledge (22.6%; 103/456); lack of public interest (44.1%; 201/456); lack of space (7%; 32/456); and other reasons such as the pharmacy group not offering the service (16%; 73/456). Of the pharmacies that offered a weight management program, the majority found the programs to be successful in providing overweight/obesity treatment in a pharmacy setting (81.8%; 347/424).

Women were reported to be the main consumer group for weight loss products/programs in over 60% of pharmacies (535/880), with both men and women being considered the main consumer group in 39% of pharmacies (344/880).

Across Australia, only 25.7% of pharmacies (226/880) were referring to any guideline(s) when offering weight management advice, with most pharmacies relying on their pharmacy weight management program guideline for information e.g. Kate Morgan's weight loss guide (44.2%; 100/226) or the Australian Pharmaceutical Handbook (APF) Weight Management Guide and/or PSA provision of orlistat (which can also be found in the APF) (25.2%; 57/226).

Figure 1 shows the weight management classifications pharmacists and pharmacy assistants are currently using to determine if someone needs to lose weight. Compared to pharmacists, pharmacy assistants were significantly more likely to use no measure when classifying a customer's weight (P < 0.001). Pharmacists were significantly (P < 0.001) more

likely to use body mass index (BMI) in combination with waist circumference (WC) when classifying a customer's weight. Pharmacists were also significantly more likely to identify the correct BMI equation compared to pharmacy assistants (P < 0.001).

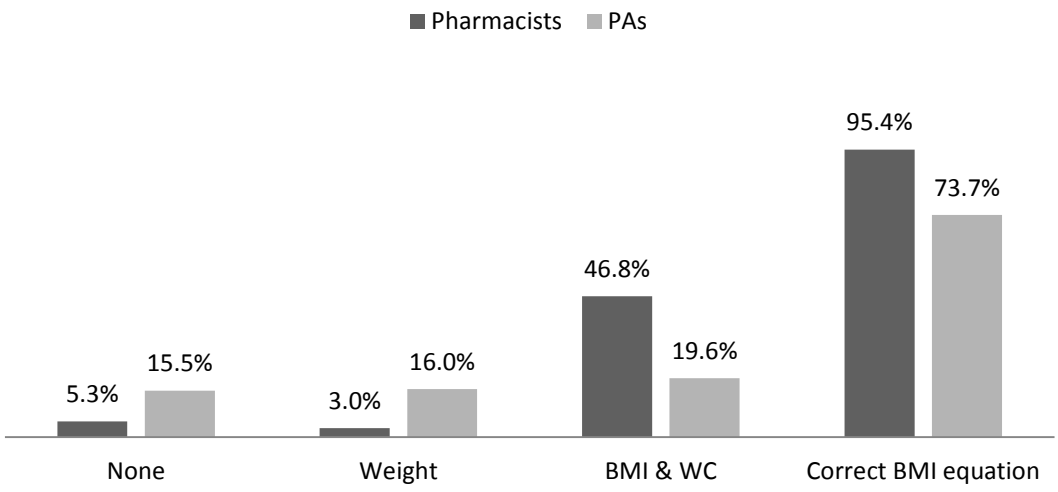

Figure 1: Weight management classifications used by pharmacists and pharmacy assistants to classify a customer's weight

Note: PAs= pharmacy assistants

Current weight management recommendations by pharmacists and pharmacy assistants

The majority of pharmacists (61.6%; 331/537) and pharmacy assistants (64.7%; 261/403) reportedly felt comfortable approaching a customer to discuss weight loss. On average, pharmacists were spending significantly less time during a weight loss consultation with a customer compared to pharmacy assistants, with 87.3% (469/537) of pharmacists stating they would spend under 15 minutes during a consultation compared to 64.5% (260/403) of pharmacy assistants (P < 0.001). Many pharmacists (61.7%; 331/537) and pharmacy assistants (65.5%; 264/403) stated they would take their customers to a private consultation area when discussing weight management. The reasons for not taking the customer into a private consultation area included lack of space and also the perceived

ease of counselling customers on weight management products in front of the weight loss section of the pharmacy.

Table 2 outlines history-taking and recommendations that pharmacists and pharmacy assistants would make following a customer's request about weight loss.

Table 2: History-taking and recommendations made by pharmacists compared to pharmacy assistants following a customer's request about weight loss.

	Pharmacists N= 537 % (n)	Pharmacy assistants N= 403 % (n)	P-value
History-taking questions when a customer asks about weight loss			
Reasons for wanting to lose weight	56.1 (301)	57.3 (231)	0.704
Amount of weight wanting to lose	49.3 (265)	67.2 (271)	<0.001
Previous weight loss attempts	82.8 (445)	86.6 (349)	0.113
Dietary habits	92.1 (495)	86.9 (350)	0.008
Exercise habits	92.9 (499)	86.9 (350)	0.002
Existing medical conditions	89.4 (480)	88.1 (355)	0.561
Current medications	89.9 (483)	91.4 (368)	0.437
Check their weight and/or BMI	55.5 (298)	52.4 (211)	0.326
Other e.g. what products have they tried	9.3 (50)	9.7 (39)	0.796
Weight loss recommendations to customers requesting a product for weight loss			
Recommend a product:	68.2 (366)	73.4 (296)	0.704
Orlistat[a]	39.5 (212)	N/A**	N/A**
Vitamin/herbal product	24.4 (131)	39.0 (157)	<0.001
Meal replacement product (MRP)	84.7 (455)	83.6 (337)	0.611
Not recommend a product	18.6 (100)	16.9 (68)	0.467
Advice on healthy eating	95 (510)	78.7 (317)	<0.001
Advice on increased exercise	73.6 (395)	53.3 (215)	<0.001
Refer to the doctor/pharmacist	37.6 (202)	51.4 (207)	<0.001
Refer to support networks	41.3 (222)	43.2 (174)	0.606
Offer leaflet on weight loss products/advice	59.2 (318)	62 (250)	0.390

[a]Orlistat is a pharmacist only product (available over the counter with pharmacist intervention) in Australia and cannot be recommended by pharmacy assistants.

Pharmacists stated that when counselling customers on medications to treat overweight and obesity related conditions such as hypertension, hyperlipidaemia, type 2 diabetes etc. they would counsel on weight loss/maintenance: never (1.7%; 9/537); only when asked by the customer (17.5%; 94/537); sometimes (48.6%; 261/237); most of the time (26.6; 143/537); always (4.1%; 22/537); or they were unsure (1.5%; 8/537).

Additional training and support required

The main training areas both pharmacists and pharmacy assistants require and preferred distribution methods for educational resources are highlighted in Table 3. The differences between the two groups of participants have also been presented. The majority of both pharmacists (91.6%; 492/537) and pharmacy assistants (95.5%; 385/403) stated they required further training in at least one factor involved in weight management counselling. Pharmacists (80.4%; 432/537) were significantly more likely to state that pharmacy-specific weight management guidelines, information and educational resources would improve their ability to assist in the prevention and treatment of overweight and obesity compared to pharmacy assistants (72.2%; 291/403) (P = 0.004).

Table 3: The factors, training areas and delivery of educational resources that pharmacists feel will improve their ability to assist customers in weight management compared to pharmacy assistants.

	Pharmacists N= 537 % (n)	Pharmacy assistants N= 403 % (n)	P-value
Factors that will improve the ability of the pharmacy to help manage overweight and obesity in Australia			
Extra staff to provide appropriate counselling, advice and support to customers	45 (242)	39.2 (158)	0.083
Pharmacy-specific weight management guidelines, information and educational resources	80.4 (432)	72.2 (291)	0.004
Private counselling areas in pharmacies	50.5 (271)	45.9 (185)	0.157
Evidence- based weight management clinics	56.6 (304)	42.9 (173)	<0.001
Healthy eating and exercise campaigns	69.3 (372)	69.5 (280)	0.984
Further training for pharmacists	67 (360)	35 (141)	<0.001
Further training for pharmacy staff	65.9 (354)	85.6 (345)	<0.001
Payment for services	66.7 (358)	28.3 (114)	<0.001
Further training areas required to assist customers in weight management			
No training required	8.4 (45)	4.5 (18)	0.017
Measurement of weight	20.7 (111)	28.6 (115)	0.006
Measurement of height	12.5 (67)	20.3 (82)	0.004
Measurement of waist circumference	25.9 (139)	30.5 (123)	0.116
Calculation of BMI	25.5 (137)	44.4 (179)	<0.001
Measurement of blood pressure	20.9 (112)	27 (109)	0.033
Measurement of blood glucose	25.5 (137)	31 (125)	0.074
Estimation of body fat	45.4 (244)	41.7 (168)	0.238
Measurement of blood cholesterol	30 (161)	36.0 (145)	0.05
Advice on healthy eating	62.8 (337)	66.3 (267)	0.281
Advice on physical activity	55.9 (300)	58.3 (235)	0.437
Advice on weight loss products	53.6 (288)	62 (250)	0.012
Advice on weight loss drugs	39 (209)	45.7 (184)	0.042
Advice on appropriate counselling skills	57.4 (308)	66 (266)	0.009

	Pharmacists N= 537 % (n)	Pharmacy assistants N= 403 % (n)	P-value
Appropriate distribution methods of weight management educational resources for pharmacy staff			
In a booklet	52.3 (281)	64 (258)	0.001
In a pamphlet	34.8 (187)	33.5 (135)	0.693
Online (webpage)	65.2 (350)	66 (266)	0.816
On a CD	18.4 (99)	20.1 (81)	0.503
On a USB	17 (91)	12.9 (52)	0.09
In a monthly newsletter/magazine	30.2 (162)	51.1 (206)	<0.001
Other e.g. face-to-face training	4.8 (26)	6.7 (27)	0.253

Discussion

This is the first study to explore weight management services provided by community pharmacies across Australia and to identify their weight management recommendations and training requirements.

Findings indicate that weight management services are being provided by a large number of community pharmacies, with over 90 per cent of respondent Australian pharmacies stocking weight loss products and just under 50 per cent providing a pharmacy weight management program. Although these results are much higher than previously reported (Berbatis et al., 2003; Rieck and Hughes, 2008), they are not surprising considering the increase in pharmacy weight management programs and products being released and advertised in community pharmacies across Australia since previous studies.

Women were reported to be the main consumer group for weight loss products and programs in the majority of pharmacies in line with recent reports showing the women spend the most on weight loss products and services across Australia (IBISWorld, 2011).

Pharmacists and pharmacy assistants in Australia have also been shown to come into contact with women in the perinatal period more often than any other primary health care provider (Hughes et al., 2011). This places pharmacies in a special position to be able to deliver evidence-based weight management interventions to women pharmacy consumers. Pharmacy stakeholders should therefore consider women and their needs when developing pharmacy weight management programs and services. Furthermore, the results from this study highlight that future advertising or development of pharmacy weight management services should also target males who may not be aware of the community pharmacies role in weight management.

Similar to other studies, pharmacists in this study reported they would counsel on dietary and exercise approaches when counselling a customer on a weight loss product/program (Bradley, 2009; Newlands et al., 2011; Awad and Waheedi, 2012) in line with NHMRC recommendations (National Health and Medical Research Council, 2003). Pharmacists were less likely to recommend a vitamin/herbal product than pharmacy assistants and were more likely to identify a patient's weight category using BMI and WC. These results indicate that the majority of pharmacists appear to be providing weight management recommendations in line with the NHMRC guidelines (National Health and Medical Research Council, 2003). However, as indicated by the pharmacists themselves, further training in appropriate dietary advice, exercise advice, counselling skills and product information (appropriate use of over-the-counter products; herbal medications, detox programs, meal replacement products etc.) needs to be introduced so that pharmacists can better support consumers to manage their weight.

Compared to pharmacists, pharmacy assistants were less likely to recommend advice according to the NHMRC guidelines (National Health and Medical Research Council, 2003). This is understandable, as pharmacy assistants do not undergo any formal training in

weight management, with most pharmacy assistants receiving information from pharmacy magazines that advertise new over-the-counter products. Pharmacy assistants were significantly more likely ($P < 0.001$) than pharmacists to recommend a vitamin/herbal product to their customers. This could be due to the majority of vitamin/herbal products sold in Australia being over-the-counter formulations stocked in self-selection areas of the pharmacy where pharmacy assistants mainly work. These products are not always appropriate, and have very little evidence for efficacy in weight management, with experts suggesting that they should not be sold in pharmacies for this purpose (Hackett and Krska, 2012). If over-the-counter weight loss products continue to be sold in pharmacies, further training needs to be provided not only to pharmacists, but to pharmacy assistants who are more likely to sell these types of products.

Very few pharmacies across Australia were found to be relying on weight management guidelines and/or resources when providing weight management counselling, with the majority utilising their own pharmacy weight management program resources. Respondents indicated their need for an evidence-based weight management educational resource to be developed. However, before any resource is created, current material needs to be promoted so that pharmacists are more aware of existing material that is available to them. The new NHMRC guidelines recommend health care professionals to utilise the 5A's counselling framework to help them manage overweight and obesity (National Health and Medical Research Council, 2013). This framework has previously been used by pharmacists in smoking cessation and increasing adherence of cholesterol lowering medications, and could be used to assist pharmacy staff counsel on overweight and obesity interventions (Nimpitakpong et al., 2010; Ma et al., 2010).

Increased knowledge and skills and involvement of pharmacy staff in the management of overweight and obesity in primary care is essential to help prevent and treat overweight

and obesity. Pharmacy staff can use opportunities when counselling on medications to treat obesity-related conditions to offer healthy lifestyle information. By being able to target a wide-range of consumers, including healthy and non-healthy individuals, consumers in varying socioeconomic groups, different locations and with different health literacy skills pharmacy staff will be able to deliver key messages regarding nutrition, physical activity and other healthy behavioural change activities such as portion control, keeping a food diary etc. to communities at large. Further research needs to be conducted to investigate how increased training and development and implementation of pharmacy-specific weight management educational resources can be used to increase the public's awareness of healthy lifestyle behaviours.

Recent pharmacist surveys have shown response rates of 18 to 25 per cent (Richman et al., 2012; René-Henri et al., 2009; McIntosh et al., 2012; Cochran et al., 2013; de Ponti et al., 2013). The response rate in this study could be attributed to the time of year the questionnaires were distributed (November to December is the busiest time for pharmacies in Australia due to the end of year claims and holiday season) and also because pharmacists have become an over surveyed population group in Australia. The sample size calculated for this study was reached due to the selection of a large random sample of pharmacies across Australia. In addition, the recommendations made by pharmacists and pharmacy assistants were assessed based on the guidelines available at the time of the study i.e. The 2003 NHMRC Clinical Practice Guidelines for the Management of Overweight and Obesity in Adults (National Health and Medical Research Council, 2003). Both the 2003 and the recently released 2013 NHMRC guidelines recommend combination approaches of diet, exercise and behavioural modification as first line management (National Health and Medical Research Council, 2003; National Health and Medical Research Council, 2013).

Declarations

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Conflict of interest

The author(s) declare(s) that they have no conflicts interest to disclose.

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PHASE THREE

EXPLORING PHARMACISTS' AND PHARMACY ASSISTANTS' WEIGHT MANAGEMENT RECOMMENDATIONS TO WOMEN PHARMACY CONSUMERS

Introduction to Phase 3: Exploring pharmacists' and pharmacy assistants' weight management recommendations to women pharmacy consumers

The importance of pharmacists and pharmacy assistants being able to provide evidence-based weight management advice to women pharmacy consumers was identified in Chapters 2, 3, 4 and 5. Little is known about what weight management recommendations pharmacists and pharmacy assistants provide to their women pharmacy consumers. Phase 3 was therefore designed to explore specific weight management recommendations given to women pharmacy consumers by pharmacists and pharmacy assistants.

Five different case vignettes that each relate to a specific women's health issue were used to elicit information on the recommendations made by pharmacists and pharmacy assistants across Australia. Sixty mystery shopper visits, using two case vignettes, were then conducted in thirty pharmacies across Victoria to further explore recommendations in a real-life setting. Mystery shopper visits were also used to validate the findings of the case vignettes. Prior to conducting the mystery shopper visits it was important to design a tool (post-visit analytical checklist) to objectively determine the success of each pharmacy consultation. The methods used to develop the post-visit analytical checklists for the mystery shopper visits are outlined in Chapter 8.

The objectives of this phase were to:

- identify pharmacists and pharmacy assistants' current weight management recommendations to women of different ages, different life stages and different co-morbidities;

- identify areas that pharmacists and pharmacy assistants require additional training in; and
- validate the findings of the case vignette study by using mystery shoppers.

Chapter 7 describes the results from the case vignettes. Chapter 8 defines the methodology used to determine a minimally successful weight management consultation (the main outcome measure used in the mystery shopper visits). Finally, Chapter 9 presents the results from the mystery shopper visits.

Three manuscripts have been produced:

1. A manuscript describing the results of the case vignettes has been submitted and is under review in Health Education Research. This manuscript is presented as Chapter 7.
2. A manuscript describing the methodology used to determine a minimally successful pharmacy consultation based on the Angoff method has been submitted and is under review in Research for Social and Administrative Pharmacy. This manuscript is presented as Chapter 8.
3. A manuscript highlighting the results from the mystery shopper study has been submitted to the International Journal of Clinical Pharmacy and is presented as Chapter 9.

Chapter 7 - Submitted manuscript:

Fakih S, Marriott JL, Hussainy SY. Exploring Weight Management Recommendations for Women in Australian Community Pharmacies- A Case Vignette Study. Health Education Research (Submitted, September 2013)

Chapter 8 - Submitted manuscript:

Fakih S, Marriott JL, Hussainy SY. Applying a standard setting approach used in objective structured clinical examinations to assess performance levels of pharmacy staff using simulated patient methodology. Research in Social and Administrative Pharmacy (Submitted October 2013)

Chapter 9 - Submitted manuscript:

Fakih S, Marriott JL, Hussainy SY. Advice on weight management: are pharmacy staff getting it right? Results from a mystery shopper study. International Journal of Clinical Pharmacy (Submitted November 2013)

Note: This work was approved by the Monash University Human Research Ethics Committee (Appendix 4 and Appendix 7). The case vignettes were included in the questionnaires used in Phase 2. Copies of the questionnaires and explanatory statements are provided as Appendix 5 (Pharmacists) and Appendix 6 (Pharmacy assistants). The pharmacy recruitment letter, mystery shopper data collection form and complete mystery shopper scenarios are provided as Appendix 8.

CHAPTER 7

EXPLORING WEIGHT MANAGEMENT RECOMMENDATIONS ACROSS AUSTRALIAN COMMUNITY PHARMACIES USING CASE VIGNETTES

7.1 Declaration for Thesis Chapter 7

Declaration by candidate

In the case of Chapter 7, the nature and extent of my contribution to the work was the following:

Nature of contribution	Extent of contribution (%)
Reviewed literature; designed methods; coordinated the ethics application; developed study materials; undertook data collection; performed data analysis; and prepared manuscript	80%

The following co-authors contributed to the work:

Name	Nature of contribution
Dr Safeera Hussainy	Designed methodology; reviewed ethics application, study materials, data analysis and manuscript.
A/Prof Jennifer Marriott	Designed methodology; reviewed ethics application, study materials, data analysis and manuscript.

Candidate's Signature		**Date**

Declaration by co-authors

The undersigned hereby certify that:

1. the above declaration correctly reflects the nature and extent of the candidate's contribution to this work, and the nature of the contribution of each of the co-authors.
2. they meet the criteria for authorship in that they have participated in the conception, execution, or interpretation, of at least that part of the publication in their field of expertise;
3. they take public responsibility for their part of the publication, except for the responsible author who accepts overall responsibility for the publication;
4. there are no other authors of the publication according to these criteria;
5. potential conflicts of interest have been disclosed to (a) granting bodies, (b) the editor or publisher of journals or other publications, and (c) the head of the responsible academic unit; and
6. the original data are stored at the following location(s) and will be held for at least five years from the date indicated below:

Location	**Centre for Medicine Use and Safety, Faculty of Pharmacy and Pharmaceutical Sciences, Monash University, Parkville, Victoria 3052**

		Date
Dr Safeera Hussainy		
A/Prof Jennifer Marriott		

7.2 Research article

Title:

Exploring weight management recommendations across Australian community pharmacies using case vignettes

Abstract:

With the increase in the overweight and obese population it is critical that pharmacy staff are able to provide weight management advice to women at different stages of their life. This study utilised case vignettes to identify pharmacists' and pharmacy assistants' current weight management recommendations to women of different ages, life stages and co-morbidities. A total of 537 pharmacist and 403 pharmacy assistant responses were received. In the case of the pre-pregnancy vignette only 57% (46/80) of pharmacy assistants were able to correctly identify a woman's weight category based on her body mass index, which was significantly fewer than 80% (86/108) of pharmacists ($P < 0.001$). In the pregnancy vignette both pharmacists and pharmacy assistants were able to identify the risks of using a herbal weight loss medication in pregnancy. The need for a "multidisciplinary team approach" was seen in the menopause case vignette with pharmacists highlighting the need for the involvement of other health care professionals for successful weight loss outcomes. Australian pharmacists and pharmacy assistants are currently providing weight management services to their consumers, however, not all of their recommendations are evidence-based. There is a need for pharmacy weight management educational resources to be developed and implemented across community pharmacies.

Introduction

Overweight and obesity has been labelled a "global epidemic" and has been linked with significant health and economic consequences [1]. The prevalence of overweight and obesity continues to increase across Australia, with recent estimates suggesting that by 2025, 83 per cent of females and 75 per cent of males aged 20 years and over will either be overweight or obese [2]. The need for increased consumer education, access to evidence-based weight management practices and products with continued behavioural support have been noted and are vital in combating this epidemic [3].

In 2008, the Pharmaceutical Society of Australia (PSA), a national peak professional organisation for pharmacists, made a submission to Australia's Parliament on why they believe pharmacists are ideal health care professionals to help manage obesity [4]. This report illustrated that community pharmacists are accessible, trustworthy and well trained health care professionals. It stated that pharmacists are well equipped to identify high risk groups and provide advice on evidence-based weight management medications as well as non-pharmacological measures, such as diet and exercise [4].

Over the last decade the availability of obesity-related products and services in community pharmacies has increased significantly. In 2010 consumers spent over $700 million on weight loss products that are commonly found in pharmacies to assist with weight loss or maintenance including meal replacement products, herbal medications and detoxifying agents [5]. Although studies have shown the benefits of pharmacy-based weight management services in assisting weight loss [6], there have been recent reports suggesting that currently available pharmacy weight management programs are not evidence-based, include little training and are mainly focussed on a pharmacy's financial gain [7]. In addition, the sale of herbal and vitamin products advertised for weight management in community pharmacies has recently come under scrutiny [8]. Health care professional

guidelines, including the Australian National Health and Medicine Research Council Guidelines (NHMRC) for adults [9], do not recommend complementary products for weight management due to their lack of evidence and unknown safety profiles. It is for these reasons that it has been suggested that pharmacies not sell these products at all [8].

Orlistat, a lipase enzyme inhibitor marketed for the treatment of weight loss in consumers with a body mass index (BMI) greater than 30 kg/m^2 or in consumers with a BMI more than 27 kg/m^2 with comorbidities, is available in Australia as a pharmacist only[2] medication [10]. Orlistat is currently the only marketed weight loss medication with evidence for weight loss with long term safety [9,11]. Meal replacement products, such as Optifast®, which are widely available in pharmacies, also have evidence for weight loss in the short-term and are recommended for consumers with a BMI greater than 30 kg/m^2 [12]. These products are recommended with close medical and dietary supervision [13]. Treatment recommendations for weight loss vary greatly and are highly dependent on the individual needs of the consumer, however, for successful weight management outcomes to be achieved, all national weight management guidelines for health care professionals recommend a combination of reduced calorie intake, increased physical activity and behavioural modification techniques, alone or in association with any product and/or program [9,13,14].

A recent Australian study by Hughes *et al* investigating nutrition and physical activity guidance provided by primary health care professionals found that pharmacy staff come into contact with women in the pre-pregnancy, pregnancy and post-partum stages more often than any other primary health care professional, including general practitioners and nurses [15]. This study also found that pharmacy staff were significantly less likely to provide nutrition and physical activity advice to women in the antenatal or post-natal

[2] Pharmacist only medication- available over the counter in Australian community pharmacies with pharmacist intervention

period compared to general practitioners and nurses. Hughes *et al* highlighted the importance of developing continuing education strategies for primary health care providers, in particular pharmacy staff [15].

Currently, there is little information on what weight management recommendations are being made to pharmacy consumers by pharmacy staff (pharmacists and pharmacy assistants) in Australia. Given that the role of pharmacy in weight management is increasing [16], weight loss treatments are consumed by more women than men [5], and that there are some causes of overweight and obesity specific to women, such as polycystic ovary disease, hormonal changes, pregnancy and menopause, it is important that pharmacy staff provide evidence-based services that consider women's needs.

Thus, the objective of this study was to survey pharmacists and pharmacy assistants, using a mailed questionnaire with a series of case vignettes, to identify their current weight management recommendations to women of different ages, different life stages and different co-morbidities. The results from this study will ultimately be used to help develop educational resources for community pharmacy use.

Methods

Development of the survey questionnaire

No study had previously explored weight management recommendations made by pharmacists and pharmacy assistants using case vignettes. Two questionnaires were developed that contained one of five case vignettes that explored specific recommendations around common weight management scenarios - one for pharmacists and one for pharmacy assistants.

Development of case vignettes

Case vignettes, otherwise known as clinical scenarios, written case simulations or case studies are often used in survey research or teaching environments to gain information regarding the knowledge, real-life decision-making and practices of specific groups [17]. For case vignettes focussing on certain disease states and their management (diagnosis, treatment and evaluation), the answers to the questions are usually decided according to the most up-to-date evidence-based guidelines or current "best practice" [18]. The five case vignettes used in this study were developed by the authors and describe commonly seen weight management scenarios in community pharmacies. Each questionnaire had a unique case vignette that either focussed on a healthy weight woman wanting to lose weight, a woman wishing to become pregnant (pre-pregnancy), a pregnant woman, a post-partum woman, or a woman going through menopause. Pharmacists and pharmacy assistants were asked to answer questions regarding one of the five case vignettes. The scenarios were the same for both pharmacists and pharmacy assistants; pharmacists were asked more advanced questions in some of the case vignettes for e.g. amount of weight that should be gained in pregnancy in the pregnancy case vignette.

The first draft of the vignettes was piloted for face, content and ecological validity [19] by academics (n=2), pharmacists (n=4) and pharmacy assistants (n=4). Changes regarding formatting and wording of certain questions were made based on their feedback. The questionnaire was then piloted in two pharmacies with pharmacists (n=4) and pharmacy assistants (n=6). Any issues, mostly formatting and space given to open-ended questions, were then addressed and the final questionnaire was developed and printed (see Appendix 5 and 6).

Sample size and randomisation

To ensure that the sample proportion was within 0.05 of the population proportion with a level of 95% confidence, and by assuming a 30 to 50 per cent response rate [20,21], it was calculated that for each pharmacist and pharmacy assistant questionnaire, 357 questionnaires needed to be returned [22]. Thus, of the 5000 pharmacies located in Australia, 3000 were randomly selected i.e. each case vignette was mailed to 600 pharmacies across Australia. Pharmacies were chosen at random from each State and Territory from their pharmacy premises list, which was obtained from the pharmacy premises regulatory authorities. Sixty per cent of pharmacies were randomly selected from each State and Territory in Australia. Randomisation was performed using Microsoft Excel 2010. Each pharmacy received two questionnaires to complete and return; one pharmacist questionnaire and one pharmacy assistant questionnaire (each with a different case vignette).

Survey administration

The data were collected using an anonymous mailed questionnaire during November 2011. The Dilmann protocol was used for questionnaire distribution [23].

Data analysis

The “ideal answers” to each of the case vignettes were determined by the authors in association with a dietician and an exercise physiologist. Answers were based on recommendations made by the Australian NHMRC guidelines [9] as well as recent guidelines from Scotland and New Zealand [13,14]. To determine whether or not the answers to each case vignette provided a successful weight management outcome, a combination of reduced calorie intake and increased exercise needed to be recommended by the participants. This was described as “best-practice”.

Quantitative data were analysed using SPSS version 19.0 and summarised using descriptive statistics. Pearson's chi -squared test was used to determine any significant relationships between two categorical variables. The association between "best practice" outcomes (reduced calorie intake and increase exercise) and demographic characteristics were investigated using multivariate logistic regression. The significance level was set at $P < 0.05$.

Logistic regression was performed to determine if there were any significant differences between certain demographic characteristics and whether or not diet and exercise in combination ("best-practice" advice) was recommended.

The study was approved by the Monash University Human Research Ethics Committee (Approval: MUHREC CF11/1606 : 2011000897)

Results

Response rate:

Response rates for pharmacists and pharmacy assistants are presented in Table 1. Due to pharmacy closures, or pharmacy premises' address changes, the final pharmacy sample was 2972.

Table 1: Case vignette response rates for pharmacists and pharmacy assistants

Case vignette	Pharmacists Number returned/Number sent (%)	Pharmacy assistants n/N (%)
A: borderline healthy	115/591 (19.5)	85/597 (14.2)
B: pre-pregnancy	108/595 (18.2)	79/598 (13.2)
C- pregnant	108/591 (18.3)	69/591 (11.7)
D: post-partum	94/598 (15.7)	82/591 (13.9)
E: menopause	112/597 (18.7)	88/595 (14.8)
Overall response rate	**537/2972 (18.1)**	**403/2972 (13.6)**

Demographic characteristics

Pharmacists and pharmacy assistant demographic characteristics are presented in Table 2.

Table 2: Pharmacist and pharmacy assistants' demographic characteristics

Respondent characteristics	Pharmacists N= 537 n (%)	Respondent characteristics	Pharmacy assistants N= 403 n (%)
State		***State***	
New South Wales	158 (29.4)	New South Wales	115 (28.5)
Victoria	151 (28.1)	Victoria	107 (26.6)
Queensland	86 (16.0)	Queensland	71 (17.6)
Western Australia	61 (11.4)	Western Australia	46 (11.4)
South Australia	45 (8.4)	South Australia	32 (7.9)
Northern Territory	2 (0.4)	Northern Territory	2 (0.5)
Tasmania	22 (4.1)	Tasmania	19 (4.7)
Australian Capital Territory	12 (2.2)	Australian Capital Territory	11 (2.7)
Location of pharmacy based on PhARIA index*		***Location of pharmacy based on PhARIA index****	
Highly accessible	409 (76.2)	Highly accessible	324 (80.4)
Accessible	68 (12.7)	Accessible	44 (10.9)
Moderately accessible	19 (3.5)	Moderately accessible	14 (3.5)
Remote and very remote	41 (7.6)	Remote and very remote	21 (5.2)
Pharmacy type		***Pharmacy type***	
Part of a chain (buying group)	216 (40.2)	Part of a chain (buying group)	175 (43.4)
Independently owned	321 (59.8)	Independently owned	228 (56.6)
Gender		***Sex***	
Male	253 (47.1)	Male	17 (4.2)
Female	284 (52.9)	Female	386 (95.8)

Respondent characteristics	Pharmacists N= 537 n (%)	Respondent characteristics	Pharmacy assistants N= 403 n (%)
Main role		**Main role**	
Pharmacy owner	195 (36.3)	Weight loss consultant	58 (14.4)
Pharmacy manager	150 (27.9)	Vitamin consultant	12 (3)
Employee pharmacist	192 (35.8)	Retail manager	68 (16.9)
		Dispensary technician	81 (20.1)
		General pharmacy assistant	184 (45.7)
Previous training in weight management		***Previous training in weight management***	
Yes	410 (76.4)	Yes	302 (74.9)
University	150 (27.9)	Pharmacist(s)	63 (15.6)
Pharmaceutical industry e.g. drug company	242 (45.1)	Pharmacy magazines e.g. Contact ®	263 (65.3)
Professional organisations e.g. The Pharmaceutical Society of Australia	191 (35.6)	Professional organisations e.g. The Pharmaceutical Society of Australia	192 (47.6)

*PhARIA index 2 (accessible A) and 3 (accessible B) have been collapsed into one variable called “accessible”. PhARIA categories 5 (remote) and 6 (very remote) have been similarly collapsed, called “remote and very remote”.

Case Vignette A - Borderline healthy weight woman: 26 years old, BMI: 26 kg/m^2

Wants to try Xenical® (orlistat), her brother's wedding is in two months time

Just under 90% (178/200) of pharmacists and pharmacy assistants wanted to find out more before selling this woman Xenical®. Common questions that pharmacists and pharmacy assistants felt the need to ask mainly focussed on lifestyle (dietary and exercise habits) and medical and medication history. A minority of pharmacists and pharmacy assistants asked about pregnancy or breastfeeding.

> *"...allergies, medical history, medication history, has she tried anything for weight loss before, pregnancy/breastfeeding, current lifestyle - diet and exercise habits…"* (Pharmacist)

Approximately 10% (14/115) of pharmacists and pharmacy assistants (8/85) stated that they would sell Xenical®, 68% (78/115) of pharmacists refused supply and 84% (71/85) of pharmacy assistants were unsure. Just under 60% (67/115) of pharmacists would recommend another product or program, significantly more (P = 0.002) than 51% (43/85) of pharmacy assistants. The majority of both pharmacists and pharmacy assistants who would recommend a different product recommended a meal replacement product.

Case Vignette B - Woman in pre-pregnancy stages: 26 years old, BMI: 33 kg/m^2

Concerned about her weight, she's trying to fall pregnant.

Only 57% (45/79) of pharmacy assistants, significantly lower (P = 0.001) than 80% (86/108) of pharmacists, were able to correctly identify this woman's weight category based on her BMI. Pharmacists were significantly more likely to recommend decreased calorie intake (P = 0.021) and increased exercise (P = 0.004) compared to pharmacy assistants (Table 3).

Pharmacy assistants, however, were significantly more likely (P = 0.006) to recommend a vitamin or herbal product compared to pharmacists.

Case Vignette C - Pregnant woman: 27 years old, BMI: 29.1 kg/m^2

Currently pregnant, she wants Blooms Svelte® tablets (a herbal product containing caffeine) to stop gaining excess weight.

Just under 60% (64/108) of pharmacists correctly identified the amount of weight a healthy pregnant woman should gain during her pregnancy. Over 50% (62/108) of pharmacists correctly identified how weight gain in pregnancy changed in an overweight or obese woman. Almost all (98%; 174/178) pharmacists and pharmacy assistants did not sell Teresa Blooms Svelte® tablets, with the majority of pharmacists and pharmacy assistants identifying lack of evidence for herbal products as the main deterrent for selling this product to this woman.

> "*no evidence that these products are safe…(or) help with weight loss anyway. It is natural to put on some weight during pregnancy. A healthy diet and lifestyle is the best way to prevent excess weight gain in pregnancy...*". (Pharmacist)

Just under 40% (27/69) of pharmacy assistants, significantly more (P < 0.001) than 15% (16/108) of pharmacists, recommended nothing, whether lifestyle or product, to help this woman stop gaining excess weight in her pregnancy (Table 3).

Case Study D - Post- partum woman: 28 years old, BMI: 35.6 kg/m^2

Had a baby 8 months ago, wants to try Optifast® (a very low calorie meal replacement product) to lose excess weight gained in pregnancy.

All the pharmacists believed this woman needed to lose weight, significantly more (P = 0.002) than 88% (72/82) of pharmacy assistants. Over 50% (106/174) of pharmacists and

pharmacy assistants were happy to sell her Optifast®. The majority recommended only substituting two meals a day with Optifast®. Overall, the counselling was inconsistent and varied markedly between respondents:

> *"... Drink a glass of water half an hour before you have it so Optifast® expands in your stomach. Replace two meals a days with the Optifast® and have a small meal once a day including two cups of vegetables…"* (Pharmacy assistant)

> *"Optifast® requires a disciplined approach. Apart from replacing three Optifast® sachets a day there is very little you are allowed to eat every day. Keep up the fluids..."* (Pharmacist)

Only a minority of pharmacy staff members (pharmacists or pharmacy assistant) explained the recommended different weight loss phases of using a very low calorie diet like Optifast® i.e. "intensive phase" and "maintenance phase":

> *"As she is otherwise healthy, may commence with three meal replacements a day to replace main meals. Needs to drink at least 2 L of clear fluids a day and to eat two cups of vegetables. This will help achieve rapid weight loss in the first couple of weeks. Then [Madeline] needs to replace two meals a day after a couple of weeks, and the other meal needs to be a proper high in protein, low in fat meal…"* (Pharmacist)

Both pharmacists and pharmacy assistants recommended ideal lifestyle modifications i.e. decrease fat intake, decrease carbohydrate intake, keep a food diary and increase water consumption. Pharmacists were significantly more likely ($P = 0.023$) to recommend increased exercise compared to pharmacy assistants (Figure 1).

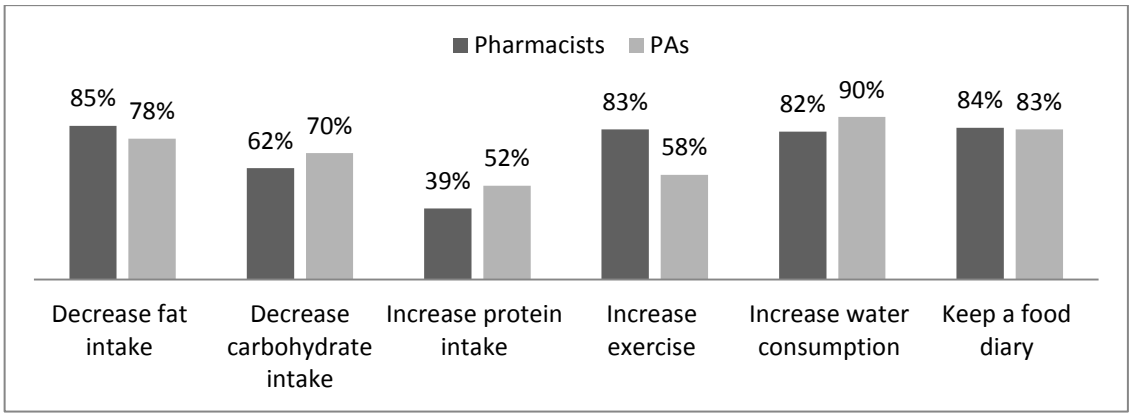

Figure 1: Lifestyle modification recommendations made by pharmacists and pharmacy assistants for case vignette D- post-partum woman; BMI: 35.6 kg/m^2

Case Vignette E - Woman going through menopause: 48 years old, BMI: 43 kg/m^2

Has tried "everything" to lose weight, reached menopause five years ago and has since struggled with her weight.

The majority of pharmacists and pharmacy assistants could correctly identify the health conditions of which this woman was at an increased risk based on her BMI. Again, pharmacists (83%; 93/112) were significantly more likely ($P < 0.001$) to correctly identify this woman's weight category based on her BMI compared to pharmacy assistants (56%; 49/88). Over 80% (164/200) of pharmacists and pharmacy assistants would refer this woman to a local doctor or other health care professional for further weight management advice.

The need for a 'multidisciplinary' team approach was highlighted in the pharmacists' responses:

> *"... She is quite obese and would definitely benefit from the support of her local doctor as well as her local pharmacy since weight loss often stagnates after a while. It is also possible that she is suffering from a number of other health care conditions already and she should get checked..."* (Pharmacist)

Differences between recommendations by pharmacists and pharmacy assistants for case vignettes B, C, D and E

The overall results and differences for recommendations made by pharmacists and pharmacy assistants for case vignettes B-D are provided in Table 3.

Table 3: Weight management recommendations by pharmacists and pharmacy assistants

Recommendation	Pharmacist n (%)	Pharmacy assistant n (%)	P-value
Case vignette B: pre-pregnancy; BMI= 33 kg/m^2	**N= 108**	**N= 79**	
Nothing	2 (1.9)	2 (25.3)	0.751
Decrease calorie intake	83 (76.9)	47 (59.5)	0.02
Increase exercise	95 (88)	55 (69.6)	0.004
Orlistat	3 (2.8)	N/A**	
Vitamin/herbal product	5 (4.6)	13 (16.5)	0.006
Meal replacement product	27 (25)	12 (15.2)	0.116
Pharmacy based program	21 (19.4)	17 (21.5)	0.676
Join a weight loss group e.g. Weight Watchers™	18 (16.7)	13 (16.5)	0.982
Refer to doctor/pharmacist	71 (65.7)	55 (69.6)	0.387
Case vignette C: pregnancy; BMI= 29.1 kg/m^2	**N= 108**	**N= 69**	
Nothing	17 (15.7)	26 (37.7)	<0.001
Decrease calorie intake	41 (38.0)	13 (18.8)	0.012
Increase exercise	76 (70.4)	24 (34.8)	<0.001
Orlistat	0 (0)	N/A	
Vitamin/herbal product	1 (0.9)	2 (2.9)	0.301
Meal replacement product	6 (5.6)	0 (0)	0.051
Pharmacy based program	2 (1.9)	0 (0)	0.266
Join a weight loss group e.g. Weight Watchers™	4 (3.7)	1 (1.5)	0.402
Refer to doctor/pharmacist	70 (64.8)	47 (68.1)	0.383

Case vignette D: post-partum; BMI= 35.6 kg/m^2	**N= 94**	**N= 82**	
Nothing	0 (0)	5 (6.1)	0.015
Decrease calorie intake	76 (80.9)	58 (70.7)	0.116
Increase exercise	91 (96.8)	72 (87.8)	0.023
Orlistat	9 (9.6)	N/A	
Vitamin/herbal product	11 (11.7)	24 (29.3)	0.004
Meal replacement product	19 (20.2)	24 (29.3)	0.163
Pharmacy based program	30 (31.9)	32 (39.0)	0.325
Join a weight loss group e.g. Weight Watchers™	25 (26.6)	23 (28.0)	0.829
Refer to doctor/pharmacist	27 (28.7)	26 (31.7)	0.667
Case vignette E: menopause; BMI= 43 kg/m^2	**N= 112**	**N= 88**	
Nothing	2 (1.8)	1 (1.1)	0.708
Decrease calorie intake	87 (77.7)	72 (81.8)	0.167
Increase exercise	105 (93.8)	81 (92.0)	0.735
Orlistat	20 (17.9)	N/A	
Vitamin/herbal product	18 (16.1)	34 (38.6)	<0.001
Meal replacement product	47 (42.0)	59 (67.0)	<0.001
Pharmacy based program	55 (49.1)	49 (55.7)	0.356
Join a weight loss group e.g. Weight Watchers™	57 (50.9)	48 (54.5)	0.461
Refer to doctor/pharmacist	91 (81.3)	69 (78.4)	0.618

Note: This question was not asked in case vignette A and thus there are no results for case vignette A presented in the table. In case vignette A, the respondents were asked in an open-ended question what they would recommend for the woman.

Participants who recommended decreased calorie intake and increased exercise ("best-practice")

The results of the logistic regression are presented in Table 4. Associations were adjusted for case vignette type, pharmacy staff member, state, PhARIA location, pharmacy type, gender and whether or not participants have had previous training in weight management.

Table 4: Associations between demographic characteristics and decreased calorie intake and increased exercise recommendations

Variable	N	Recommended diet and exercise n (%)	Unadjusted OR 95% CI	P-value	Adjusted OR 95% CI	P-value
Case Vignette						
Borderline healthy[1]	200	115 (57.5)	1 (ref)		1 (ref)	
Pre-pregnancy	187	126 (67.4)	1.33 (0.86, 2.04)	0.201	1.37 (0.88, 2.15)	0.167
Pregnant	177	52 (29.4)	0.26 (0.17, 0.40)	**<0.001**	0.26 (0.17, 0.42)	**<0.001**
Post-partum	176	130 (73.9)	1.70 (1.08, 2.66)	**0.021**	1.74 (1.10, 2.76)	**0.018**
Menopause	200	158 (79.0)	2.71 (1.69, 4.34)	**<0.001**	2.82 (1.75, 4.67)	**<0.001**
Staff member						
Pharmacist	537	333 (62.0)	1 (ref)		1 (ref)	
Pharmacy assistant	403	248 (61.5)	1.06 (0.80, 1.39)	0.693	1.04 (0.74, 1.46)	0.836
State						
New South Wales	273	185 (67.8)	1 (ref)		1 (ref)	
Victoria	258	154 (59.7)	0.72 (0.50, 1.03)	0.075	0.76 (0.51, 1.14)	0.183
Queensland	132	82 (62.1)	0.51 (0.34, 0.78)	**0.001**	0.57 (0.36, 0.89)	**0.015**
Western Australia	107	67 (62.6)	0.82 (0.50, 1.32)	0.405	0.84 (0.49, 1.44)	0.524
South Australia	77	48 (62.3)	0.81 (0.47, 1.39)	0.443	0.84 (0.46, 1.54)	0.579
Northern Territory	4	3 (75)	1.31 (0.14,12.82)	0.815	1.74 (0.14, 21.8)	0.670
Tasmania	41	26 (63.4)	0.81 (0.40, 1.64)	0.563	0.83 (0.39, 1.79)	0.641

Variable	N	Recommended diet and exercise n (%)	Unadjusted OR 95% CI	P-value	Adjusted OR 95% CI	P-value
State						
Australian Capital Territory	23	16 (69.6)	1 (0.40, 2.53)	0.999	1.61 (0.54, 4.83)	0.393
Location of pharmacy based on PhARIA index[2]						
Highly accessible	733	451 (61.5)	1 (ref)		1 (ref)	
Accessible	112	64 (57.1)	0.85 (0.56, 1.29)	0.47	0.87 (0.54, 1.39)	0.079
Moderately accessible	33	27 (81.8)	3.09 (1.18, 8.12)	**0.02**	2.53 (0.90, 7.12)	0.679
Remote and very remote	62	39 (62.9)	0.97 (0.57, 1.66)	0.91	1.14 (0.61, 2.11)	0.836
Pharmacy type						
Part of a chain	391	237 (60.6)	1 (ref)		1 (ref)	
Privately owned	549	344 (62.7)	1.10 (0.84, 1.45)	0.486	1.10 (0.80, 1.50)	0.573
Gender						
Male	270	163 (60.4)	1 (ref)		1 (ref)	
Female	670	399 (59.6)	0.96 (0.71, 1.30)	0.782	0.90 (0.62, 1.31)	0.584
Previous training in weight management						
No	228	136 (59.6)	1 (ref)		1 (ref)	
Yes	712	445 (62.5)	0.91 (0.66, 1.24)	0.537	0.89 (0.63, 1.27)	0.530

Note: OR= odds ratio, CI= confidence interval

[1]Borderline healthy: Reduced calorie intake was defined as the "decrease fat intake" response. Increased exercise was defined as "increase exercise (15 minutes, 3 days a week)" or "increase exercise (30 minutes, 5 or more days a week)" responses.

[2]PhARIA index 2 (accessible A) and 3 (accessible B) have been collapsed into one variable called "accessible". PhARIA categories 5 (remote) and 6 (very remote) have been similarly collapsed, called "remote and very remote".

Discussion

This is the first Australian study to investigate weight management recommendations by pharmacists and pharmacy assistants using case vignettes.

Overall, pharmacists had a better understanding of the consumer's needs in each case vignette compared to the pharmacy assistants, as would be expected due to their education. Pharmacy assistants in Australia do not have to undergo any formal training to work in pharmacy and may not feel comfortable making recommendations in unfamiliar areas such as weight management in pregnancy. Pharmacy assistants were more likely to refer to another health care professional without taking any action i.e. without recommending decreased calorie intake and/or increased exercise, compared to pharmacists.

Just under 60 per cent of pharmacists were able to correctly identify gestational weight gain for healthy weight women and how that changed when women were overweight or obese [24]. This is an important finding, as studies have shown that pregnant women receive varying information or none at all, regarding the recommended gestational weight gain [25,26]. Pharmacists are seen as accessible, trusted health care professionals and often come into contact with pregnant women [15]. Pharmacists trained in weight management should be able to support pregnant women in this area and be able to make referrals to other health care professionals when appropriate. In this study, pharmacists and pharmacy assistants were nearly four times less likely to recommend "best-practice" advice to the woman in the pregnant case vignette compared to the borderline healthy weight woman. Weight management guidelines for before, during and after pregnancy recommend a balanced, healthy diet and regular physical activity to ensure appropriate gestational weight gain [27]. The results in this study highlight the need for further training of pharmacists in this area so that they are more comfortable in recommending appropriate

advice to their pregnant pharmacy consumers. These findings are comparable to the Hughes *et al* study, which also found that Australian pharmacy staff require further continuing education strategies to improve their knowledge in nutrition and physical activity guidance [15].

Body mass index (BMI) is the gold-standard measure to classify a person's weight according to the World Health Organization [28]. The BMI also helps determine which products and/or programs can be offered to consumers, and also gives an indication of how much calorie restriction and physical activity needs to be recommended [9]. In this study, pharmacists were significantly more likely to correctly classify the patient's BMI in case vignette B and E compared to pharmacy assistants. Pharmacy assistants need further training in BMI cut-off points, especially since they are the pharmacy staff members who respond to many of the weight management queries dealt with in community pharmacies.

Pharmacy assistants were significantly more likely to recommend herbal supplements in case vignettes B, D and E compared to pharmacists. Herbal supplements advertised for weight loss are commonly found in self-selection areas of the pharmacy where pharmacy assistants mainly work. Many of these products lack evidence and may be unsafe [8,9] Consumers need to be given consistent, up-to-date, evidence-based advice so that they are able to make appropriate decisions that will ultimately optimise their health. It is evident that pharmacy assistants require further training in over-the-counter weight management supplements so that they are able to better inform their consumers when they are making decisions about whether they should purchase these products.

Meal replacement products were recommended by both pharmacists and pharmacy assistants in case vignette A as an alternative product. Manufacturers of these products do not recommend them for patients with a BMI of less than 30 kg/m^2. However, national guidelines do not give any indication of BMI cut-off points when recommending these

products [9,13,14]. More consistent guidelines regarding the use of meal replacement products are needed, especially for pharmacy where they are often sold. Further information is also required on the way meal replacement products should be used; in case vignette D there was inconsistent counselling regarding their use. Pharmacists and pharmacy assistants need to be trained to give correct, consistent and evidence-based advice regarding the use of all over-the-counter weight loss products.

Diet, exercise and lifestyle modification techniques should be included in any weight management intervention [9]. In this study, the majority of pharmacists and pharmacy assistants recommended decreased calorie intake and increased exercise for case vignettes A, B, D and E. No differences were seen between pharmacists, pharmacy assistants, locations of pharmacies, prior weight management training or whether pharmacies were independent or belonged to a group. Future weight management educational resources should be targeted at all Australian pharmacies and staff and should focus on non-pharmacological weight management advice and interventions. This will allow pharmacists and pharmacy assistants to feel more comfortable in providing information in this area to better support their consumers.

This study also found pharmacists' willingness to be part of a multidisciplinary team when advising more complex patients on the most optimal weight management intervention. This finding was highlighted in case vignette E, with the majority of pharmacist participants indicating the need for more than one health care professional, other than themselves, to be involved in the woman's weight loss treatment. Future weight management guidelines and resources should include pharmacists as key health care professionals to manage weight loss and also to assist other health care professionals in this area.

A limitation of this study is that the results relied on answers given to case vignettes and may not truly reflect real-life practice [18,29]. Follow-up studies using simulated patients in

a real-life setting are often needed to confirm findings from case vignette studies [30]. Although the overall response rate was low, the sample size required was achieved. This allowed capture of an extensive range of weight management recommendations by pharmacists and pharmacy assistants from a wide number of different pharmacy premises across Australia.

Australian pharmacists and pharmacy assistants are currently providing weight management services to their consumers, however, not all of their recommendations appear to be evidence-based. Further research needs to be conducted in a real-life setting to supplement these findings and determine possible training areas and the development of educational resources.

Declarations

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Conflict of interest

The author(s) declare(s) that they have no conflicts interest to disclose.

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CHAPTER 8

APPLYING A STANDARD SETTING APPROACH USED IN OBJECTIVE STRUCTURED CLINICAL EXAMINATIONS TO ASSESS PERFORMANCE LEVELS OF PHARMACY STAFF USING SIMULATED PATIENT METHODOLOGY

8.1 Declaration for Thesis Chapter 8

Declaration by candidate

In the case of Chapter 8, the nature and extent of my contribution to the work was the following:

Nature of contribution	Extent of contribution (%)
Reviewed literature; designed methods; coordinated the ethics application; developed study materials; carried out recruitment and expert panel group; performed data analysis; prepared manuscript	80%

The following co-authors contributed to the work:

Name	Nature of contribution
Dr Safeera Hussainy	Designed methodology; reviewed ethics application, study materials, data analysis and manuscript.
A/Prof Jennifer Marriott	Designed methodology; reviewed ethics application, study materials, data analysis and manuscript.

Candidate's Signature		**Date**

Declaration by co-authors

The undersigned hereby certify that:

1. the above declaration correctly reflects the nature and extent of the candidate's contribution to this work, and the nature of the contribution of each of the co-authors.
2. they meet the criteria for authorship in that they have participated in the conception, execution, or interpretation, of at least that part of the publication in their field of expertise;
3. they take public responsibility for their part of the publication, except for the responsible author who accepts overall responsibility for the publication;
4. there are no other authors of the publication according to these criteria;
5. potential conflicts of interest have been disclosed to (a) granting bodies, (b) the editor or publisher of journals or other publications, and (c) the head of the responsible academic unit; and
6. the original data are stored at the following location(s) and will be held for at least five years from the date indicated below:

Location	**Centre for Medicine Use and Safety, Faculty of Pharmacy and Pharmaceutical Sciences, Monash University, Parkville, Victoria 3052**

		Date
Dr Safeera Hussainy		
A/Prof Jennifer Marriott		

8.2 Research article

Title

Applying a standard setting approach used in objective structured clinical examinations to assess performance levels of pharmacy staff using simulated patient methodology

Synopsis

Simulated patient methodology has become widely used in pharmacy practice research. This manuscript describes using the Angoff method to develop a post-analytical checklist to effectively evaluate a pharmacy consultation undertaken with a simulated patient presenting with a weight management problem. An expert panel was organised to determine the appropriateness of items on, and the cut-score for, each analytical checklist. The cut-score calculated for each scenario defined the performance score needed for a minimally successful pharmacy consultation. The analytical checklists that were developed using this process provide assessment of the success of this type of interaction and could be utilised in other simulated patient research.

Abstract

Background

Simulated patient methodology has become widely used in pharmacy practice research. Prior to this study, however, no study had previously used a standard setting approach to develop an objective method to assess performance levels of pharmacy staff.

Objectives

To use a standard setting approach (the Angoff method), similar to assessing a minimally competent student in Objective Structured Clinical Examinations (OSCEs), to assess a "minimally successful pharmacy consultation".

Methods

Two simulated patient case scenarios were developed and validated for face, content and ecological validity. An analytical checklist was developed for each scenario based on the Angoff method. An expert panel was organised to determine the appropriateness of items on, and the cut-score for, each analytical checklist. The cut-score calculated for each scenario defined the performance score needed for a minimally successful pharmacy consultation.

Results

The expert panel reached consensus about the appropriateness of items on each checklist and calculated the final cut scores: 31 for Scenario 1 and 33 for Scenario 2. Some items on the analytical checklists were given a weighting of zero because the expert panel believed that no minimally successful pharmacy consultation would respond correctly to that item. Three items on the analytical checklists were determined to be killer points (information that must be included for the consultation to be considered successful): asking about previous weight loss attempts; providing advice on decreased calorie intake; and increased physical activity to support weight loss and/or management.

Conclusions

The Angoff method was used successfully to develop a tool that could be used to objectively determine the success of pharmacy consultations.

Introduction

Over the last ten years, simulated patients (pseudo-customer, pseudo-patient, mystery shopper) have been increasingly used in pharmacy practice research to evaluate provision of pharmacy services, recent training or implementation of guidelines, and also more commonly to evaluate counselling and supply of common over-the-counter products and the treatment of minor ailments.[1-4] Simulated patient methodology involves a trained individual entering a pharmacy and acting out a specific scenario.[1] This method aims to test and observe pharmacy staff behaviour, usually for assessment of current practice to help improve quality of services.[5] In Australia, the Quality Care Pharmacy Program that is monitored by the Quality Care Pharmacy Support Centre, regularly uses simulated patients in their standard maintenance assessment visits to evaluate the supply of pharmacy medicine and pharmacist only medicines in pharmacies across Australia.[6]

To protect public safety and to ensure highest possible professional standards are upheld, pharmacists must demonstrate competence throughout their professional career.[7, 8] Competence is generally taken to mean that "an individual possesses the required knowledge, skills and attributes sufficient to successfully and consistently perform a specific function or task to a desired standard".[9] Performance, on the other hand, refers to what a professional actually does in reality. In undergraduate pharmacy courses, there are a number of methods used to assess performance, including Objective Structured Clinical Examinations (OSCEs).[10] Assessments using an OSCE follow a basic structure that involves a multi-station examination, where students rotate through stations on a pre-determined time schedule, complete the same set of clinical tasks and are marked via a pre-defined method.[10-13] OSCEs are widely used in pharmacy undergraduate training,[13] in some high stakes licensure exams[11] and more recently in continuing professional development.[12] Stations designed for OSCEs often involve the use of simulated patients; non-patients who

portray a 'real' patient to assess clinical skills.[14] Similar to simulated patients in OSCEs, simulated patients in pharmacy practice research are trained in their role to increase their reliability.

When developing an OSCE there are a number of steps that need to be performed to ensure the reliability and accuracy of the exam. These steps include:

1. *Developing a blueprint to define the station:*[15] this includes determining the content areas and process skills to be examined. It becomes the "skeleton" of the OSCE.

2. *Station development*:[15] to ensure that the OSCE developed is realistic and relevant and also has a measurable or observable outcome.

3. *Case writing:*[11, 15] The case template should include the problem, the prompt that is read before entering the OSCE station and background on the simulated patient. Case writers are also responsible for developing the assessment tool.[11, 15] This tool should be reflective of the OSCE objectives. An analytical checklist is often used as an assessment tool to assess performance. Analytical checklists contain items that are observable such as interviewing questions and informative questions. The checklist is designed to give candidates points for the items they perform. This is done in a binary way with candidates receiving a "yes" or "no" for each item.

4. *Case review and validation:*[15] refinement occurs to ensure cases contain all the relevant information for the student, simulated patient and examiners, and to review the assessment tool to confirm that all required information is provided.

5. *Standard setting:*[11, 12, 15, 16] This is conducted by a separate panel to establish the passing score. For numerical scores to have meaning, standard setting procedures are often undertaken, to determine the final score that is needed to pass. There are

many standard setting methods that can be used including the Angoff method, the Ebel method and the Nedelsky method.[16]

6. *Training:* Training of simulated patients, examiners and supportive staff is essential to increase reliability and consistency between the examinations.

7. *Piloting:*[11] At this step, further training of examiners and simulated patients is identified. Piloting is also important to ensure that time allocation is adequate and that the scenario and assessment tool are appropriate, unambiguous and interpreted correctly by personnel involved. Any issues identified in the piloting phase are rectified before the commencement of the official examinations.

The Angoff Method is one of the most commonly used standard setting approaches and is a widely used standard-setting approach in test development.[17] It is used to determine the passing percentage (cut-score) for a test and is based on the "minimally competent candidate" method. The passing grade of a test cannot be decided arbitrarily; it must be justified with empirical data. The Angoff method relies on subject-matter experts who examine the content of each test question and then predict how many minimally-qualified candidates would answer the item correctly. Experts are first given a definition or asked to define a "minimally competent candidate" in the setting of the OSCE scenario. They are then asked to imagine a hundred minimally competent candidates and to predict the proportion of those candidates who would be able to perform each item on the checklist correctly. The pass level (cut-score) then becomes the sum of the proportions for each item averaged across the judges.[17]

In a real life setting, away from OSCEs, Hobma *et al*.[18] investigated how criterion-referenced standards (Angoff method and Borderline Regression Procedure)[17, 19] could be used as a means to assess doctor-patient communication. In this study, the authors investigated how setting standards in performance assessment could be used to identify learning areas for

continuing education purposes. Hobma *et al*. compared the Angoff and Borderline Regression Procedure and found that both processes could be used to identify minimum performance standards in daily practice.[18] The authors highlighted that when the aim of the performance assessment is to identify educational areas required for future continuing education development, the Angoff method would be more suitable than the Borderline Regression Procedure.[18]

In pharmacy practice research, no simulated patient study has used a standard setting approach to objectively assess pharmacy staff performance levels. Previous studies involving pharmacy staff members have relied on existing literature and available guidelines to determine what the outcome of the consultation should be, what history-taking questions should be asked and what recommendations should be made by the pharmacy staff.[1]

To assess the ability of pharmacy staff to provide appropriate weight management advice to women pharmacy consumers, a study using simulated patient methodology was designed to verify whether the recommendations made met pre-determined standards, and to determine future training areas required. However, before this study could be undertaken, it was important to develop objective criteria to determine what constitutes a "minimally successful pharmacy consultation".

Aim

To use a standard setting approach, similar to assessing a minimally competent student in OSCEs, to assess a "minimally successful pharmacy consultation".

This manuscript describes using the Angoff method to develop a post-analytical checklist to effectively evaluate a pharmacy consultation undertaken with a simulated patient presenting with a weight management problem.

Method

The steps commonly used in OSCE development (outlined above in the Introduction), were adapted in this study to develop a post-analytical checklist to determine a successful pharmacy consultation. These steps have been described below.

Developing the case scenarios

The simulated patient scenarios (Table 1) were developed based on two case vignettes that had previously been used by the same research team in a mailed questionnaire to pharmacists and pharmacy assistants across Australia.[20] The two case vignettes that were chosen allowed a wide capture of key counselling areas, including: history-taking in response to weight loss product requests; management of a woman in the overweight body mass index (BMI) category with no comorbidities; and management of a woman in the perinatal period. These scenarios were developed by practising pharmacists and were piloted for face, content and ecological validity.[21] A script was developed for each scenario for the simulated patient to follow to ensure that they could have a genuine encounter with the pharmacy staff and maintain face value i.e. not be recognised by the pharmacy staff as simulated patients.

Table 1: Description of scenarios given to simulated patients derived from mailed questionnaire[20]

Scenario 1 "Shereen," a 26 year old woman with a BMI of 26 kg/m^2, comes to the pharmacy and wants to buy a box of Xenical®. She's heard from her friends that it works really well for rapid weight loss. She wants to lose weight before her brother's wedding, which is in two months' time.
Scenario 2 "Madeline," a 28 year old woman with a BMI of 35.6 kg/m^2, comes to the pharmacy seeking weight loss advice. She has had a baby eight months ago and is finding it really difficult to lose the extra weight she gained in her pregnancy. She is no longer breastfeeding and would like to fall pregnant again in the near future.

Developing the Analytical Checklist

Determining items on the analytical checklist

The checklist items on the analytical checklist were each related to the questions and advice expected from a minimally successful pharmacy consultation in weight management. The history-taking items on the analytical checklist were determined by the research team and based on existing literature, which explores appropriate history-taking steps that should be undertaken by health care professionals when someone seeks advice on weight loss/management.[22, 23] Checklist items surrounding requests for weight loss advice were determined in association with a dietitian and exercise physiologist. Checklist items were also based on recommendations made by the Australian weight management guidelines[22] as well as recent guidelines from Scotland and New Zealand.[24, 25]

Expert panel meeting

An expert panel meeting with a senior pharmacy educator, a major chain clinical pharmacist manager and a pharmacy owner was conducted to determine the cut-score of the post-analytical checklist that would define a minimal successful pharmacy consultation.[16, 26] During the expert panel meeting, each item on the checklist was given a weighted value using the Angoff method as described above.[17] Prior to attending the expert panel meeting, each panel member was given a copy of each scenario and the recommendations that the researchers, dietitian and exercise physiologist had pre-determined to be most appropriate. At the meeting, each panel member independently judged the number of pharmacy consultations out of 100 pharmacy consultations that would respond correctly to each item on the checklist to determine the minimally successful score for that item. This was called the 'weighting' of the item and was given as a decimal from 0 to 1. The panel then discussed the weightings for each item, any discrepancies between the members of the group were debated and a consensus was

reached for each item so that one final value was given. For example, one of the items on the post-analytical checklist was "past weight loss methods utilised"; for a minimally successful pharmacy consultation the panel believed that of 100 minimally successful pharmacy consultations, 90 of those would ask the simulated patient about previous weight loss methods, and therefore that item was given a weighted value of 0.9.

Once all the items on the post-analytical checklist for each scenario were given a value, the sum of the weightings was calculated and this provided the cut-score for the entire scenario.[16, 17] For pharmacies to have a minimally successful pharmacy consultation, they had to obtain the cut-score. In addition, "killer points" were also included and were given a weighted value of 1.[27] A killer point was information that must be included for the consultation to be considered successful, e.g. pharmacy staff *must* have provided advice on decreased calorie intake and increased physical activity to support weight loss and/or management for the consultation to be considered successful as this is critical information that should always be included in weight management advice.

No items were removed or added to the analytical checklist during the expert panel meeting.

Training of the simulated patients

Two independent research assistants acted as the simulated patients. The simulated patients were trained in their scenario, prior to any simulated patient visits, in a virtual pharmacy setting, with one of the researchers (S.F.) and two other research assistants acting as pharmacy staff members. The simulated patients were also trained in how to complete the analytical checklists and were made familiar with each item and what it meant. To minimise observer bias, the simulated patients were unaware of the cut-scores for each scenario, the weightings of items on the post-analytical checklists and which items on the checklists were killer points.

Results

Table 2 highlights the history-taking checklist items and weightings as decided by the expert panel for Scenario 1 and Scenario 2. Table 3 highlights the recommendation checklist items for Scenario 1 and Scenario 2. The final cut-scores calculated were 31 for Scenario 1 and 33 for Scenario 2.

Table 2: History-taking checklist items and weightings for Scenario 1 and Scenario 2

Items	Weighting (0-1) Scenario 1	Weighting (0-1) Scenario 2
Personal health history		
Name of the patient	0	0
Marital status	0	0
Age	0	0
Occupation	0	0
Nationality	0	0
Pregnancy	1	1
How far into the pregnancy	0	0
Breastfeeding	1	1
Co-morbidity assessment		
Medical conditions	1	1
Medication use	1	1
Allergies	1	1
Obesity assessment		
Height	0.6	0.6
Weight	0.8	0.8
Was BMI calculated?	0.6	0.6
If BMI was calculated was it calculated correctly?	1	1
Waist circumference	0.7	0.7
Readiness to change assessment		
Reason for weight loss	0.2	0.2
How important is it for you to lose weight?	0	0
How confident are you that you will lose weight?	0	0

Items		Weighting (0-1) Scenario 1	Weighting (0-1) Scenario 2
Risk factor assessment			
Family history of obesity		0.1	0.1
Previous weight history		0	0
Any outside factors that may have contributed to weight gain		0	0
Stage of life (pregnancy, trying to fall pregnant, menopause etc.)		0.4	0.4
Diet, exercise & lifestyle information			
Exercise	Amount of physical activity (daily, weekly)	1	1
	Type of physical activity	0.8	0.8
Diet	Number of meals a day	0.85	0.85
	Number of serves of vegetables a day	0.5	0.5
	Number of serves of fruit a day	0.5	0.5
	Number of serves of deep fried, pan-fried or commercially baked or fried food (food that is high in saturated fat) a day	0.8	0.8
	Number of times a week take-away food is consumed	0.8	0.8
	Assessment of water intake/other drinks	0.8	0.8
	Association of food with a reward or comfort	0.3	0.3
	List of what is eaten at breakfast, lunch, dinner, snacks	0.2	0.2
Caffeine	Do you drink caffeinated drinks?	0	0
	Number of cups/cans a day	0	0
Alcohol	Do you drink alcohol?	0.2	0.2
	What kind?	0	0
	Amount per day/week	0	0
Smoking	Smoking status	0.8	0.8
	Amount a day/week	0	0

Items	Weighting (0-1) Scenario 1	Weighting (0-1) Scenario 2
Previous weight loss attempts		
Previous weight loss attempts*	1	1
Previous weight loss methods utilised	0.9	0.9
Duration of previous weight loss methods	0	0
Side effects related to previous weight loss methods	0	0
Current weight loss goals		
Patient's goal weight	1	1
Time frame to reach goal weight	0.4	0.4
Preferences for weight loss methods	0.1	0.1
Time since last been at the specified goal weight	0	0
Assessment of main causes of obesity and things to consider		
Diet	0.9	0.9
Exercise	0.8	0.8
Stress	0	0.7
Psychological issues	0	0
Other	0.2	0.3
SUM OF 'HISTORY-TAKING' ITEM WEIGHTINGS	**22.25**	**23.05**
*Killer point		

Table 3: Recommendation checklist items and weightings for Scenario 1 and Scenario 2

Items	Weighting (0-1) Scenario 1	Weighting (0-1) Scenario 2
Intervention and management strategy		
Reduce energy intake		
Changes to dietary intake*	1	1
Changes to alcohol/caffeine/water consumption	0.9	0
Increased physical activity		
Increased physical activity in daily living	0	1
Increased planned physical activity*	1	0.6
Behavioural modification techniques		
Use of food diary	0.5	0.5
Use of smaller plates/smaller portions	0.5	0.8
Referral to support networks/websites, groups	0.1	0.6
Product or program recommendation[a]		
Vitamin/herbal product	0.4	0.9
Orlistat	0.9	0.3
Meal replacement products e.g. Optifast®	0.5	0.3
Pharmacy-based programs e.g. Tony Ferguson®	0.1	0.1
Goal setting		
Information on short-term goals	0.9	0.9
Information on medium-term goals	0.3	0.8
Information on long-term goals	0.2	0.4
Additional counselling provided		
Provision of pamphlets, information leaflets and written information	0.5	0.5
Scheduling of follow-up visit	0.7	0.6
Referral to other health care professionals	0.1	0.4

Items	Weighting (0-1) Scenario 1	Weighting (0-1) Scenario 2
SUM OF 'RECOMMENDATION' ITEM WEIGHTINGS	**8.6**	**9.7**
**Killer point [A]*product or program recommendation* - These products and programs were not recommended by the dietitian and exercise physiologist. For these items the expert panel was asked to determine how many pharmacy staff consultations out of 100 minimally successful pharmacy staff consultations would NOT recommend these products.		

Discussion

This study provides new insight into how an established teaching method can be employed in simulated patient pharmacy practice research. Even though simulated patient research has become widely used in Australia, prior to this study no study had previously used the Angoff method[17] to develop an objective method to assess performance levels of pharmacy staff. By using the Angoff method[17] the researchers were able to employ a validated tool developed by experts in the area, to assess a "minimally successful pharmacy consultation" specifically in weight management.

The cut-scores calculated for each scenario were similar (31 for Scenario 1 and 33 for Scenario 2), which was expected, as regardless of the type of weight management scenario, certain areas need to be addressed, including history-taking regarding previous weight loss attempts, advice on diet, exercise and behavioural modification techniques, and height, weight and BMI calculations. Some items on the analytical checklists were given a weighting of zero. For those items, the expert panel believed that no minimally successful pharmacy consultation out of one hundred minimally successful pharmacy consultations would respond correctly to that item.

In a systematic review exploring the use of simulated patients in pharmacy practice research, Watson *et al*. described the importance of using standardised and formally developed scenarios as well as standardised data collection tools when undertaking a simulated patient study.[1] Recently, the majority of the pharmacy practice research that utilises simulated patient methodology has used standardised scenarios and a few have attempted to use a standardised data collection form.[2, 3, 5, 28] A recent simulated patient study exploring provision of non-prescription medications in community pharmacies throughout Brazil utilised an expert panel comprising four clinical pharmacists to determine what would signify a 'reasonable outcome' in the pharmacy consultation.[2] Mesquita *et al*. also used a data collection tool developed by Berger *et al*. to assess the performance level of pharmacy staff in regards to the quality of their counselling and communication skills.[2, 28] This particular data collection tool utilises a dichotomic scale (yes/no) and a Likert five-point scale to assess pharmacy performance.[28] Unlike the study reported here where a standard setting approach was used to determine a 'reasonable outcome', with a clearly derived cut-score, results of the simulated patient visits in Mesquita *et al.'s* study were simply determined based on the items answered on the post-visit data collection instrument.[2]

Benrimoj has extensively explored the use of simulated patients in the improvement of pharmacy services in Australia.[5] Benrimoj's work focusses around 'standard maintenance assessment' visits, which involve a simulated patient entering a pharmacy and enacting a scenario that has been developed by pharmacists and checked for face, content and ecological validity.[5] These visits are conducted by trained individuals, who enter a pharmacy and audio-tape their interaction with the pharmacy staff members. These audio-tapes are then analysed by a consultant pharmacist who scores the simulated patient-pharmacy staff interaction based on criteria developed from the Quality Care Pharmacy Program standards Self-Assessment tool.[5] Each item on the criteria form has the same weighting and all

scoring templates add to a total of ten. Although this method uses a form of standard setting to determine the items on the scoring template, the template does not use any standard setting approaches to determine the passing level. Apart from the number of items on the template answered correctly (0-3: 'unsatisfactory'; 4-6: 'satisfactory'; and 7-10: 'excellent'), little information is provided on how an 'unsatisfactory', 'satisfactory', and 'excellent' pharmacy consultation is determined. In the present study, the cut-score provided a 'pass score' and a standardised way of determining a successful pharmacy consultation in weight management.[5] They also do not include the concept of killer points.

A recent study exploring the appropriateness of the supply of the emergency contraceptive pill from community pharmacies in the UK also utilised simulated patient methodology.[3] Researchers in this study conducted two focus groups; one with pharmacists and one with women, to determine the pharmacy consultation scoring template.[3] For each of the two scenarios developed, the members of the focus groups aimed to determine the elements of a consultation that pharmacists 'must do', 'should do' or 'could do.' The results from the focus groups were used to determine the criteria for rating each of the consultations. A clear rating scale for each scenario was developed. This rating scale included different weightings for each item, depending on the perceived importance to each scenario. For example, in Scenario 2, the patient was taking St John's Wort (a medication known to interact with the emergency contraceptive pill), so the score for that item (asking the patient if they were on any other medication) was four as opposed to the usual score of one. Following the simulated patient visit, the total score on the data collection tool was used to define the pharmacy consultation outcome.[3] Again, there was no indication of what score was required for a 'successful pharmacy consultation'.

Simulated patient methodology should be used to support continuing pharmacy education and to improve the quality of pharmaceutical services.[1] Recently in Canada, OSCEs have

been introduced in their quality assurance procedures and pharmacists' continuing education processes. Although simulated patients are not used in a real-life setting, they describe how simulated patient methodology with standard setting procedures can be used in pharmacy practice research.[12] Cut- scores for these OSCEs were determined using the Ebel method,[29] which utilises an expert panel to determine the minimum performance level of each item on the checklist based on its relevance to the scenario and its perceived difficulty. The sum of the minimum performance levels for all the items on the checklist are then used to determine the cut-score. The researchers highlight the importance of using standard setting procedures (Ebel or Angoff method)[17, 29] to produce a reliable and valid cut- score to determine a pass/fail outcome.[12]

In the study reported here, the Angoff method was effectively used to determine the cut-score for the 'minimally successful pharmacy consultation' in weight management. There are major strengths to utilising a standard setting approach, which include the ability of having a standardised scoring process. While setting standards can be time-consuming and involves conducting expert panel meetings, this study showed that they can successfully be incorporated in simulated patient methodology to provide an objective method for determining real-life performance.

Conclusion

The Angoff method was used successfully to develop a tool that could be used to objectively determine the success of pharmacy consultations. The analytical checklists that were developed using this process provide assessment of the success of this type of interaction and could be utilised in other simulated patient research.

Declarations

Acknowledgements

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Conflict of interest

The author(s) declare(s) that they have no conflicts interest to disclose.

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CHAPTER 9

ADVICE ON WEIGHT MANAGEMENT: ARE PHARMACY STAFF GETTING IT RIGHT? RESULTS FROM A MYSTERY SHOPPER STUDY

9.1 Declaration for Thesis Chapter 9

Declaration by candidate

In the case of Chapter 9, the nature and extent of my contribution to the work was the following:

Nature of contribution	Extent of contribution (%)
Reviewed literature; designed methods; coordinated the ethics application; developed study materials; trained the mystery shoppers; performed data analysis; and prepared manuscript	80%

The following co-authors contributed to the work:

Name	Nature of contribution
Dr Safeera Hussainy	Designed methodology; reviewed ethics application, study materials, data analysis and manuscript.
A/Prof Jennifer Marriott	Designed methodology; reviewed ethics application, study materials, data analysis and manuscript.

Candidate's Signature		**Date**

Declaration by co-authors

The undersigned hereby certify that:

1. the above declaration correctly reflects the nature and extent of the candidate's contribution to this work, and the nature of the contribution of each of the co-authors.
2. they meet the criteria for authorship in that they have participated in the conception, execution, or interpretation, of at least that part of the publication in their field of expertise;
3. they take public responsibility for their part of the publication, except for the responsible author who accepts overall responsibility for the publication;
4. there are no other authors of the publication according to these criteria;
5. potential conflicts of interest have been disclosed to (a) granting bodies, (b) the editor or publisher of journals or other publications, and (c) the head of the responsible academic unit; and
6. the original data are stored at the following location(s) and will be held for at least five years from the date indicated below:

Location	**Centre for Medicine Use and Safety, Faculty of Pharmacy and Pharmaceutical Sciences, Monash University, Parkville, Victoria 3052**

		Date
Dr Safeera Hussainy		
A/Prof Jennifer Marriott		

9.2 Research article

Title

Advice on Weight Management: Are Pharmacy Staff Getting It Right? Results from a Mystery Shopper Study

Abstract

Background

In Australia, women have been identified as being the largest consumer group of weight loss products and/or programs, which can be commonly found in community pharmacies. Pharmacy staff have been shown to come into contact with women in the perinatal stages more than any other primary health care professional. It is therefore vital that pharmacy staff are able to provide appropriate weight management advice to women.

Objectives

To identify the weight management advice pharmacists and pharmacy assistants are providing to women pharmacy consumers in community pharmacies across Victoria, Australia.

Setting

Community pharmacies across Victoria

Method

Thirty randomly selected community pharmacies in Victoria, Australia were visited by two different mystery shoppers acting out a specific weight management scenario: either a product-based request for orlistat (Xenical®) by a borderline healthy weight woman (body

mass index [BMI]= 26 kg/m^2) or a symptom-based request by a post-partum woman. The results of each visit were recorded on an analytical checklist.

Main outcome measure

Successful pharmacy consultations were determined from the post-visit analytical checklist score calculated immediately after each pharmacy visit.

Results

Sixty mystery shopper visits were conducted in August-September 2012. No pharmacy had a successful pharmacy consultation for the direct product request scenario with scores between 3 and 22 (median = 7.5; cut score 31/70). Thirty per cent of pharmacies sold Xenical® to the woman in the direct product request scenario and only a third of pharmacies provided this woman with any advice on healthy eating and exercise. Only three pharmacies (10%) had a successful pharmacy consultation for the symptom-based scenario with scores ranging between 3 and 38 (median = 8; cut score 33/70). Overall, pharmacy staff conducted very poor history-taking prior to recommending any product and/or program to the women mystery shoppers.

Conclusion

The poor history-taking skills and poor quality of weight management advice being provided by pharmacy staff highlights the need for pharmacy weight management educational resources.

Impact of research findings

- Pharmacists and pharmacy assistants need training in history-taking specific to weight management counselling. History-taking by pharmacists and pharmacy assistants during the mystery shopper visits was minimal, which led to products and programs being recommended inappropriately.
- Weight management advice provided by pharmacists and pharmacy assistants in community pharmacies to women pharmacy consumers is unsatisfactory. Pharmacists and pharmacy assistants need educational resources on nutrition, physical activity and behavioral support counselling, so that they are able to provide their consumers with evidence-based advice recommended by national guidelines.
- Pharmacy assistants have a significant role in the provision of weight management advice and sale of products, they too should receive training with pharmacists in this area.

Introduction

With overweight and obesity recognised as a 'global epidemic' [1], the need for more accessible evidence-based weight management services has been highlighted as a necessity [2,3]. Pharmacists have been identified as key health care professionals who can positively contribute to the management of overweight and obesity as they are easily accessible, highly trained and trusted health care professionals [4-6].

A recent study by an Australian research team identified that experts in the field of obesity support the role of pharmacists in the management of overweight and obesity [6]. These experts suggested that pharmacists would form an integral part of a multidisciplinary team [6]. Training of pharmacists in the management of overweight and obesity has been recognised by pharmacists themselves and by obesity experts as critical [6,7]. Pharmacists

have highlighted their willingness to be involved in this area, with a recent study emphasising their need for an accredited weight management training program [7].

Choice [8], the Australian consumer 'watch dog', has reviewed some of the more popular pharmacy weight management programs, including Tony Ferguson®, Kate Morgan®, Xndo®, Alphaslim®, Betty Baxter®, Meditrim®, Ultralite® and Dr. Tim's Success®, and found that these programs were highly variable, and did not offer the privacy, time and support required to adequately provide a satisfactory weight management program [8]. They concluded that overall, these programs should not be recommended to Australian consumers. Choice felt that these programs were structured for pharmacies to receive a financial benefit and were not really considering the health of the consumer. They highlighted that there needs to be a national accreditation system to ensure that consultants are adequately trained in giving evidence-based advice and have the time and facilities to provide patients with adequate care [8].

Pharmacy staff (pharmacists and pharmacy assistants) come into contact with women in the pre-pregnancy, pregnancy and post-partum stages more than any other primary health care professional, including general practitioners and nurses [9]. In Australia, women have been identified as being the main consumer group for weight loss products and/or programs [10], commonly found in community pharmacies. It is therefore vital that pharmacy staff provide appropriate weight management advice to women at different stages of their life [5].

Women pharmacy consumers have indicated that they want pharmacist involvement in an ideal weight management program [11]. They feel extremely comfortable approaching pharmacists about weight management advice and believe that pharmacies are an ideal location for a weight management program [11]. A study by Um *et al*, however, showed that consumers feel that pharmacists lack expertise in this area and require appropriate

training. In addition, Hughes *et al*. found that pharmacy staff were significantly less likely to provide nutrition and physical activity advice to women in the ante-natal or post-natal period compared to general practitioners and nurses, and highlighted the importance of additional training of pharmacy staff in this area [9].

Aim of the study

Before any training and educational material for pharmacy staff can be developed it is essential to identify the current weight management recommendations being made by pharmacists and pharmacy assistants in a community pharmacy setting to determine their appropriateness. By using mystery shopper methodology, the aims of this study were to identify what weight management services and advice pharmacists and pharmacy assistants are recommending to women pharmacy consumers in community pharmacies across Victoria, Australia and to determine whether these recommendations are in line with national weight management guidelines [12]. It is important to note that since this study was conducted a new version of the national weight management guidelines in Australia has been released [13]. In this study recommendations made by pharmacists and pharmacy assistants were assessed based on the guidelines available at the time of the study i.e. The 2003 National Health and Medical Research Council Clinical Practice Guidelines for the Management of Overweight and Obesity in Adults [12]. Both guidelines recommend combination approaches of diet, exercise and behavioural modification to be considered first line [12,13].

Ethical approval

The study was approved by the Monash University Human Research Ethics Committee (Approval number: CF12/0817 - 2012000357).

Method

Pharmacy sample selection

Two hundred and fifty pharmacies were randomly chosen from the Pharmacy Premises Regulatory Authority in Victoria list of community pharmacies in Victoria. The selected pharmacies were notified of the study by mail one month prior to the commencement of the mystery shopper visits. In order to minimise the Hawthorne effect [14], and enable a more accurate assessment of what was occurring in real life practice, the pharmacies were not told when the visits would occur or the description of the mystery shopper scenarios. From the list of 250 pharmacies, 30 pharmacies were then randomly selected for the mystery shoppers to visit.

Developing the mystery shopper scenarios

The mystery shopper scenarios (Table 1) were developed based on two case vignettes that had previously been used by the research team in a mailed questionnaire to pharmacists and pharmacy assistants across Australia [15]. The two case vignettes that were chosen allowed a wide capture of key counselling areas including, history-taking for weight loss product requests, management of a woman in the overweight body mass index (BMI) category with no comorbidities and management of a woman in the perinatal period. These scenarios were developed by practising pharmacists and were piloted for face, content and ecological validity [16]. A script was developed for each scenario for the mystery shopper to follow to ensure that they could have a genuine encounter with the pharmacy staff and maintain face value i.e. not be recognised by the pharmacy staff as mystery shoppers. Each mystery shopper had an opening statement that they were trained to use when they were approached by any pharmacy staff member (Table 1). Apart from the prompts listed in Table 1, no other information was provided to pharmacy staff unless they specifically asked the mystery shopper.

Table 1: Mystery shopper scenarios [15]

Nature of scenario	Description of scenario given to mystery shopper derived from mailed questionnaire[15]	Opening statement	Prompt
Scenario 1: Product request	"Shereen" a 26 year old woman with a BMI of 26 kg/m^2 comes to the pharmacy and wants to buy a box of Xenical®(orlistat). She's heard from her friends that it works really well for rapid weight loss. She wants to lose weight before her brother's wedding, which is in two months' time.	"Can I please have a box of Xenical®?"	If no questions were asked: "I have never used this product before"
Scenario 2: Symptom-based request	"Madeline" a 28 year old woman with a BMI of 35.6 kg/m^2 comes to the pharmacy seeking weight loss advice. She has had a baby eight months ago and she is finding it really difficult to lose the extra weight she gained in her pregnancy. She is no longer breastfeeding and would like to fall pregnant again in the near future.	"I am looking for something to help me lose weight"	If no recommendations were made: "Do you think a meal replacement product would work to help me lose weight?"

Development of the post-visit data collection form

Information asked, and recommendations made, by the pharmacy staff members were recorded by the mystery shoppers on an analytical checklist immediately following the mystery shopper pharmacy visit. The analytical checklist was developed using the Angoff method and based on the "minimally competent student" method commonly used in Objective Structured Clinical Exams (OSCEs) when developing an exam checklist to determine a minimally competent student [17-19]. An expert panel meeting with a senior pharmacy educator, a major chain clinical pharmacist manager and a pharmacy owner was conducted to determine the 'cut score' of the analytical checklist that would define a minimally successful pharmacy consultation [19-21]. The cut scores determined by the

expert panel group for a minimally successful pharmacy consultation were 31/70 for the product-based request scenario (Scenario 1) and 33/70 for the symptom-based request scenario (Scenario 2) [19]. For pharmacies to have a minimally successful pharmacy consultation they had to obtain the cut score specified for each scenario.

Mystery shopper recruitment and training

Two independent research assistants acted as the mystery shoppers. The research assistants each played the role of the mystery shopper that they were most suited to play according to their body type, e.g. each had the specified BMI in the scenario. The mystery shoppers were trained in their scenario, prior to any mystery shopper visits, in a virtual pharmacy setting, with the researcher (S.F). and research assistants acting as pharmacy staff members.

Timing of mystery shopper visits

Each mystery shopper visited thirty pharmacies during August to September 2012 – sixty visits in total. To ensure a representative sample of pharmacy staff, pharmacies were visited by the mystery shopper once only at any time between 9 am to 9 pm. Different pharmacies were visited on different days of the week.

Analysis

Data from analytical checklist were entered in SPSS 19 and summarised using descriptive statistics. Previously determined cut scores were used to identify successful pharmacy consultations. Pearson's chi-squared test was used to determine any significant relationships between two categorical variables between the two scenarios. Continuous variables were compared using the independent samples t-test and the Mann-Whitney U test. The significance level was set at $P < 0.05$.

Comments made by pharmacy staff during the consultations were recorded on the analytical checklist immediately after each pharmacy visit and have been used to further support and illustrate the outcomes of each scenario.

Results

Sixty mystery shopper visits were conducted in Victoria in a total of thirty pharmacies. The same number (n=15) of buying group pharmacies and independent pharmacies were visited. The majority of pharmacies (n=25; 83%) were 'highly accessible' according to Australia's Pharmacy Accessibility and Remoteness Index for Australia (PhARIA) categories.[22]

No pharmacy had a minimally successful pharmacy staff consultation in Scenario 1 and only three pharmacies (10%; 3/30) had a minimally successful pharmacy consultation in Scenario 2.

Table 2 outlines the differences between the history-taking and recommendations made to the women in Scenario 1 and Scenario 2. No mystery shopper was invited to a pharmacy consulting room. The majority of pharmacy consultations were conducted in front of the weight loss product section or in front of the dispensary counter.

Table 2: Comparison of history-taking and recommendations made to mystery shoppers by pharmacy staff in Scenario 1 and Scenario 2

	Overall N=60 n (%)	Scenario 1 N=30 n (%)	Scenario 2 N=30 n (%)	P-value
General				
Number of items responded to on the post-visit analytical checklist Median (IQR range)	8 (3-12)	7.5 (3-9.5)	8 (3-27)	0.29
Time taken to attend mystery shopper (minutes) Median (IQR range)	2 (1-5)	2 (2-5.25)	1.5 (1-5)	0.09
Length of consultation (minutes) Mean; SD (IQR range)	6.45; 4.84 (2-10)	3.80; 3.09 (2-5)	9.17; 4.82 (5-10)	<0.001 *95% CI* (-7.46,- 3.27)
Pharmacists offering advice	24 (40.0)	20 (66.7)	4 (13.3)	<0.001
Pharmacy assistants offering advice	45 (75.0)	18 (60.0)	27 (90.0)	0.007
Both pharmacist and pharmacy assistant offering advice	9 (15.0)	8 (26.7)	1 (3.3)	0.01
History-taking				
Weight	19 (31.7)	11 (36.7)	8 (26.7)	0.41
BMI calculated	9 (15.0)	9 (30.0)	0 (0)	0.001
Reason for weight loss	22 (36.7)	11 (36.7)	11 (36.7)	1
Current diet and exercise habits	12 (20)	3 (10.0)	9 (30.0)	0.05
Previous weight loss attempts	14 (23.3)	2 (6.7)	12 (40.0)	0.02
Previous weight loss methods	12 (20.0)	2 (6.7)	10 (33.3)	0.01
Patient's goal weight	11 (18.3)	1 (3.3)	10 (33.3)	0.003
Current medical conditions	8 (13.3)	0 (0)	8 (26.7)	0.002
Current medications	3 (5.0)	0 (0)	3 (10.0)	0.08
Pregnancy	2 (3.3)	0 (0)	2 (6.7)	0.15
Breastfeeding	3 (5.0)	0 (0)	3 (10.0)	0.08

	Overall N=60 n (%)	Scenario 1 N=30 n (%)	Scenario 2 N=30 n (%)	P-value
Recommendations				
Reduced dietary intake	38 (63.3)	15 (50.0)	23 (76.7)	0.03
Increased physical activity	26 (43.3)	10 (33.3)	16 (53.3)	0.12
Reduced dietary intake and increased physical activity	25 (41.2)	10 (33.3)	15 (50.0)	0.19
Vitamin/herbal product	12 (20.0)	8 (26.7)	4 (13.3)	0.20
Orlistat (Xenical®)	10 (16.7)	9 (30.0)	1 (3.3)	0.006
Meal replacement product	7 (11.7)	6 (20.0)	1 (3.3)	<0.001
Pharmacy based program	25 (41.7)	3 (10.0)	22 (73.3)	0.69
Use of a food diary	4 (6.7)	0 (0)	4 (13.3)	0.04
Referral to support networks	11 (18.3)	2 (6.7)	9 (30)	0.02
Offer of pamphlets, written advice	12 (20.0)	3 (10.0)	9 (30)	0.05
Referral to other HCP(s)	3 (5.0)	1 (3.3)	2 (6.7)	0.55
Note: IQR= inter-quartile range, SD= standard deviation, CI= confidence interval				

Mystery shopper Scenario 1: Direct product request- Xenical®

Figure 1 presents a flowchart of the four different situations that occurred following the product request for Xenical® by the mystery shopper in Scenario 1. Nine pharmacies sold the mystery shopper Xenical®. Contrary to guidelines for sale of Xenical®, three sales were completed solely by pharmacy assistants without any consultation with the pharmacist. Five pharmacies did not have Xenical® in stock; all offered to order Xenical® for the mystery shopper to purchase the following day. One pharmacist explained to the mystery shopper:

> *"You really don't look like you need it, but I'm happy to order it for you. It will come in tomorrow morning".*

Seven pharmacies did not calculate a BMI for the mystery shopper and judged by her appearance that she did not fit the Xenical® criteria. These pharmacies refused supply of Xenical® but recommended an alternative product such as a vitamin/herbal product or meal replacement product. After declining to sell Xenical®, two pharmacies recommended the mystery shopper to:

> *"…go to the doctor, they will write a prescription for you for something called Duromine®* [(phentermine]*, it works a lot better than Xenical®…".*

Nine pharmacies calculated the mystery shopper's BMI and all of those pharmacies declined to sell Xenical®. These pharmacies, however, did not take an appropriate weight management history e.g. ask about previous weight loss attempts or offer any advice on diet and exercise or behavioural modification techniques. Consequently, none of these pharmacies fulfilled the criteria of a minimally successful pharmacy consultation.

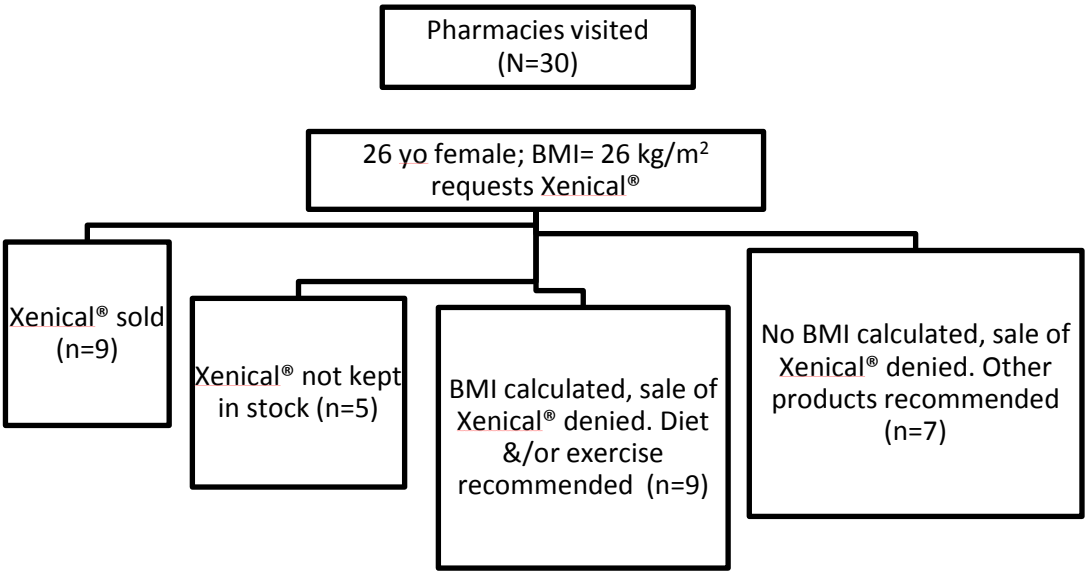

Figure 1: Situations that occurred post mystery shopper Scenario 1 visit

Mystery shopper Scenario 2: Weight loss advice

Figure 2 presents the five different situations that occurred following the symptom-based request for weight loss advice by the mystery shopper in Scenario 2. In eight pharmacies no product or non-pharmacological advice was provided; the mystery shopper was left to browse in the weight loss section on her own and even when she prompted, "I was thinking about trying a meal replacement product", no recommendations were made. Fifteen pharmacies had poor history-taking skills i.e. did not check current diet and exercise history or if the mystery shopper had previously utilised any weight loss method. In the poor history-taking consultations, five pharmacies recommended a weight loss product with no diet and/or exercise advice, four pharmacies provided diet and/or exercise advice without recommending a product and six pharmacies recommended a meal replacement product (e.g. Optifast®) and provided diet and/or exercise advice. The pharmacy staff in the remaining seven pharmacies took a thorough history before recommending a meal replacement product and providing diet and/or exercise advice. Advice provided by the pharmacy assistants frequently focused on their own personal weight management efforts:

> *"I used Tony Ferguson* [weight management program] *when I was trying to lose weight, it works really well. It's easy to use and it tastes alright…"*

Some pharmacy assistants simply offered pamphlets of available pharmacy weight loss programs such as Be Good to Yourself® and told the mystery shopper to "go home and have a read".

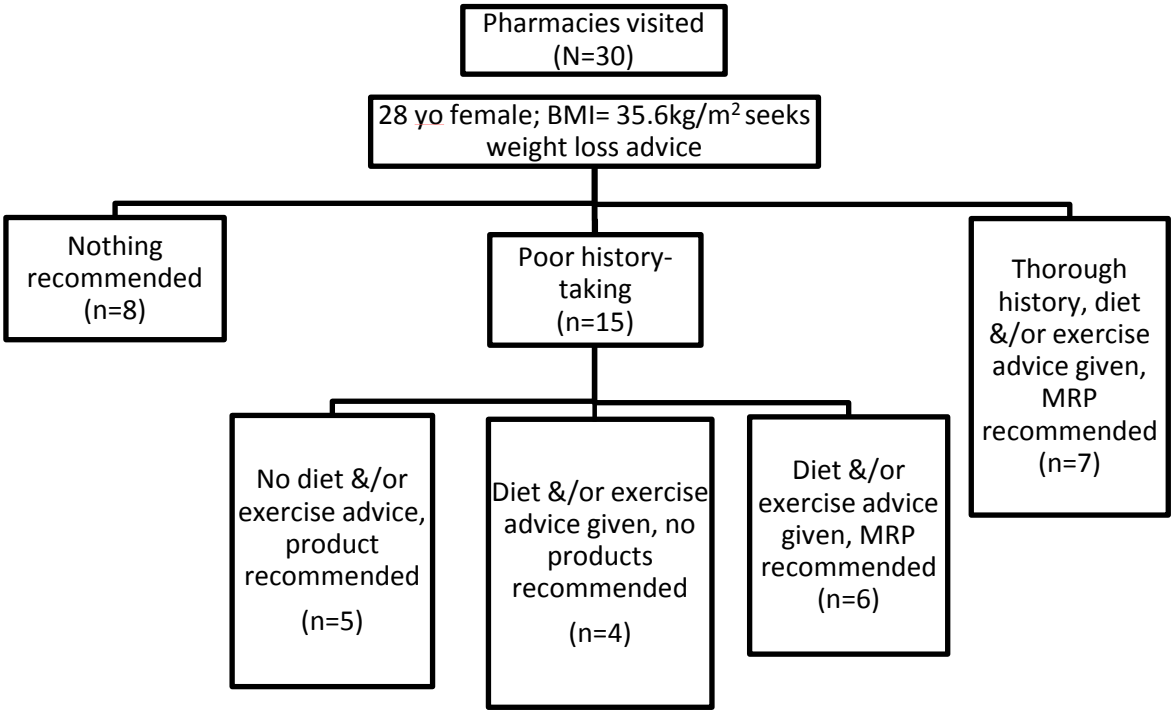

Figure 2: Situations that occurred post mystery shopper Scenario 2 visit

Discussion

This study provides a greater understanding of the current weight management practices and recommendations being made by pharmacy staff to women pharmacy consumers and highlights areas in which pharmacy staff need further training and education. This study is the first Australian study to use mystery shoppers to investigate actual weight management recommendations made by pharmacists and pharmacy assistants specifically to women using an objective assessment method.

The quality of pharmacy staff consultations varied depending on the type of scenario. No pharmacy had a successful pharmacy consultation in Scenario 1, which was disappointing, considering the majority of the mystery shopper interactions were dealt with by a pharmacist. Since pharmacists are trained health care professionals with medication

expertise it was expected that pharmacist-mystery shopper interactions would result in a higher post-analytical checklist score compared to pharmacy assistant-mystery shopper interactions. In Australia, Xenical® (orlistat) is a Pharmacist Only Product (available OTC with pharmacist intervention). It cannot legally be recommended or sold by pharmacy assistants without the direct involvement of a pharmacist. It is unacceptable that in the three sales that were completed solely by pharmacy assistants without any consultation with the pharmacist, correct procedure for the sale of orlistat was not followed.

Three successful pharmacy consultations were recorded for Scenario 2, all of which had been dealt with solely by a pharmacy assistant. Although there were no significant differences between Scenario 1 and Scenario 2 in the number of items to which a response was recorded on the post-analytical checklists ($P = 0.294$), the range of scores varied greatly between the scenarios, with higher scores being recorded for Scenario 2. This is similar to other studies that have shown that pharmacy staff perform better in responding to symptom-based request (Scenario 2) scenarios compared with product-based requests (Scenario 1) [23].

The duration of the mystery shopper pharmacy visits differed significantly between the scenarios, with Scenario 2 consultations being longer than Scenario 1 ($P < 0.001$). This could be explained by the majority of Scenario 2 consultations being handled by pharmacy assistants as opposed to pharmacists. Pharmacists have previously expressed that lack of time is one of the major barriers to offering weight management services [7,24,25]. In addition, pharmacy assistants dealt with 60 per cent of the mystery shopper visits alone without communication with the pharmacist. This finding indicates that future weight management training and education material that is developed must target pharmacy assistants in addition to pharmacists. These results are comparable to those reported by Um *et al* in an Australian consumer survey [26]. In their study, 50 per cent of surveyed

consumers reported that they had been served by pharmacy assistants when seeking information from their community pharmacy about weight management [26].

General history-taking also differed between the two scenarios. Again, this was expected, as studies have shown that symptom-based requests often lead to better history-taking by pharmacy staff compared to direct product requests [23]. Overall, a more thorough history was taken in Scenario 2 compared with Scenario 1, however, in both scenarios, the majority of pharmacy staff did not ask the recommended questions as outlined by weight management guidelines [12,27]. These results are similar to those seen by Choice® in their mystery shopper study [8]. It is interesting to note that no pharmacy staff member asked the woman in Scenario 1 whether she was pregnant or breastfeeding and in Scenario 2 only two pharmacy staff members asked about pregnancy and three asked about breastfeeding. Pharmacies have been identified as an ideal location for women to obtain diet and exercise advice in the perinatal period, pharmacy staff in the current study did not even determine if the women were pregnant or breastfeeding. For women pharmacy consumers of child-bearing age, pregnancy and breastfeeding are two very relevant points that need to be addressed before any recommendation is made. These results underline the need for development of pharmacy staff weight management education material with an emphasis on how to take an appropriate weight management history.

Weight management recommendations made by pharmacy staff to the mystery shoppers varied remarkably between the pharmacies and the different scenarios. The expert panel group had determined that for a successful pharmacy consultation, decreased calorie intake and increased physical activity must be recommended, however only around 60 per cent of pharmacy staff provided any dietary advice and less than half recommended increased exercise. The low number of pharmacy staff consultations offering advice on both diet and exercise in weight management may be due to lack of knowledge and confidence

of pharmacy staff in this area, again highlighting the need for further education. Hughes *et al*. found that pharmacy staff report being significantly less confident providing advice on nutrition and physical activity compared with other primary health care professionals such as general practitioners and nurses [9]. During counselling many of the pharmacy staff relied on personal experiences to give weight loss advice, did not refer the women to appropriate support networks or did not provide any written information.

Pharmacies have recently been perceived as providing weight management services merely for a financial gain by selling non-evidence based products or selling products that are not indicated for the consumer [7,26,28]. In this study, although not indicated or recommended, orlistat was sold to the woman in Scenario 1 in 30 per cent of pharmacy visits. In a further 30 per cent of pharmacy visits, pharmacy staff recommended this woman purchase another weight loss product such as a meal replacement product or vitamin/herbal product. In addition to poor history-taking in Scenario 2, the outcome was also very product focused. This is of concern as the majority of products recommended were pharmacy-based programs that rely on meal replacements to achieve weight loss and require a thorough history, which was not undertaken, to determine their appropriateness. It is difficult to determine whether the recommendations were based on the desire for a sale or lack of knowledge about other suitable options.

Study Limitations

The potential for recall bias was minimised by the mystery shoppers recording the results of the consultation immediately following each visit on a post-visit data collection form. The mystery shoppers visited a small sample of pharmacies in only one state of Australia, so the results cannot be generalised to all Australian community pharmacies, however, it is unlikely that weight management services differ much between Australian states. The

checklist used to determine the success of the consultations provided an objective, pre-determined list of criteria for assessment.

Conclusion

Two scenarios were used to determine the quality of weight management advice being provided in Victorian pharmacies. The poor history-taking skills and quality of weight management advice identified indicates an urgent need for pharmacy weight management educational resources to be developed. These resources should offer appropriate guidance on appropriate history-taking skills, what information should be obtained during a consultation and what non-pharmacological advice and/or products (if any) are suitable for women with varying BMIs, conditions and life stages.

Declarations

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Conflict of interest

The author(s) declare(s) that they have no conflicts interest to disclose.

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SUMMARY

PHASE 2 AND 3

Introduction

Phases 2 and 3 explored pharmacists' and pharmacy assistants' weight management recommendations, history-taking skills and future training requirements using three types of methodology.

Phase 2 utilised a general questionnaire to investigate the history-taking questions pharmacists' and pharmacy assistants' would ask and weight management advice they would subsequently recommend to any consumer enquiring about weight management. These questions were general and did not relate to specific women-related weight management issues. This was an important component of the research project as prior to the national survey there was no literature available regarding the current weight management services provided to consumers by pharmacists and pharmacy assistants. It was then important to explore specific weight management recommendations made by pharmacists and pharmacy assistants to women pharmacy consumers to determine whether they understood the specific requirements of women-related weight management consultations. This was done in Phase 3 using case vignettes and by conducting a mystery shopper study.

There are advantages and limitations of using case vignettes and the decision to use them depends on the research question.[1-5] In medicine, case vignettes are a cost-effective and reliable method of investigating whether management of specific disease states is in accordance with current guidelines or evidence-based practice. They are cheaper to use than mystery shoppers; the scenarios in case vignettes are written and distributed on paper or online, without the need for hiring and training a real person to act out the scenario. [2, 3] In addition, unlike mystery shoppers, researchers are able to obtain answers to different scenarios from a wide demographic group (nationally or internationally) in a short period of time by using mailed or online questionnaires. It has been argued that answers to case

vignettes are exaggerated and cannot be used to illustrate what happens in everyday practice.[1, 6] With that said, some studies have shown that results obtained from case vignettes are comparable to results obtained from using mystery shoppers and thus can be applied to answer research questions relating to health care professionals' decision-making, knowledge and management of medical conditions.[2, 3] To validate research findings collected using case vignettes, it has been suggested that a small group in the same cohort is also investigated using mystery shoppers. In this way, researchers are able to predict whether results from the case vignettes can be generalised to current real-life practice.[3] It is for these reasons that Phase 3 comprised of both a case vignette study and a mystery shopper study.

The results highlighted major differences between the responses to the general questionnaire used in Phase 2, the case vignette study and mystery shopper study. These differences have been outlined and discussed below. Overall, the answers to the general questionnaire and case vignettes were markedly exaggerated to what was seen in real-life in the mystery shopper study. Reasons for these findings have also been discussed.

History-taking and assessment

The majority of pharmacists and pharmacy assistants who responded to the general questionnaire in Phase 2 said that they would ask about previous weight loss attempts, dietary habits, exercise habits, existing medical conditions and current medications when they are approached by a consumer seeking weight management advice. This was further highlighted in case vignette A; pharmacists and pharmacy assistants again said that they would ask the consumer about her current diet and exercise habits, medical conditions and current medications before supplying her with Xenical ®. However, this was not observed in the mystery shopper study. Pharmacists and pharmacy assistants asked about medications (3/60) and medical conditions (8/60) in less than 15 per cent of the mystery

shopper visits. Current diet and exercise habits were also only solicited in 20% (12/60) of the mystery shopper visits. The importance of taking an adequate weight management history has been highlighted in national weight management guidelines.[7] It was disappointing to see that pharmacists and pharmacy assistants were not asking the questions they recognised as important in the questionnaire in a real-life setting. Furthermore, in the general questionnaire, just under 50 per cent of pharmacists (251/537) said they would utilise a person's BMI and WC measurement in combination for weight assessment. In the mystery shopper visits, only 15% (9/60) of visits had a BMI calculated and no visit had a WC measurement taken.

The mystery shopper study highlighted the poor weight management assessment skills of pharmacists and pharmacy assistants. There are a number of explanations for the observed differences in findings between the general questionnaire, case vignettes and mystery shopper study. These include:

- Pharmacists and pharmacy assistants may feel uncomfortable asking a woman about her weight history in a real-life situation. Dastani *et al.* has previously found that pharmacists in Texas, USA, felt uncomfortable providing weight management counselling to their consumers.[8]
- In the general questionnaire and case vignette study, pharmacists were significantly more likely ($P < 0.001$) to understand the importance of calculating a BMI and taking a WC measurement when assessing a person's weight compared to pharmacy assistants. In the mystery shopper study, BMI was calculated by only pharmacists in the first scenario that involved Xenical®. The majority of the other mystery shopper visits were dealt solely by pharmacy assistants without pharmacist intervention. Pharmacy assistants may not understand the significance of calculating a person's BMI when assessing a consumer's weight.

- Finally, pharmacists and pharmacy assistants may not feel that they have the time to take a thorough weight management history. This all relates to barriers commonly described by pharmacists to the delivery of enhanced pharmacy services and includes time, space, pharmacy layout and staffing issues,[9, 10] all of which have been discussed previously (Chapter 2, Chapter 6, Chapter 7 and Chapter 9). Both pharmacists and pharmacy assistants appear to understand what questions need to be asked when taking a thorough weight management history but are unable to do this in a real-life situation.

The inability of pharmacists and pharmacy assistants to take a thorough weight management history is particularly alarming. With over 90% (832/880) of pharmacies stocking weight loss products and just under 50% (424/880) of pharmacies offering a weight management program in Australia, it is extremely important that each member of the pharmacy is able to take a thorough history. Weight loss products are not without side effects, interactions or contraindications. If pharmacists and pharmacy assistants are to sell these products correctly they need to treat them like any other medication that may cause harm. Currently pharmacists and pharmacy assistants are treating these products as a "quick sale" without the need for any assessment to determine their suitability for their consumer.

Recommendations made by pharmacists and pharmacy assistants

Decreased calorie intake and increased exercise

In the general questionnaire, pharmacists and pharmacy assistants were asked what they would recommend to a consumer who wanted to purchase a weight loss product. The majority of pharmacists said that they would recommend decreased calorie intake (95%;

510/537) and increased exercise (73.6%; 395/537) as part of their counselling. Over 50 per cent of pharmacy assistants also said that they would recommend decreased calorie intake (78.7%; 317/403) or increased exercise (53.3%; 215/403). Overall in the case vignette study, the findings were similar to those seen in the general questionnaire with decreased calorie intake and increased exercise also recommended by the majority of pharmacists (62.0%; 333/537) and pharmacy assistants (61.5%; 248/403). Although a combination of decreased calorie intake and increased exercise was recommended for most of the case vignettes, it is worth mentioning that in the pregnancy case vignette, very few pharmacists and pharmacy assistants recommended decreased calorie intake and increased exercise (29.4%; 52/177).

More specifically, in the borderline healthy weight case vignette (woman requesting Xenical®), over 50% (115/200) of respondents said that they would recommend decreased calorie intake and increased exercise. In the mystery shopper study acting out the same scenario, this result was very different, with only a third (10/30) of pharmacists or pharmacy assistants recommending reduced dietary intake and increased physical activity to the mystery shopper. Similarly, the responses to the post-partum case-vignette differed from what was observed in the real-life scenario. In the case-vignette study, over 70% (130/176) of pharmacists and pharmacists said that they would recommend decreased calorie intake and increased exercise, compared to only 50% (15/30) of pharmacists and pharmacy assistants in the mystery shopper study.

There are some explanations for the differences in the observed findings:

- Pharmacists and pharmacy assistants may feel uncomfortable providing decreased calorie intake and increased physical activity counselling in a real-life situation. In a study by Hughes *et al.* investigating primary health care workers' comfort in providing nutrition and physical activity counselling to women, pharmacists and

pharmacy assistants reportedly felt the least comfortable compared to general practitioners and nurses.[11]

- Similar to understanding the benefits of calculating a consumer's BMI, pharmacists were significantly more likely to recommend advice on healthy eating ($P < 0.001$) and increased exercise ($P < 0.001$) in the general questionnaire compared to pharmacy assistants. As mentioned above, the majority of mystery shopper visits were dealt with by pharmacy assistants and this may be the reason for the low number of mystery shopper-pharmacy consultations resulting in decreased calorie intake and increased exercise advice being offered.

Decreased calorie intake and increased physical activity is the recommended first-line therapy for weight management in all national weight management guidelines.[7, 12-14] Pharmacists and pharmacy assistants must be able to provide this information to their consumers when they are approached about weight management. Basic counselling on healthy eating and increased exercise should occur in *all* weight management counselling sessions, in line with relevant dietary and physical activity guidelines available.[7, 15] It is disappointing to see that only 40% (25/60) of mystery shopper pharmacy consultations resulted in this counselling being provided. Before any weight management intervention or program is to be offered or recommended in community pharmacies, all pharmacists and pharmacy assistants need to be trained in this aspect of weight management counselling. Consumers should expect to receive evidence-based diet and exercise advice from their community pharmacist and support-staff. Unfortunately, this is not what is currently observed in practice.

Over-the-counter products and programs marketed for weight management

Over 80 per cent of pharmacist and pharmacy assistant respondents in the general questionnaire said that they would recommend a meal replacement product (MRP) to a consumer wanting to purchase a weight loss product. A quarter of pharmacists (131/537) and 40% (157/403) of pharmacy assistants also said that they would recommend a vitamin or herbal product. This was quite different to what was observed in the case vignette study. For the borderline healthy weight woman and the woman with menopause, half of the pharmacists and pharmacy assistants recommended a MRP. However, for the other case vignettes, very few pharmacists and pharmacy assistants said that they would recommend a MRP or a vitamin/herbal product. For all case vignettes, pharmacy assistants were more likely to recommend a vitamin/herbal product than pharmacists. Again, these results differed in the mystery shopper study. In the mystery shopper study, fewer pharmacists and pharmacy assistants recommended a MRP or a vitamin/herbal product compared to the responses seen in the general questionnaire and case vignette study. It is important to highlight that even though MRPs were recommended less in the mystery shopper study compared to the general questionnaire and case vignettes studies, in the second scenario of the mystery shopper study that investigated weight loss advice, over 70% (22/30) of pharmacists and pharmacy assistants recommended a pharmacy-based program that utilises MRPs.

The first scenario in the mystery shopper study investigated a woman who had a BMI of 26 kg/m^2. Over 50 per cent of pharmacists and pharmacy assistants sold this woman a weight loss product. Although fewer pharmacists and pharmacy assistants sold this woman a MRP or vitamin/herbal product compared to the case vignette study, it is still a concerning figure as this woman should *not* have been sold any weight loss products. It is unknown whether

the sale of the weight loss products in this scenario was because pharmacists and pharmacy assistants wanted to make a sale or because they do not know when it is appropriate to recommend a weight loss product.

Additional information provided

Around 60 per cent of pharmacists (318/537) and pharmacy assistants (250/403) stated in the general questionnaire that they would offer leaflets on weight loss products/advice. This was very different to what was observed in real-life in the mystery shopper study. Women were offered leaflets or take-home information in only 20% (12/60) of the mystery shopper visits. The information provided in the mystery shopper visits often included pamphlets advertising pharmacy weight management programs and did not include general weight management information such as calorie intake, exercise and behavioural modification techniques.

In practice, pharmacists and pharmacy assistants may not have available resources, fact sheets, pamphlets or information to offer their women pharmacy consumers and this may explain the low amount of supplementary material provided during the mystery shopper visits compared to what was depicted in the general questionnaire. The results from the general questionnaire show that pharmacists and pharmacy assistants understand the importance of providing written information but it is disappointing to see that this does not occur in a real-life situation. In addition, even when information was provided to the consumer in the mystery shopper study, the information was not useful. These results indicate that there is currently a gap in weight management service provision that needs to be addressed through the development of appropriate, supplementary material for pharmacists and pharmacy assistants to distribute.

Duration and location of consultation

Differences in the duration of the consultation were also seen between the respondents in the general questionnaire and what was observed in the mystery shopper study. The consultations in the mystery shopper study were shorter than what was indicated in the general questionnaire. In addition, the majority of the respondents in the general questionnaire said that they would conduct a weight management consultation in a private consulting room, however, this was not observed in the mystery shopper visits. The majority of the mystery shopper visits were conducted in front of the main counter or in front of the weight loss section of the pharmacy. Time, staffing issues and layout of the pharmacy have been previously noted as barriers to providing enhanced pharmacy services and could explain the differences in the results observed.[10]

Training

In the general questionnaire the main training areas in which pharmacists and pharmacy assistants indicated that they need further education (advice on healthy eating, increased physical activity, weight loss medications and counselling skills) were the same areas that were identified as lacking in the mystery shopper study. This highlights that pharmacists and pharmacy assistants appear to know in which weight management areas they need further training to improve their recommendations to women pharmacy consumers.

Conclusion

The differences observed between what pharmacists and pharmacy assistants reported they will do in the general questionnaire and the case vignette study compared to what they actually did in a real-life setting were highlighted in this summary. The differences noted were significant, which emphasises the importance of conducting studies that test

real-life performance. From the results of the general questionnaire and the case vignette study, pharmacists and pharmacy assistants appear to know what is needed to provide a satisfactory weight management consultation. It is unacceptable that this currently does not occur in a real life setting as demonstrated by the mystery shopper study.

Educational resources need to be developed to target the areas that were identified as unsatisfactory. Before educational resources can be developed, it is important to determine their content, design and delivery. It was also evident from Phases 2 and 3 that pharmacy assistants have a large role to play in the provision of weight management services in community pharmacies. Thus, Phase 4 of this research project was designed to determine what women, pharmacists and pharmacy assistants want in weight management educational resources for community pharmacy use.

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PHASE FOUR

IDENTIFYING WHAT WOMEN PHARMACISTS AND PHARMACY ASSISTANTS WANT IN WEIGHT MANAGEMENT EDUCATIONAL RESOURCES

Introduction to Phase 4: Identifying what women, pharmacists and pharmacy assistants want in weight management educational resources

Based on the previous phases of the research project, it was evident that educational resources for pharmacists and pharmacy assistants need to be promptly developed. It was also identified from the previous phases that women pharmacy consumers need a trusted, evidence-based, easily accessible resource for delivery of up-to-date weight management information. However, before such a resource can be developed, it is vital to comprehensively identify what material women, pharmacists and pharmacy assistants want it to contain. Phase 4 used focus groups to further explore the barriers and facilitators to delivering weight management services in community pharmacies, and to identify the material women, pharmacists and pharmacy assistants want in a future educational resource.

The objectives of this study were to:

- explore the opinions and views of women, pharmacists and pharmacy assistants on whether they feel pharmacies have a role in the delivery of weight management services; and
- identify what women, pharmacists and pharmacy assistants want in their ideal weight management educational resource.

A manuscript has been submitted to the International Journal of Pharmacy Practice and is presented as Chapter 10.

Chapter 10 - Submitted manuscript:

Fakih S, Marriott JL, Hussainy SY. Developing Weight Management Educational Resources - What Do Women, Pharmacists and Pharmacy Assistants Want? International Journal of Pharmacy Practice (Submitted January 2014)

Note: This work was approved by the Monash University Human Research Ethics Committee (Appendix 9). Copies of the topic guides, explanatory statements and consent forms have been provided in Appendix 10.

CHAPTER 10

DEVELOPING WEIGHT MANAGEMENT EDUCATIONAL RESOURCES - WHAT DO WOMEN, PHARMACISTS AND PHARMACY ASSISTANTS WANT?

10.1 Declaration for Thesis Chapter 10

Declaration by candidate

In the case of Chapter 10, the nature and extent of my contribution to the work was the following:

Nature of contribution	Extent of contribution (%)
Reviewed literature; designed methods; coordinated the ethics application; developed study materials; carried out recruitment and focus groups; performed data analysis; and prepared manuscript	80%

The following co-authors contributed to the work:

Name	Nature of contribution
Dr Safeera Hussainy	Designed methodology; reviewed ethics application, study materials, data analysis and manuscript.
A/Prof Jennifer Marriott	Designed methodology; reviewed ethics application, study materials, data analysis and manuscript.

Candidate's Signature		**Date**

Declaration by co-authors

The undersigned hereby certify that:

1. the above declaration correctly reflects the nature and extent of the candidate's contribution to this work, and the nature of the contribution of each of the co-authors.
2. they meet the criteria for authorship in that they have participated in the conception, execution, or interpretation, of at least that part of the publication in their field of expertise;
3. they take public responsibility for their part of the publication, except for the responsible author who accepts overall responsibility for the publication;
4. there are no other authors of the publication according to these criteria;
5. potential conflicts of interest have been disclosed to (a) granting bodies, (b) the editor or publisher of journals or other publications, and (c) the head of the responsible academic unit; and
6. the original data are stored at the following location(s) and will be held for at least five years from the date indicated below:

Location	**Centre for Medicine Use and Safety, Faculty of Pharmacy and Pharmaceutical Sciences, Monash University, Parkville, Victoria 3052**

		Date
Dr Safeera Hussainy		
A/Prof Jennifer Marriott		

10.2 Research article

Title

Developing Weight Management Educational Resources - What Do Women, Pharmacists and Pharmacy Assistants Want?

Abstract

Objective

It is evident from the literature that weight management educational resources for pharmacists and pharmacy assistants are needed to help improve their weight management recommendations to women pharmacy consumers. The main objective of this study was to identify what women, pharmacists and pharmacy assistants want in an ideal weight management educational resource.

Methods

Three homogenous and one heterogeneous focus group of up to 120 minutes duration were conducted with ten women, ten pharmacists and seven pharmacy assistants. The nominal group technique was used to conduct each focus group to determine the most important issues that should be considered before developing and implementing any educational resources. The heterogeneous focus group was used to finalise what women, pharmacists and pharmacy assistants want in an educational resource.

Key findings

Overall, pharmacists, pharmacy assistants and women believe that pharmacy staff have an important role in the treatment of overweight and obesity due to their accessibility, trust and the availability of products in pharmacy. The perceived barriers to providing pharmacy

weight management services were similar across the three participant groups, with time, lack of specific knowledge and lack of available resources being the most commonly discussed issues. Regarding the most suitable healthcare professional(s) to treat overweight and obesity, the majority of participants believed that no one member of the health care team was most suitable and that overweight and obesity needs to be treated by a multidisciplinary team. The participants unanimously agreed that training in weight management needed to be ongoing, easily accessible, in both online and in hard copy form and, most importantly, needs to originate from reputable sources.

Conclusion

Pharmacy-specific weight management educational resources that are readily available to pharmacy staff and women are highly desirable. Future research can use the findings from this study to determine the content and design of a pharmacy-based weight management educational resource.

Keywords

Women; Pharmacists; Pharmacists' Aides; Educational Needs Assessment; Weight

Introduction

Overweight and obesity is defined by the World Health Organization (WHO) as the excessive or abnormal fat accumulation in the body that may cause impaired health.[1] Obesity is a complex condition, one with serious social and psychological dimensions, which affects virtually all age and socioeconomic groups. Obesity can increase the risk of a number of conditions including type 2 diabetes mellitus, hypertension, coronary heart disease, breast, colon and uterine cancers, gastroesophageal reflux disease and osteoarthritis.[2-4] It is therefore not surprising that health problems relating to obesity cause a significant economic burden to the individual and to society. In Australia over 60 per cent of the population is now considered overweight or obese,[5] with reports indicating a further increase over the next ten years.[6] Colagiuri estimated that the total annual direct and indirect cost for overweight and obesity in Australia in 2005 was $56.6 billion.[7] In 2008 Australian health ministers made obesity a National Health Priority Area, recognising it as a chronic disease that has a big impact on Australia's health.[8]

Over the last ten years community pharmacies have been increasingly involved in weight management. A recent national survey of Australian community pharmacists and pharmacy assistants found that over 90 per cent of the community pharmacies surveyed stocked weight loss products and just under 50 per cent provided a weight management program.[9] The participants in the study highlighted the need for increased training in the weight management area, with approximately 60 per cent wanting increased training in counselling on diet, exercise and over-the-counter weight loss medication.[9] Online educational resources were highlighted to be the most appropriate way to deliver training information.[9] Similarly, a study by Um *et al.* found that pharmacists were interested to participate in the weight management area but were in need of further training, with the authors suggesting an accredited weight management training program be developed.[10]

The results from these studies indicate the need to further explore what pharmacy staff (pharmacists and pharmacy assistants) want in a weight management educational resource designed specific for them.

Women have been reported to be the main consumer group of weight loss products in community pharmacies.[9] Women are at an increased risk of weight gain throughout their adult life and have specific causes of overweight and obesity, which include polycystic ovary disease, hormonal changes, pregnancy and menopause.[11] Overweight and obesity in women has been linked to infertility, pregnancy complications and childhood obesity in the unborn child.[11] Modest weight losses of 5 to 10 per cent bodyweight have been shown to have significant benefits on overweight and obesity-related health conditions, including decreased fertility problems and complications in pregnancy and delivery.[12] Recent studies have highlighted the need to investigate women's weight management approaches and devise specific weight management plans.[13, 14] In particular, a need for educational resources that outline up-to-date and unbiased information has been proposed so that women have timely access to evidence-based information.[15]

Women in Australia, in the perinatal period, have been shown to come into contact with pharmacy staff more than any other primary health care professional, including general practitioners and nurses.[16] Advice on nutrition and physical activity are two main components of any weight management program,[13] and it is thus vital that further education is provided to pharmacy staff in these areas so that they are able to deliver appropriate weight management services. A recent Australian study highlighted that pharmacy staff were significantly less likely to provide nutrition and physical activity advice to women in the ante-natal or post-natal period compared to general practitioners and nurses ($P < 0.01$).[16] The researchers emphasised the importance of additional training for all pharmacy staff in women's nutrition and physical activity.[16] Maher *et al.* explored

Australian mother's ulitisation of community pharmacies for their nutrition needs and found that pharmacies have a role to play in providing nutrition advice in this life stage.[17] The authors further reinforced the importance of training pharmacy staff in this area.[17]

Women pharmacy consumers in Victoria have previously indicated that they want pharmacist involvement in an ideal weight management program.[18] Women pharmacy consumers have also indicated that they feel extremely comfortable approaching pharmacists for weight management advice and believe that pharmacies are an ideal location for a weight management program. [18]

It is therefore evident that pharmacy-specific educational resources are needed for pharmacy staff so they are better able to deliver weight management services in community pharmacy. It is also important to deliver educational material targeted to pharmacy consumers' needs, especially women pharmacy consumers. Currently there is no information available to help determine the content, design and delivery of pharmacy educational resources targeting pharmacy staff and women pharmacy consumers.

This paper describes the results of focus groups that aimed to determine what women, pharmacists and pharmacy assistants want in weight management educational resources.

Methods

Focus groups are widely used in qualitative research with the aim of "describing and understanding perceptions, interpretations and beliefs" of a group of participants from a specific population.[19] Unlike an in-depth interview where the participants tend to answer the interviewer's questions, focus groups enable the participants to interact, discuss and explore ideas and views regarding a specific area.[20, 21] Focus groups have been used to supplement findings from survey research, as a way to validate and confirm quantitative

results.[22] They are also used as a way to explore survey findings in greater depth by using qualitative methodology.[22]

The Nominal Group Technique (NGT) is one method used to conduct focus groups. Due to its structured format, it enables members of the focus group to have equal opportunity to express their ideas and results in a higher number of ideas per focus group compared to brainstorming and the Delphi technique. It is often used in health care research to explore evaluations of care, developing educational resources and in auditing.[23]

This study utilised the NGT method to supplement and verify results obtained from previous work conducted with surveys.[9, 18] Three homogenous focus groups, one with pharmacists, one with pharmacy assistants and one with women, were used to further investigate:

- how pharmacists, pharmacy assistants and women feel about community pharmacy's involvement in weight management (barriers and facilitators);
- how pharmacy staff can work with other health care professionals in the weight management area;
- the type of educational material pharmacists, pharmacy assistants and women feel is needed; and
- pharmacists', pharmacy assistants' and women's opinions on the content, design and most appropriate means of educational resource delivery (e.g. internet, smart phone application, book etc.).

A heterogeneous focus group that included a combination of pharmacists, pharmacy assistants and women aimed to validate the results from the first three homogenous focus groups, to finalise what women, pharmacists and pharmacy assistants want in an

educational resource and to also understand the differences in views and opinions (if any) between the three groups of participants.

Participant selection and recruitment

Pharmacists and pharmacy assistants:

Pharmacists and pharmacy assistants were initially selected at random. The researcher (S.F.) called the first thirty pharmacies from a randomised list of pharmacies in Victoria, obtained from the Victorian Pharmacy Premises Regulation Authority, to determine their interest in participating. The 'snowball' sampling method was also used to recruit pharmacists and pharmacy assistants to participate.[21]

The first six pharmacists and six pharmacy assistants to agree to participate were designated to the homogenous focus groups. The next three pharmacists and three pharmacy assistants were allocated to the heterogeneous focus group.

Women

The women were recruited using the purposive sampling method, using an invitation flyer and also via the snowball sampling method.[21] To be involved, women had to be over 18 years and be able to communicate in English. The flyer was distributed in two community pharmacies in Victoria to capture women pharmacy consumers.

Similar to pharmacists and pharmacy assistants, the first six women to agree to participate were designated to the homogenous focus group. The next three women were allocated to the heterogeneous focus group.

Conducting the focus groups

The four focus groups were conducted in March, 2013 at Monash University, Parkville campus at a time convenient to the participants. S.F. was the facilitator and an assistant

(Z.F. or J.G) acted as an audio-recorder/note-keeper/observer. Two hours were allocated to each focus group session.

Homogenous focus groups

Prior to conducting the homogenous focus group, each member received an explanatory statement outlining the aims and the structure of the focus group session, a consent form, and a list of questions to be asked throughout the session. No results from the previous mailed surveys were given to the participants as the researchers did not want to contaminate any of the focus group findings.[9, 18] Once at the focus group session, the NGT was used and the following steps were followed.

Introductory phase

The facilitator introduced the study and the aim of the focus group. All members of the focus group were asked to introduce themselves. The questions to be answered by the participants during the focus group were explained to help minimise any potential ambiguity or misinterpretation.

Silent generation of ideas

The participants were given 20 minutes to list ideas for each question. This was done as an independent exercise and no discussion between the participants or facilitator occurred. The questions considered are presented in Table 1.

Round robin session

For each question, each member of the focus group was asked, in a “round robin” session, to discuss an idea they had considered. Each idea was recorded on a white board. The round robin session continued for each question until all the ideas had been presented.

Table 1: Questions discussed during homogenous focus groups

1. Reasons why pharmacists, pharmacy assistants and pharmacies DO have a role to play in the weight management area.
2. Reasons why pharmacists, pharmacy assistants and pharmacies DO NOT have a role to play in the weight management area.
3. What are the factors that you feel are limiting your capacity or the capacity of your community pharmacy to help your consumers in the weight management area? (pharmacists and pharmacy assistants only)
4. Do you feel other health care professionals are more appropriately suited to be involved in this area? If so, which healthcare professionals?
5. How do you think a multidisciplinary team approach to weight management will work the best?
6. What type of weight management educational resources (if any) do you think are needed?
7. Do you feel that the internet is the most appropriate medium to deliver these resources? If not, what other delivery approaches do you think will be more appropriate?
8. If a weight management educational resource was developed for online access how would you want an internet site designed and made accessible i.e. just online, in a smart-phone application, printable resources etc?
9. What material do you want in these educational resources? e.g. information on diet, exercise, meal plans, behavioural modification techniques etc.
10. What other tools do you want in these educational resources? e.g. calorie counter, online discussion group, exercise diary etc.

Clarification

In this stage, discussion between the group members was used to clarify and revisit ideas for each question that had been presented during the round-robin session. Ideas that were related and interpreted in the same way by the group members were condensed. A final list of ideas for each question was generated.

Voting and ranking

The participants were then given 15 minutes to choose the five ideas for each question that they thought were most relevant or held the most importance. They were then asked to rank those ideas from 1 (least important) to 5 (most important). This was done independently by each member of the focus group as a silent exercise.

For each question, the ranking for every idea was recorded. The sum of the ranks was then used to classify the ideas that were most important to the members of the group.

Heterogeneous focus group

The heterogeneous focus group was conducted one week after the three homogenous focus groups. Prior to conducting this focus group, all the ideas for each question were re-ranked based on the sum of the ranks from each focus group meeting (aggregate score from the three focus groups). The ordered list of ideas for each question was then given to the members of the heterogeneous focus group before the meeting.

The NGT was used to finalise what women, pharmacists and pharmacy assistants want in an educational resource and to validate the results from the homogenous focus groups. The same NGT steps described above were used in the heterogeneous focus group; however, in the heterogonous focus group, the participants already had a list of ideas previously generated for each question. Their role was to add any new ideas they thought had been missed and to also re-rank the ideas for each question from 1 (least important) to 10 (most important).

At the end of the heterogeneous focus group, a final ranked list of ideas for each question was generated. The top five ideas according to rank for each question have been reported in this paper.

Ethics approval

The study was approved by the Monash University Human Research Ethics Committee (Approval number: CF13/303 – 2013000139, February 2013).

Results

Participant characteristics

Four focus groups were conducted. The characteristics of the participants in the focus groups are presented in Table 2. The majority of the participants were female, which is representative of the current pharmacy workforce.

Table 2: Participant characteristics

Focus group session	Number of participants	Age range (years)	Gender (female)
Homogenous focus group 1: Women	6	18-56 (median= 32)	6
Homogenous focus group 2: Pharmacy assistants	4	18-21 (median= 19)	4
Homogenous focus group 3: Pharmacists	7	23-49 (median= 27)	5
Heterogeneous group:	10	18-60 (median= 35)	10
Women	3		3
Pharmacy assistants	4		4
Pharmacists	3		3

The results from all ten questions shown in Table 1 are presented below under four main headings: barriers and facilitators to community pharmacies involvement in weight management; pharmacist involvement in a multidisciplinary team in weight management;

type of educational resources needed by pharmacists, pharmacy assistants and women; and views and opinions on the content, design and most appropriate means of educational resource delivery.

1. **Barriers and facilitators to community pharmacies involvement in weight management**

In response to question 1, pharmacists, pharmacy assistants and women felt that pharmacies do have a role to play in the weight management area (Table 3). Regarding question 2, limitations to pharmacies offering weight management services were identified, including lack of time, lack of private consulting areas, pharmacists and pharmacy assistants not knowing the products they sell well enough, difficulty in maintaining a free service and the perceived difficulty in being able to adequately follow-up with the consumer.

In response to question 3, pharmacists and pharmacy assistants listed time and staffing issues, lack of training, lack of public awareness of the role of the pharmacist and pharmacy assistants, lack of privacy, and the difficulty in following-up the consumer as the main factors limiting the capacity of pharmacists and pharmacy assistants being able to help their consumers in the weight management area.

Table 3: Reasons why pharmacists, pharmacy assistants and pharmacies DO have a role to play in the weight management area

Rank	Suggested items			
	Homogenous group 1: Women	**Homogenous group 2: Pharmacy assistants**	**Homogenous group 3: Pharmacists**	**Heterogeneous group**
Reasons why pharmacists, pharmacy assistants and pharmacies DO have a role to play in the weight management area				
1.	Informal, no appointment needed and easily accessible.	Pharmacy staff are trained to ask questions regarding medial conditions and medications, which are important in weight loss.	Accessibility.	Pharmacies sell products, pharmacy assistants familiar with products and able to give advice to consumers.
2.	Informal, less clinical approach.	Accessibility of pharmacies	Pharmacists are trained health care professionals.	Pharmacists are trained health care professionals.
3.	Predominately female employees, can relate to women better.	Pharmacies sell products, pharmacy assistants familiar with products and able to give advice to consumers.	Informal, consumers feel comfortable approaching pharmacists/ pharmacy assistants.	Follow-up with consumers can be done as regular consumers come into local pharmacy.
4.	Give more attention to people than doctors	Follow-up with consumers can be done, regular consumers come into local pharmacy.	Opportunity for pharmacies	Accessibility, no appointment needed.
5.	Less intimidating to see pharmacy staff	Pharmacies are the only destination that can give advice and compare all the different kinds of products available.		Pharmacy staff are trained to ask questions regarding medical conditions and medications, which are important in weight loss.

2. **Pharmacist involvement in a multidisciplinary team in weight management**

Regarding question 4, women, pharmacists and pharmacy assistants felt that "No one member of the health care team is most suited (in weight management). Everyone has a role depending on the kind of consumer. Some people will need more than one health care professional". Overall, dietitians and exercise physiologists were named as important health care professionals to be involved in the weight management area. Pharmacists and pharmacy assistants were considered important as they are able to "offer comparative information on products" and "capture those who are just browsing in the pharmacy".

When asked how a multidisciplinary team in weight management involving a pharmacist would work best in question 5, the participants thought that a team within a pharmacy or adjacent to a pharmacy (all healthcare professionals working in one location or in close communication with each other) would be ideal, or having educational sessions in the pharmacy could facilitate the same i.e. nutritionist/dietitian/exercise consultants can visit the pharmacy and give advice to groups of consumers or an individual consumer. The most important consideration was to ensure that "all health care professionals knew their role in what advice they were responsible in providing, as this will decrease overlap and enable consistent flow of information".

3. **Type of educational resources needed by pharmacists, pharmacy assistants and women**

In response to question 6, pharmacists, pharmacy assistants and women thought that educational resources were needed to assist them in the weight management area (Table 4). Women highlighted the importance of having educational resources developed from trustworthy sources that were free from financial gain and commercialisation. Hard copy formats of educational material including brochures, pamphlets, magazines and self-care fact cards (health information fact cards distributed in community pharmacies) were still desirable. The importance of up-to-date training was also emphasised.

Table 4: Educational resources pharmacists, pharmacy assistants and women feel are needed in weight management

Rank	Suggested items			
	Homogenous group 1: Women	**Homogenous group 2: Pharmacy assistants**	**Homogenous group 3: Pharmacists**	**Heterogeneous group**
What type of weight management educational resources (if any) do you think are needed?				
1.	Educational resources are needed and need to come from trustworthy resources without financial gain or commercialization.	Up-to-date training (ongoing)	Current, up-to-date information	Brochures, pamphlets, magazines, self-care cards.
2.	Brochures, pamphlets, magazines, self-care cards.[#]	Easy to access, current information, from reliable sources	Reputable sources	Up-to-date training (ongoing)
3.	Screenings in pharmacies or other health care sites: DVDs, advertisements on TV.	Comparative information from a reliable source	Online modules	Online
4.	Face-to-face	Contact numbers for pharmaceutical companies to obtain product information	Face-to-face continuing education	Face-to-face continuing education
5.	Online		Therapeutic guidelines on weight management	Educational resources are needed and need to come from trustworthy resources without financial gain or commercialization.

[#]hard copy that can be supplemented with electronic form

4. **Views and opinions on the content, design and most appropriate means of educational resource delivery**

Regarding question 7, the internet was viewed as the most appropriate medium to deliver weight management educational resources as long as there were supplementary materials, such as printable options, available. The advantages of having educational material online were that "it's fast, easily accessible and easily kept up-to-date". Pharmacists, pharmacy assistants and women also felt that "materials (online or hard copy) need to have links to health care professionals trained in the weight management area" and that if "resources are made available online, [you] need to educate consumers about Google® so people can access the educational resources appropriately". Finally, face-to-face seminars to supplement information available online were highlighted as being a necessity to further facilitate training of pharmacists and pharmacy assistants in weight management. Table 5 highlights the way in which pharmacists, pharmacy assistants and women want an online site developed and made accessible (question 8), what material pharmacists, pharmacy assistants and women want in the educational resources (question 9) and finally what additional tools the participants believed are required (question 10).

Table 5: Views and opinions on the content, design and most appropriate means of educational resource delivery

Rank	Suggested items			
	Homogenous focus group 1: Women	**Homogenous focus group 2: Pharmacy assistants**	**Homogenous focus group 3: Pharmacists**	**Heterogeneous group**
If a weight management educational resource was developed for online access how would you want an internet site designed and made accessible i.e. just online, in a smart-phone application, printable resources etc?				
1.	Webpage needs to have different pages for professionals and consumers. This will require an individual login.	Personalisation of website, more interactive for the consumer and health care professional.	Easy to use search bar	Smart phone applications that can also be personalised
2.	Online discussion groups with women and health care professionals	Smart phone applications that can also be personalised	Different pages for pharmacists, pharmacy assistants and women.	Webpage needs to have different pages for professionals and consumers. This will require an individual login.
3.	Unbiased information, from trusted sources (not from commercial products).	Webpage needs to have different pages for professionals and consumers. This will require an individual login.	Input/output option i.e. people can enter information and receive feedback on weight loss accomplishments etc.	Unbiased information, from trusted sources (not from commercial products).
4.	Lots of graphs and pictures so information is easy to understand and follow	Forum/chat room	Interactive, lots of pictures, diagrams etc.	Input/output option i.e. people can enter information and receive feedback on weight loss accomplishments etc.
5.	Multilingual	Quotes, motivational strategies	Health benefit reminders, motivational strategies to keep people on track.	Forum/chat room- online discussion groups with women and health care professionals.

Rank	Suggested items			
	Homogenous focus group 1: Women	**Homogenous focus group 2: Pharmacy assistants**	**Homogenous focus group 3: Pharmacists**	**Heterogeneous group**
What material do you want in these educational resources? e.g. information on diet, exercise, meal plans, behavioural modification techniques etc.				
1.	Recommendations for exercise and ideal exercise locations i.e. parks and natural environments.	Information on weight loss products	Information on weight loss products	Meal plans
2.	Information on food and diets	Meal plans	Basic information on nutrition	Information on weight loss products
3.	Glossary for difficult words when simple words cannot be used	Information on different diets with ideas on how to achieve successful results when using those diets.	Information on new diets that are advertised	Information on different diets with ideas on how to achieve successful results when using those diets.
4.	Meal plans	Information on history-taking techniques and initial counselling strategies.	Meal plans	Recommendations for exercise and ideal exercise locations i.e. parks and natural environments.
5.	Have the “hows” and “whys” of suggestions and recommendations	Information on self-motivation tools	Exercise information: types and duration	Information on self-motivation tools

Rank	Suggested items			
	Homogenous focus group 1: Women	**Homogenous focus group 2: Pharmacy assistants**	**Homogenous focus group 3: Pharmacists**	**Heterogeneous group**
What other tools do you want in these educational resources? e.g. calorie counter, online discussion group, exercise diary etc.				
1.	Calorie counter List of food: why each is good, why each is bad.	Food and exercise diary	Tools for pharmacists so that they know how to provide a weight loss service: "business model'.	Food and exercise diary
2.	Links to parks, exercise locations. Pedometer linked to smart phone application	Ability to personalise smart phone application	Information on how to train staff: "train the trainer"	List of food: why each is good, why each is bad.
3.	Recording body mass index (BMI), height, weight to track progress.	Online discussion group	BMI calculators for different ethnicities	Calorie counter
4.	Glossary of ingredients that can be found in food.	BMI calculating tools	Discussion groups	Recording BMI, height, weight to track progress. Glossary of ingredients that can be found in food
5.	Links to recipes and healthy choice options			Ability to personalise smart phone application

Discussion

By the using the NGT, this study determined what priority areas women, pharmacists and pharmacy assistants want in an ideal weight management educational resource. The focus groups were able to validate findings from surveys regarding weight management services in community pharmacy and the areas in which pharmacists, pharmacy assistants and women are deficient.[9, 18]

This study found that pharmacists, pharmacy assistants and women feel that community pharmacies have a definite role to play in weight management. Similar to other studies investigating enhanced pharmacy services, reasons for wanting pharmacy involvement in weight management included accessibility of pharmacies and pharmacy staff having regular contact with pharmacy consumers.[24, 25] Interestingly, the reasons that pharmacists, pharmacy assistants and women felt were most relevant to pharmacies having a role in weight management were the current availability of weight loss products in pharmacy and pharmacists being trained health care professionals. The participants felt that because pharmacies sell weight loss products, the pharmacy staff should be able to give appropriate advice to their consumers. This finding strengthens the need to ensure that pharmacy staff are able to provide appropriate, evidence-based advice to their consumers regarding all weight loss products/programs available in pharmacy.

The major barriers identified by focus group participants to pharmacies providing weight management services were similar to those reported in other studies.[10, 26] A study conducted in Texas using a mailed questionnaire to 400 randomly selected pharmacies found that the three most acknowledged barriers to counselling on weight management were lack of time (76.8%), lack of patient demand (55.8%) and lack of reimbursement (49.3%). Increasing pharmacists' knowledge and resources on weight management counselling, as well as increasing the public's awareness on the role of pharmacists in

weight management, were seen as good methods to overcome the above barriers.[26] Similarly, in this study the importance of increased training and increased public education regarding the role of the pharmacist in weight management were seen as major factors that would increase community pharmacy's capacity to offer weight management services.

All participants, women, pharmacists and pharmacy assistants, stressed the importance of involving pharmacists in a multidisciplinary team to obtain the best possible weight management outcome. Collaboration has previously been identified as a major strength in delivering successful weight management programs.[13] Studies have shown that multidisciplinary weight management interventions are more likely to be effective compared to weight management interventions delivered by one health care professional.[27, 28] Similar to the women participants in this study, consumers have previously felt the need for pharmacists to be involved in a multidisciplinary weight management intervention.[29] The new 2013 National Health and Medical Research Council (NHMRC) Clinical Practice Guidelines for the Management of Overweight and Obesity for Adults, Adolescents and Children in Australia have noted key areas where health care professionals can be involved in weight management.[13] These include:

- providing advice on healthy eating and increased exercise i.e. a "healthy lifestyle";
- assessing body mass index (BMI), height, weight, waist circumference and other health conditions that the individual may be at an increased risk of;
- introducing discussions about weight management interventions if and when needed;
- assisting the individual to develop a weight management program or to refer to other health care professionals with specific expertise if required; and

- reviewing and monitoring the individual throughout the intervention and to continue to provide support for a successful weight management outcome afterwards.

Although the NHMRC guidelines provide suggestions on where each healthcare professional might be involved in a multidisciplinary approach to help "ask, assess, advise, assist and arrange" a weight management intervention for an individual,[13] pharmacists and pharmacy staff are not mentioned.

Based on the results from these focus groups and other survey research[9, 18] it may be possible that appropriately trained pharmacy staff can be involved in each of the key areas above to provide desirable weight management services to their consumers.

In this study, participants discussed the importance of having hard copy material to supplement electronic resources, which highlights the importance of having educational resources in various formats to target all audiences. The internet was chosen as the most appropriate medium to deliver educational resources as it was seen as a medium that is fast, easily accessible and able to be kept up-to-date. Similar to the findings from the focus groups, a recent Australian study by Lewis *et al.*, exploring why obese people search the internet for weight loss advice, concluded that consumers are in need of a website that is reputable, bias free and has a strong support network so that the users can feel part of a community.[30] Most importantly, this study concluded that the developed website should not only offer information about weight loss, but also about lifestyle change.[30] Similarly, the focus group participants in the study reported here highlighted the importance of having a website that contains information regarding healthy eating, physical activity, different diet and meal plans and also information on motivational techniques. Developers of future pharmacy weight management educational resources need to consider what pharmacy

staff and women consumers have identified as being important and aim to include that information in any resources produced.

This study also identified the importance of having a website that can be accessed by both pharmacy staff and consumers with different login options. By having a login page, the participants in the focus group felt that each person (consumer or pharmacy staff member) could have access to a site personalised to them. In this way, consumers are able to obtain the support that they need at their specific stage of weight loss. It is known that regular support during weight maintenance is essential, as maintaining weight loss is a difficult process.[13] The women in the homogenous focus group and heterogeneous focus group felt that weight loss successes would be more achievable if consumers had a personalised website that allows them to visualise their weight change and also receive up-to-date information on weight loss and weight maintenance techniques. Also, by women having personalised pages, different information regarding the specific stage of their life, whether it be the perinatal stage, menopause etc., can be generated with their log in. In addition, for pharmacy staff, their individualised login may contain more specific information regarding the different weight loss products and programs and also have referral contacts to local weight management specialist health care professionals.

This study also highlighted the importance of having information for pharmacists on how to provide a weight loss service - “a business model” - and information on how to train staff. A “train the trainer” education model was discussed in the pharmacist homogenous focus group. Train the trainer involves adequately training the main employees at the pharmacy and providing them with the tools to train other staff members. The importance of addressing these two issues (how to provide weight loss advice and information on how to train staff) when developing future pharmacy educational resources or training programs is essential. Um *et al.* have previously explored the best weight management service model in

Australian community pharmacy.[10] They have identified that pharmacists can be involved in offering weight management services through health promotion or by providing an individualised pharmacy weight management service to their consumers.[31] These findings should be included in educational resources produced in the future.

Finally, the heterogeneous focus group allowed for a consensus to be reached amongst pharmacists, pharmacy assistants and women regarding what is needed in any future pharmacy educational resources. Very few additional ideas were generated in the last focus group session, which helped confirm that saturation of ideas had been reached in the homogenous focus groups.

Conclusion

Pharmacy-specific weight management educational resources that are readily available to pharmacy staff and women are highly desirable. These educational resources need to be easily accessible, in formats that can be delivered to varying members of the community, able to be personalised and need to contain information from trusted sources. Future research can use the findings from this study for the content and design of a pharmacy-based weight management educational resource.

Declarations

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Conflict of interest

The Author(s) declare(s) that they have no conflicts of interest to disclose.

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CHAPTER 11

GENERAL DISCUSSION

11.1 Summary of findings

With the prevalence of overweight and obesity expected to reach 66 per cent over the next decade[1] and the importance of investigating women's weight issues increasingly being highlighted,[2-4] the purpose of this research project was to explore where pharmacy can help to prevent, treat and manage overweight and obesity in women in a community setting. The overall aim of this research project was to explore the knowledge, experiences and practices of current weight management services of women, pharmacists and pharmacy assistants.

The research project investigated the opinions, attitudes and experiences of women pharmacy consumers (the population group to whom future educational resources will be targeted) and pharmacists and pharmacy assistants (the health care professionals and support staff who will be utilising the educational resources to help better inform their consumers on appropriate weight management practices). The information generated from this research project is crucial to helping develop and implement women-specific weight management educational resources for use in/through community pharmacies. The hypotheses presented in Chapter 1 of this thesis were addressed throughout the research project and are discussed below.

Phase 1 explored women pharmacy consumers' experiences and attitudes regarding currently available weight management products and programs in Victoria, Australia and Nottingham, England. This was the first study in Australia or internationally to explore pharmacy consumers' experiences with weight management products and programs. Unlike previous studies that have investigated non-pharmacy consumer experiences and opinions of pharmacy involvement in weight management,[5-8] this study found that women pharmacy consumers felt comfortable approaching pharmacists regarding weight

management and also felt that there was a role for pharmacists to deliver weight management services in a community pharmacy. Over a third of women in Victoria (117/281) and Nottingham (54/155) wanted a pharmacist involved in their ideal weight management program. Over 40 per cent of women in Victoria (118/281), and over a quarter of the women in Nottingham (39/155), wanted their ideal weight management program located in a pharmacy. Women's positive opinions on pharmacy involvement in weight management services were further emphasised in **Phase 4** of the research project during focus group sessions. Women in this phase of the research project expressed that pharmacists, pharmacy assistants and the community pharmacy have a role in the delivery of weight management services due to their accessibility, informal, less clinical approach and by having predominately female employees. Similar to other studies, however, limitations of pharmacy weight management services were expressed; these included lack of time, lack of privacy and pharmacists' and pharmacy assistants' lack of knowledge regarding the products and programs that they offer.[7, 9, 10]

Results from **Phase 1** also highlighted that pharmacy consumers are influenced by the products that pharmacies sell. Pharmacy consumers in both the Victoria and Nottingham study used weight loss products and programs available in pharmacies, i.e. herbal supplements, meal replacement products and specific pharmacy programs, more frequently than is commonly reported in other studies investigating weight management practices of non-pharmacy consumers.[11, 12] The need for pharmacists and pharmacy assistants to be able to counsel appropriately on OTC weight loss products and programs has previously been mentioned.[13] With over 90% (832/880) of the pharmacies surveyed in **Phase 2** selling OTC weight loss products and just fewer than 50% (424/880) offering a weight management program, the ability of pharmacists and pharmacy assistants to counsel appropriately on these products and programs is critical. The inappropriate sale of herbal supplements, meal replacement products and pharmacists' and pharmacy assistants'

recommendations to join a pharmacy weight management program was seen in **Phase 3** in the answers to the case vignettes and during the mystery shopper pharmacy visits. Pharmacists and pharmacy assistants recognise their need for additional training in this area with over 50 per cent of both pharmacists (288/537) and pharmacy assistants (250/403) in **Phase 2** wanting further training on weight loss products. Women, pharmacists and pharmacy assistants further highlighted in **Phase 4** the importance of having up-to-date, easily accessible, evidence-based information on OTC weight management products and programs**.**

The importance of appropriate weight management counselling by pharmacists and pharmacy assistants to women pharmacy consumers was depicted in all four phases of the research. In **Phase 1** women were using appropriate weight management practices (decreased calorie intake, increased physical activity) but for very short periods of time and with very high initial weight loss goals. In addition, very few women in **Phase 1** had received any advice from their health care professional in their last weight loss attempt. The majority of women in Victoria and Nottingham, however, wanted a health care professional involved in their ideal weight management program. These results emphasise the importance of health care professionals supporting and providing evidence-based weight management recommendations to their consumers. The inability of pharmacists and pharmacy assistants to provide appropriate weight management advice was highlighted in the mystery shopper study in **Phase 3**.

Phases 2, 3 and 4 identified that pharmacists and pharmacy assistants need further training in the ability to elicit an appropriate and adequate weight management history from their consumers. Without a thorough history, health care professionals are unable to make suitable weight management recommendations to their consumers. The inability to obtain a thorough weight management history could be one of the reasons why women pharmacy

consumers had received very little advice from their health care professional during their last weight loss attempt.

The significance of pharmacists being involved in a multidisciplinary team to offer weight management services was also identified throughout the research project. In **Phase 1** women in Victoria and Nottingham expressed their desire to have dietitians, general practitioners, exercise physiologists and pharmacists as part of their ideal weight management program. This was further highlighted in **Phase 4,** when women, pharmacists and pharmacy assistants unanimously agreed that "No one member of the health care team is most suited. Everyone has a role depending on the kind of consumer." In **Phase 3** the majority of pharmacists and pharmacy assistants who responded to the case vignettes said that they would refer to another health care professional. In particular, the pharmacists emphasised the importance of being part of a multidisciplinary team in the more complicated case (case vignette 5) that explored recommendations to a severely obese women who had reached menopause. In the mystery shopper visits **(Phase 3)**, however, very few pharmacists or pharmacy assistants referred the women to another health care professional. It is vital that pharmacists and pharmacy assistants understand where, and how, they can fit into a multidisciplinary team so that the best health outcomes for their consumers can be generated.

The differences between what pharmacists and pharmacy assistants report they do, compared to what they do in real-life when approached with a weight management request, was explored in Phase 3. **Phase 3** involved two studies, one with case vignettes and one with mystery shopper visits. The aim of **Phase 3** was to identify what pharmacists and pharmacy assistants recommend to women pharmacy consumers seeking weight management advice and thus identify future training areas. As expected, pharmacists and pharmacy assistants performed better in the case vignettes compared to the mystery

shopper visits – that is they did better in theory than in actual practice. Pharmacists and pharmacy assistants were more likely to recommend appropriate dietary and increased physical activity advice in the case vignettes compared to the mystery shopper visits and were also more likely to recommend appropriate products, programs and refer to appropriate health care professionals in the case vignettes. There are a number of possible explanations for the differences in these results. Firstly, pharmacists and pharmacy assistants answered the case vignettes in their own time and may have had access to references, which they may not have had, or to which they did not refer, in the real-life setting. Secondly, the pharmacists and pharmacy assistants may know what to recommend to their consumers but in a real-life setting may not feel comfortable actually recommending this course of action. Finally, pharmacists and pharmacy assistants may feel that they lack the time to offer the weight management services they said they would offer in the case vignettes. Nevertheless, the importance of additional training in history-taking and appropriate recommendations to women of different life-stages and BMIs was seen in both studies.

Finally, the need to have accessible, up-to-date, evidence-based weight management educational resources for women, pharmacists and pharmacy assistants was identified throughout the research. In **Phase 2** it was found that very few pharmacies in Australia were utilising weight management guidelines and/or resources to help them provide weight management recommendations to their consumers. The need for additional training in a variety of weight management areas including advice on diet, exercise, weight loss products, medications and appropriate counselling skills was seen as a necessity for pharmacists and pharmacy assistants to be able to better help their consumers in this area. Furthermore, in **Phase 2** the majority of pharmacists and pharmacy assistants expressed a desire for educational resources to be available online, with over half of pharmacists (n=

281/537; 52.3%) and pharmacy assistants (n=258/403; 64.0%) also wanting information in a hard-copy format.

These results were further emphasised in the focus groups in **Phase 4** of the study, with women, pharmacists and pharmacy assistants all considering the internet as the most appropriate medium to deliver weight management educational resources, with the need for supplementary material available in hard-copy formats further expressed. A clear outline of what information women want to support them with weight management was determined in **Phase 4**. The results from **Phase 4** also identified what pharmacists and pharmacy assistants require to help them better advise their women pharmacy consumers and make appropriate weight management recommendations. The areas in which pharmacists and pharmacy assistants highlighted that they need further education and training were the same areas that were identified as lacking in **Phase 3.**

11.2 What this research adds

Over the last five years a number of studies have been published nationally and internationally regarding pharmacy involvement in weight management services.[7, 8, 14-18] This research project was unique in that it was the first to investigate:

- Women pharmacy consumers' experiences and practices with weight loss products and programs and their opinions of pharmacy involvement in the treatment of weight management;
- What weight management services are being provided by Australian community pharmacies; and
- The knowledge and current practices of, and recommendations provided by, both pharmacists and pharmacy assistants to women pharmacy consumers seeking weight loss advice.

The collective findings of this research project have added to the growing body of evidence regarding pharmacist involvement in weight management.

Previous studies have explored the views and opinions of non-pharmacy consumers regarding weight management practices and their opinions of pharmacy involvement in weight management.[5-7, 19] Phase 1 found that the majority of women pharmacy consumers felt comfortable approaching a pharmacist regarding weight management, want pharmacists to be involved in their ideal weight management program and want their program to be located in a pharmacy. In contrast, Krska *et al.* found that the majority of individuals in the general population (n=177) wanted to receive weight management advice in gyms, with only one person nominating a pharmacy.[6] A recent study by Um *et al.* also found that very few consumers in the general population (n=56/403) in New South Wales, Australia had sought any advice from their pharmacist regarding weight management.[7] However, a third of the population in this study felt that the community pharmacy was a suitable environment to deliver weight management services.[7] Although the results from the women pharmacy consumer study in this research project differed from the opinions on pharmacy involvement in weight management in nonpharmacy consumer studies, the number of consumers who had previously attempted to lose weight, the weight loss practices (decreased calorie intake and increased exercise) and the number of consumers who had received advice from a health care professional in their last weight loss attempt were comparable to other studies.[5, 6, 11] The finding that women pharmacy consumers felt comfortable receiving advice from their pharmacists highlights that this population group is receptive to weight management services provided in pharmacy. It was important that this research considers the views of women pharmacy consumers as they are the potential target population group for weight management services, educational resources and programs.

At the time of this research, community pharmacy weight management services were also investigated by Um and her team in New South Wales, Australia.[7, 20] Um *et al.* conducted a study using semi-structured interviews with 20 pharmacists in one state in Australia.[17] This study explored the current weight management services provided by pharmacists and the perceived barriers to providing weight management services. In addition, Um *et al.* investigated the role of pharmacists in weight management by conducting semi-structured interviews with 12 experts in New South Wales.[20] This study found that pharmacists could be involved in weight management in two different roles: health promotion and providing an individualised service. The importance of training was highlighted in both studies.

Um *et al.'s* research differs from the research presented in this thesis as their results are from one state in Australia, do not explore definite training requirements required by pharmacists and pharmacy assistants and do not specially consider women's weight management needs. By using a nation-wide survey in Phase 2 of this study, the training areas and method of delivery of weight management educational resources for pharmacists and pharmacy assistants were elicited. In addition, by using mystery shopper visits in Phase 3 of this research project actual weight management recommendations made by pharmacists and pharmacy assistants in a real-life setting were further explored. These two complementary studies validate the additional training requirements needed by pharmacists in Australia in weight management. In addition, this research was the first in Australia or internationally to investigate pharmacy assistants' recommendations around weight management products and programs and to explore their training requirements in this area.

11.3 Recommendations

As can be seen from the findings of this research, women-specific educational resources need to be developed and implemented in community pharmacy. The results generated from all four phases of the research should be considered when developing these educational resources.

The following general recommendations can be made:

- Weight management advice should be delivered face-to-face in the pharmacy. Educational resources should be used to supplement information provided;
- Educational resources need to be accessible online with accompanying hard-copy formats to help pharmacists and pharmacy assistants support their women pharmacy consumers;
- Information regarding the benefits of weight loss needs to be highlighted in educational resources. In addition, pharmacists should use opportunities when dispensing medications used to treat obesity-related conditions to deliver weight management advice;
- Pharmacists and pharmacy assistants need to become more familiar with available weight management guidelines and educational resources so that they are aware of evidence-based weight management treatment(s);
- Pharmacists and pharmacy assistants should utilise the 5A's counselling framework provided in the 2013 NHMRC Clinical Practice Guidelines for the Management of Overweight and Obesity in Adults, Adolescents and Children in Australia to help them recommend appropriate weight management advice to their consumers.[21] This framework will also improve their ability to take an appropriate weight management history;

- Pharmacists and pharmacy assistants need to become more familiar with women-specific weight issues so that they are able to support their women pharmacy consumers in different life stages, especially since it has been shown that women in the perinatal period come into contact with pharmacists and pharmacy assistants more frequently than other primary health care professionals;[22]
- Women pharmacy consumers should be educated about the importance of seeking health care advice prior to commencing any weight management regimen;
- Training in the areas identified as lacking by women, pharmacists and pharmacy assistants in all phases of the research need to be addressed so that pharmacists and pharmacy assistants can deliver appropriate weight management services to their women pharmacy consumers; and
- Government bodies need to consider pharmacists as key health care professionals in the prevention and treatment of overweight and obesity in Australia and as such, need to be mentioned in future iterations of existing weight management guidelines so that other health professionals are aware of the pharmacist's role in this area.

It is envisioned that the development of pharmacy-specific educational resources will enable pharmacy staff to better support women when providing weight management recommendations and will also enable women pharmacy consumers to access information from a credible site about diet, exercise, weight management products and programs, medications that impact on weight and how to manage weight during different phases of life. The aim of future resources would be to educate pharmacists, pharmacy assistants and their women pharmacy consumers about nutrition, physical activity and healthy lifestyle behaviours to help prevent and treat overweight and obesity and ultimately help make Australia a healthier country.

11.4 Future research directions

The results from this research project have provided key stakeholders - government bodies, pharmacy professional organisations and universities - with the information required for the future development and implementation of women-specific educational resources for use in community pharmacies.

First, a study should be conducted to determine the suitability and acceptance of future educational resources by pharmacists, pharmacy assistants and women pharmacy consumers. Research should also investigate whether pharmacists and pharmacy assistants' knowledge, comfort in providing weight management advice, history-taking skills and counselling ability, is improved after the dissemination of the educational resources. Future studies should determine whether weight management educational resources for women, delivered by pharmacists and pharmacy assistants, contribute to positive weight loss outcomes.

In addition, only Phase 1 was conducted in both Victoria and Nottingham, England. Although similar results between the women pharmacy consumers were found, in future it will be important to investigate the current recommendations made by pharmacists and pharmacy assistants to women pharmacy consumers in England. This will help determine whether the same educational resources developed in Australia for pharmacists and pharmacy assistants, can be utilised in both regions.

11.5 Conclusions

This research has provided a greater understanding of the current weight management practices of women pharmacy consumers and recommendations made by pharmacists and pharmacy assistants. It showed that pharmacies are viewed as an appropriate health

destination for weight management services, but that, at present, pharmacists and pharmacy assistants are not well-equipped to provide those services. The need for the development of pharmacy-specific educational resources was reinforced in all four phases. Each phase was able to identify the different areas that need to be addressed in future educational resources, including training areas identified as lacking and information that women and pharmacy staff want included. Importantly, this research has identified how best to design and deliver future educational resources for pharmacy staff and women pharmacy consumers.

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APPENDICES

Appendix 1

Ethics approval: Phase 1 (Chapter 4 and 5)

MONASH University

Monash University Human Research Ethics Committee (MUHREC)
Research Office

Human Ethics Certificate of Approval

Date:	**4 November 2010**
Project Number:	**CF10/2672 - 2010001481**
Project Title:	**Women's Health and Wellbeing Research Project**
Chief Investigator:	**Dr Safeera Hussainy**
Approved:	**From: 4 November 2010 To: 4 November 2015**

Terms of approval

1. The Chief investigator is responsible for ensuring that permission letters are obtained, if relevant, and a copy forwarded to MUHREC before any data collection can occur at the specified organisation. **Failure to provide permission letters to MUHREC before data collection commences is in breach of the National Statement on Ethical Conduct in Human Research and the Australian Code for the Responsible Conduct of Research**.
2. Approval is only valid whilst you hold a position at Monash University.
3. It is the responsibility of the Chief Investigator to ensure that all investigators are aware of the terms of approval and to ensure the project is conducted as approved by MUHREC.
4. You should notify MUHREC immediately of any serious or unexpected adverse effects on participants or unforeseen events affecting the ethical acceptability of the project.
5. The Explanatory Statement must be on Monash University letterhead and the Monash University complaints clause must contain your project number.
6. **Amendments to the approved project (including changes in personnel):** Requires the submission of a Request for Amendment form to MUHREC and must not begin without written approval from MUHREC. Substantial variations may require a new application.
7. **Future correspondence:** Please quote the project number and project title above in any further correspondence.
8. **Annual reports:** Continued approval of this project is dependent on the submission of an Annual Report. This is determined by the date of your letter of approval.
9. **Final report:** A Final Report should be provided at the conclusion of the project. MUHREC should be notified if the project is discontinued before the expected date of completion.
10. **Monitoring:** Projects may be subject to an audit or any other form of monitoring by MUHREC at any time.
11. **Retention and storage of data:** The Chief Investigator is responsible for the storage and retention of original data pertaining to a project for a minimum period of five years.

Professor Ben Canny
Chair, MUHREC

cc: Assoc Prof Jennifer Marriott, Ms Souhiela Fakih

Postal – Monash University, Vic 3800, Australia
Building 3E, Room 111, Clayton Campus, Wellington Road, Clayton
[redacted]
[redacted] www.monash.edu/research/ethics/human/index/html
ABN 12 377 614 012 CRICOS Provider #00008C

The University of Nottingham

Division of Social Research in Medicines and Health

Research Ethics Approval Form

Name: Souhiela Fakih

Supervisor(s): Jennifer Marriott and Safeera Hussainy
Helen Boardman, Claire Anderson

Course of study: Doctor of Philosophy

Title of research project: Women's Health and Wellbeing Research Project

Is this a re-submission? No

Comments:
This project does not involve invasive intervention to participants and the protocol complies with Research Code of Conduct of the University of Nottingham. All relevant ethic issues have been considered.

Outcome:

Approved ☑ Revise and re-submit ☐

Signed: [redacted]

Name: Li-Chia Chen

Date: 07 February 2011

Appendix 2

Phase 1 (Chapter 4 and 5) supplementary material: Victoria

- Community pharmacy invitation letter
- Community pharmacy permission letter
- Explanatory statement
- Questionnaire
- Recruitment poster for women

MONASH University
Pharmacy and Pharmaceutical Sciences

December 2010

Attention: Pharmacy proprietor/manager

Re: Women's Health and Wellbeing Research Project

Dear Pharmacy proprietor/manager,

I am writing to you regarding a research project being conducted by the Centre for Medicine Use and Safety, Faculty of Pharmacy and Pharmaceutical Sciences, Monash University, into gaining an insight of women's pharmacy consumer's experiences with weight loss treatments. This project will form part of the research towards attainment of the degree of Doctor of Philosophy (PhD).

This project aims to survey women pharmacy consumers, to determine: if they are currently using or have used weight loss treatment(s); awareness of treatment evidence and potential consequences of obesity (e.g. on "heart health"); treatment duration, perceived benefits and adherence; and interaction with health professionals during treatment and advice given. This information would inform the development of guidelines on weight management in women that could be used by pharmacists to provide evidence-based advice.

We are seeking expressions of interest from pharmacies as potential locations for this project, which is planned to begin in January 2011.

It is expected that pharmacies and participants will not be disadvantaged or put at risk in this project. The project involves conducting a 15-20 minute questionnaire with women consumers in the pharmacy premises. The researcher will be present the entire time in case the participants require any assistance. Participants will receive a $5-$10 gift voucher (funded by the University) once they have completed the questionnaire, which they can use in the pharmacy (not to be used to purchase prescription products).

For your convenience I have attached to this invitation a template expression of interest letter. Should you wish to lodge an expression of interest to take part in this project, and use your pharmacy premises as a location for this questionnaire to be completed, please fill in the relevant details and return it via fax (9903 9629) or mail to Souhiela Fakih in the Department of Pharmacy Practice. Should you have any questions about the project please feel free to contact me. Additionally, my academic supervisors, Dr Safeera Hussainy and A/Prof Jennifer Marriott, will also be available to answer any questions you may have.

I look forward to hearing from you soon.

Sincerely,

[redacted]

Souhiela

Souhiela Fakih
Pharmacist, PhD Candidate
Department of Pharmacy Practice, Centre for Medicine Use and Safety
Monash University
[redacted]

Dr Safeera Hussainy
Lecturer, Academic Supervisor
Department of Pharmacy Practice, Centre for Medicine Use and Safety
[redacted]

A/Prof Jennifer Marriott
Associate Professor, Academic Supervisor
Department of Pharmacy Practice, Centre for Medicine Use and Safety
Monash University
[redacted]

MONASH University
Pharmacy and Pharmaceutical Sciences

Permission Letter for Women's Health and Wellbeing Research Project

Date:

Souhiela Fakih
Pharmacist and PhD Candidate
Department of Pharmacy Practice
Centre for Medicine Use and Safety
Faculty of Pharmacy and Pharmaceutical Sciences,
Monash University (Parkville Campus)
381 Royal Parade
Parkville VIC 3052
Telephone: 9903 9057
Fax: 9903 9629

Dear **Souhiela Fakih**

Thank you for your request to recruit participants for the above-named research from

_____
_____**< please insert name of pharmacy>**

I have read and understood the letter of invitation regarding the research project and hereby give permission for this research to be conducted in the pharmacy premises.

Yours Sincerely,

<insert signature of pharmacy owner/manager
<insert name of the above signatory>
<insert above signatory's position>

MONASH University
Pharmacy and Pharmaceutical Sciences

Explanatory Statement- Female Pharmacy Consumers

Project Title: Women's Health and Wellbeing Research Project

This information sheet is for you to keep.

My name is **Souhiela Fakih B.Pharm (Hons)** and I am conducting a research project with **Associate Professor Jennifer Marriott** and **Dr. Safeera Hussainy** at the Centre for Medicine Use and Safety, Department of Pharmacy Practice, Faculty of Pharmacy and Pharmaceutical Sciences, Monash University. I am conducting this research project towards a Doctor of Philosophy at Monash University. This means that I will be writing a thesis which is the equivalent of a 300 page book. A report of the project may also be submitted for publication in a journal or be presented at a conference. We have funding from Monash University and the University of Nottingham research alliance for this project to also be conducted in Nottingham, UK, once approval from the University of Nottingham ethics committee has been granted.

Why did you choose this particular person/group as participants?
The research project aims to develop weight management guidelines for women visiting community pharmacies; hence the participants for this project are female pharmacy consumers.

Information from women is sought as females use more weight loss products than males, and currently there are no specific guidelines developed for women to help them lose or maintain their weight. Pharmacy consumers were chosen because many women of different backgrounds, ages and qualifications visit pharmacies for a range of purposes, and therefore information can be collected from a range of different women regarding their different experiences with weight loss treatments.

Participants for this project have been chosen at random. Women are chosen based on the time they walk in to the pharmacy. The first female that walks in to the pharmacy every 45 minutes will be asked to participate in this questionnaire. So you have been chosen to participate in this project because you are the first female that walked in to the pharmacy during this 45 minute interval.

The aim/purpose of the research

The aim of this project is to gain information about women's interactions with health care professionals (doctors, nurses, dieticians, pharmacists) and their awareness of the health risks of being overweight or obese. The project also aims to gain an increased knowledge of women pharmacy consumers' experiences with weight loss treatment and perceived problems with current weight loss programs,

This information will later help us develop Australian weight management guidelines specific to women.

Possible benefits
There may be no direct benefit from the participation in this project. By participating in this project participants will provide researchers with valuable information that will later be used for the development of weight management guidelines specific to women. This may benefit certain participants in future to help them lose or maintain their weight.

What does the research involve?
Participation in this project involves completion of a questionnaire about you in general, and your health and weight loss experiences.

How much time will the research take?
The research assistant will need to explain the research project and this may take up to 20-30 minutes. The questionnaire itself will only take about 15-20 minutes for you to complete.

Inconvenience/discomfort
There are no foreseeable risks other than the inconvenience of your time required to complete the questionnaire. If you experience inconvenience or discomfort due to the time required, you are free to withdraw participation at any time while completing the questionnaire. However you cannot withdraw after submitting the questionnaire as it will be unable to be identified.

If you become upset or distressed as a result of your participation in the project, the researcher is able to arrange for counselling or other appropriate support. Any counselling or support will be provided by staff who are not members of the research team.

The researcher will be present in the pharmacy the entire time you are filling out the questionnaire, so if you have any questions or need any assistance completing the questionnaire you are free to ask them. If you have any questions or you would like to talk to someone about the research project later on, you are free to contact me or my supervisors on the contact details listed below.

Payment
All participants who complete the questionnaire will be given a $7.50 voucher that can be used in the pharmacy (cannot be used to purchase prescription products).

Can I withdraw from the research?
Participation in this research project is voluntary and you are under no obligation to participate. If you decide to take part and later change your mind, you are free to withdraw from the project. However once the questionnaire is completed and submitted to the researcher you will not be able to withdraw from the research as the entire questionnaire is anonymous.
If there are certain questions that are in the questionnaire that you feel are too personal or too intrusive you are free to not answer them. This will not affect your participation in the project.

Confidentiality

All the information collected from individual participants during the course of this project will be kept confidential. The questionnaires are completely anonymous and participants will not be able to be identified at any stage during the research project.

In any publication and/or presentation information will be provided in such a way that you cannot be identified.

Storage of data

Storage of the data collected will adhere to the University regulations and kept on University premises in a locked cupboard/filing cabinet for 5 years.

Use of data for other purposes

It is not intended that this data be used for any other purpose for which it is primarily obtained.

Results

If you would like to be informed of the aggregate research finding, please contact myself or my supervisors (see below). The findings will be accessible after all data is collected.

If you would like to contact the researchers about any aspect of this study, please contact the Chief Investigator:	If you have a complaint concerning the manner in which this research **<insert your project number here>** is being conducted, please contact:
Souhiela Fakih B.Pharm(Hons) PhD candidate Centre for Medicine Use and Safety, Monash University. [redacted] Dr. Safeera Hussainy Lecturer, Academic supervisor Centre for Medicine Use and Safety, Monash University [redacted] Associate Professor Jennifer Marriott Academic Supervisor Centre for Medicine Use and Safety, Monash University [redacted]	**Executive Officer, Human Research Ethics** **Monash University Human Research Ethics Committee (MUHREC)** **Building 3e Room 111** **Research Office** **Monash University VIC 3800** [redacted]

Thank you,

Souhiela Fakih B.Pharm(Hons)

MONASH University
Pharmacy and Pharmaceutical Sciences

WOMEN'S HEALTH AND WELLBEING RESEARCH PROJECT QUESTIONNAIRE

Please tick the appropriate box(es) and/or write in the spaces provided.

Section A

1. Why did you visit the pharmacy today? (You may tick more than one)
   ☐1 To speak to a pharmacist ☐2 To fill a prescription
   ☐3 To buy an over the counter medication ☐4 To buy a vitamin or herbal product
   ☐5 To buy cosmetics or perfumes ☐6 To join a weight loss program
   ☐7 Other (please specify).....

2. How is your health in general?
   ☐1 Very poor ☐2 Poor ☐3 Fair ☐4 Good ☐5 Very good ☐6 Excellent

3. Do you have any medical conditions? (You may tick more than one)
   ☐1 None ☐2 High cholesterol ☐3 High blood pressure
   ☐4 Heart condition ☐5 Diabetes ☐6 Cancer
   ☐7 Depression ☐6 Asthma ☐7 Arthritis
   ☐8 Others (please specify).....

4. Are you currently taking any medications including non-prescription medications and vitamins (e.g. daily supplements, the oral contraceptive pill, asthma puffers, etc)?
   ☐1 Yes (please specify) ☐2 No
   .....
   .....
   .....

5. Which of the following health care professionals have you visited regarding your health in the last 12 months? (You may tick more than one)
   ☐1 Doctor ☐2 Pharmacist ☐3 Dentist
   ☐4 Psychologist ☐5 Physiotherapist ☐6 Dietitian
   ☐7 Optometrist ☐8 Podiatrist ☐9 Others (please specify).....

6. Which single health care professional have you visited **MOST** frequently regarding your health in the last 12 months? (Please tick only one)
   ☐1 Doctor ☐2 Pharmacist ☐3 Dentist
   ☐4 Psychologist ☐5 Physiotherapist ☐6 Dietitian
   ☐7 Optometrist ☐8 Podiatrist ☐9 Others (please specify).....

7. Do you smoke cigarettes?
   ☐1 Yes *(go to question 10)* ☐2 Never smoked *(go to question 11)* ☐3 I quit *(go to question 8)*

8. How long ago did you quit smoking?
   ☐1 0-5 months ago ☐2 6-11 months ago ☐3 1-5 years ago
   ☐4 6-10 years ago ☐5 over 10 years ago

9. Which of the following helped you to quit smoking? (You may tick more than one)
   ☐1 Quit with no help ☐2 Champix® (Varenicline) ☐3 Zyban® (Bupropion)
   ☐4 Quit Helpline ☐5 Nicotine replacement therapy *e.g. Patches, gum, lozenges*
   ☐6 Others (please specify).....

10. Have you ever smoked cigarettes to lose or maintain your weight?
    ☐1 Yes ☐2 No

11. Do you know how much you currently weigh?
    ☐1 Yes, please specify: [ ][ ][ ] Kgs **Or** [ ][ ][ ] Pounds
    ☐2 No

    If you would like to know your weight please speak to the research assistant.

12. Do you know how tall you are?
    ☐1 Yes, please specify: [ ][ ][ ] Cms **Or** [ ] Feet/inches
    ☐2 No

    If you would like to know your height please speak to the research assistant.

Section B

13. Have **YOU** ever considered yourself overweight?
    ☐1 Yes ☐2 No

14. Has anyone ever told you that you are overweight?
    ☐1 Yes *(go to question 15)* ☐2 No *(go to question 16)*

15. Who told you that you were overweight? (You may tick more than one)
    ☐1 Partner ☐2 Family ☐3 Friends
    ☐4 Colleagues ☐5 Health care professional (please specify).....

16. What do you believe the benefits of weight loss are? (You may tick more than one)
    ☐1 No benefits ☐2 Increased energy ☐3 Lower risk of heart problems
    ☐4 Improved mobility ☐5 Lower risk of diabetes ☐6 Lower risk of high cholesterol
    ☐7 Decreased blood pressure ☐8 Increased self-esteem ☐9 Increased motivation
    ☐10 Others (please specify).....

17. Have you **EVER** attempted to lose weight in the past?
    ☐1 Never ☐2 Once ☐3 2-5 times
    ☐4 6-10 times ☐5 More than 10 times

    If you answered "Never" to question 17 please go to Section C (page 6).
    If you ticked another response to question 17 please go to question 18.

18. Why did you want to lose weight? (You may tick more than one)
    ❑1 To look and feel good ❑2 For a special event ❑3 For my health
    ❑4 Someone told me to (please specify).....
    ❑5 Other (please specify).....

19. In the last **FIVE** years which of the following methods have you used to try to lose weight? (You may tick more than one)
    ❑1 Decreased calorie intake (healthy eating) ❑2 Increased exercise
    ❑3 Jenny Craig or Weight Watchers (please specify).....
    ❑4 Meal replacement products, *e.g. Optifast*® (please specify).....
    ❑5 Pharmacy based weight loss programs, *e.g. Tony Ferguson*® (please specify).....
    ❑6 Weight loss medication, *e.g. Xenical*® (please specify).....
    ❑7 Vitamins/herbal products marketed for weight loss (please specify).....
    ❑8 Weight reducing surgery *e.g. gastric banding*
    ❑9 Others (please specify).....

20. Which of the following methods do you believe are most effective for **SHORT-TERM** weight loss? (You may tick more than one)
    ❑1 None ❑2 Decreased calorie intake ❑3 Increased exercise
    ❑4 Jenny Craig or Weight Watchers ❑5 Weight loss medication, *e.g. Xenical*®
    ❑6 Meal replacement products, *e.g. Optifast*® ❑7 Pharmacy based weight loss programs
    ❑8 Vitamins/herbal products marketed for weight loss ❑9 Weight reducing surgery
    ❑10Others (please specify).....

21. Which of the following methods do you believe are most effective for **LONG-TERM** weight loss? (You may tick more than one)
    ❑1 None ❑2 Decreased calorie intake ❑3 Increased exercise
    ❑4 Jenny Craig or Weight Watchers ❑5 Weight loss medication, *e.g. Xenical*®
    ❑6 Meal replacement products, *e.g. Optifast*® ❑7 Pharmacy based weight loss programs
    ❑8 Vitamins/herbal products marketed for weight loss ❑9 Weight reducing surgery
    ❑10Others (please specify).....

Questions 22-35 are related to your *LAST* weight loss attempt

22. How long ago was your last weight loss attempt? ..... years ..... months

23. In your ***last*** weight loss attempt, which of the following weight loss methods did you use? (You may tick more than one)
    ❑1 Decreased calorie intake (healthy eating) ❑2 Increased exercise
    ❑3 Jenny Craig or Weight Watchers (please specify).....
    ❑4 Meal replacement products, *e.g. Optifast*® (please specify).....
    ❑5 Pharmacy based weight loss programs, *e.g. Tony Ferguson*® (please specify).....
    ❑6 Weight loss medication, *e.g. Xenical*® (please specify).....
    ❑7 Vitamins/herbal products marketed for weight loss (please specify).....
    ❑8 Weight reducing surgery *e.g. gastric banding*
    ❑9 Others (please specify).....

24. What influenced you to choose this/these method(s) of weight loss? (You may tick more than one)
    ☐1 Nothing ☐2 Family/Friends ☐3 TV/radio/newspaper/magazines
    ☐4 Exercise Consultant e.g. gym instructor ☐5 Internet
    ☐6 Health care professional (please specify).....
    ☐7 Other (please specify).....

25. Where was the ***last*** place you purchased a weight loss product (medication/vitamin/herbal) or joined a weight loss program?
    ☐1 Not applicable ☐2 Supermarket ☐3 Pharmacy
    ☐4 Internet ☐5 Health food store ☐6 Other (please specify).....

26. In your ***last*** weight loss attempt how much weight did you **WANT** to lose?
    ☐1 0-2 kgs ☐2 3-5 kgs ☐3 6-10 kgs
    ☐4 11-15 kgs ☐5 16-20 kgs ☐6 over 20 kgs

27. How much weight did you lose?
    ☐1 0-2 kgs ☐2 3-5 kgs ☐3 6-10 kgs
    ☐4 11-15 kgs ☐5 16-20 kgs ☐6 over 20 kgs

28. How long did you use the weight loss method for?
    ☐1 0-3 weeks ☐2 1-2 months ☐3 3-5 months
    ☐4 6-8 months ☐5 9-11 months ☐6 over 1 year

29. Have you since regained any of the weight you lost?
    ☐1 Yes *(go to question 30)* ☐2 No *(go to question 32)*

30. How long did it take you to regain the weight?
    ☐1 0-3 weeks ☐2 1-3 months ☐3 4-6 months
    ☐4 7-11 months ☐5 1-2 years ☐6 over 2 years

31. What do you think caused you to regain the weight? (You may tick more than one)
    ☐1 Stopped the weight loss method(s) ☐2 Stress
    ☐3 The weight loss method(s) didn't work ☐4 A significant event
    ☐5 Other (please specify).....

32. Did you experience any side effects from the weight loss method(s) you ticked in question 23? (You may tick more than one)
    ☐1 No side effects ☐2 Headache ☐3 Agitation
    ☐4 Nausea/vomiting ☐5 Constipation ☐6 Loss of concentration
    ☐7 Diarrhoea ☐8 Other (please specify).....

33. Did you receive advice from a health care professional before you started or while using this/these method(s) of weight loss? (You may tick more than one)
    ☐1 No advice was received ☐2 Doctor ☐3 Exercise Consultant e.g. gym trainer
    ☐4 Dietitian ☐5 Pharmacist ☐6 Pharmacy Assistant
    ☐7 Other (please specify).....

If you answered "No advice was received" to question 33 then please go to question 36.
If you ticked any of the other responses please go to question 34.

34. What advice did the health care professional(s) give you? (You may tick more than one)
❑1 Decrease calorie intake ❑2 Increase exercise ❑3 Take a vitamin/herbal medication
❑4 Take a weight loss medication e.g. *Xenical®, Reductil® or Duromine®*
❑5 Join a weight loss program ❑6 Other (please specify).....

35. Did you find their advice helpful?
❑1 Not at all helpful ❑2 Not helpful ❑3 Unsure
❑4 Somewhat helpful ❑5 Extremely helpful

36. Who/What is your most trusted source for weight loss/maintenance advice?
❑1 Family/Friends ❑2 Internet ❑3 TV/radio/newspaper/magazines
❑4 Exercise consultant ❑5 Health care professional (please specify).....
❑6 No one ❑7 Others (please specify).....

37. How would you feel about a pharmacist giving you advice about weight loss/weight maintenance?
❑1 Not at all comfortable ❑2 Not comfortable ❑3 Unsure
❑4 Somewhat comfortable ❑5 Extremely comfortable

38. What do you think is/are the biggest problem(s) when you are trying to lose or maintain your weight? (You may tick more than one)
❑1 There are no problems ❑2 Lack of motivation
❑3 Lack of support from family and friends ❑4 Lack of time
❑5 Lack of support from health care professionals ❑6 Too little information about what to do
❑7 Side effects of weight loss methods ❑8 Cost of product or program
❑9 Currently available weight loss methods aren't effective
❑10 Other (please specify).....

Questions 39-41 are about your *IDEAL* weight management program.

39. In your program, how would advice and information about weight loss/maintenance be delivered? (You may tick more than one)
❑1 Face to face ❑2 Email ❑3 Telephone calls
❑4 Mobile Phone e.g. SMS ❑5 Postal letter ❑6 Other (please specify).....

40. Which health care professional(s) would you like to involve in your program? (You may tick more than one)
❑1 None ❑2 Doctor ❑3 Dietitian
❑4 Pharmacist ❑5 Psychologist ❑6 Exercise Consultant e.g. gym instructor
❑7 Nurse ❑8 Others (please specify).....

41. Where would your program be located?
❑1 Doctors clinic ❑2 Pharmacy ❑3 Gym
❑4 At the workplace ❑5 Home ❑6 Community Centre
❑7 Other (please specify).....

Section C

42. How old are you (in years)?
    - ☐1 18-24
    - ☐2 25-30
    - ☐3 31-40
    - ☐4 41-50
    - ☐5 51-60
    - ☐6 61-70
    - ☐7 Over 70

43. Are you currently pregnant or breastfeeding?
    - ☐1 Pregnant
    - ☐2 Breastfeeding
    - ☐3 Not pregnant or breastfeeding

44. How many children do you have?
    - ☐1 None
    - ☐2 1
    - ☐3 2
    - ☐4 3
    - ☐5 4
    - ☐6 5
    - ☐6 Other (please specify).....

45. In which country were you born in?
    .....

46. What is your level of education?
    - ☐1 No formal education
    - ☐2 Primary school or less
    - ☐3 Secondary school or less
    - ☐4 Post secondary school certificate
    - ☐5 University student
    - ☐6 University graduate
    - ☐7 Post graduate

47. What is the postcode of the suburb in which you live?
    .....

THANK YOU FOR YOUR TIME

MONASH University
Pharmacy and Pharmaceutical Sciences

Women's health and wellbeing Research project

Appendix 3

Phase 1 (Chapter 5) supplementary material: Nottingham

- Community pharmacy invitation letter
- Community pharmacy permission letter
- Explanatory statement
- Questionnaire
- Recruitment poster for women

MONASH University
Pharmacy and Pharmaceutical Sciences

The University of Nottingham

December 2010

Letter of Invitation

Name of Pharmacy:
Address:

Attention: Pharmacy proprietor/manager

RE: Women's Health and Wellbeing Research Project

Dear (Pharmacy proprietor/manager),

I am writing to you regarding a research project being conducted by the School of Pharmacy, Nottingham University and the Centre for Medicine Use and Safety, Faculty of Pharmacy and Pharmaceutical Sciences, Monash University, Australia, into gaining an insight of female pharmacy consumer's experiences with weight loss treatments. This project will form part of the research towards attainment of the degree of Doctor of Philosophy (PhD).

This project aims to survey women pharmacy consumers, to determine: if they are currently using or have used weight loss treatment(s); awareness of treatment evidence and potential consequences of obesity (e.g. on "heart health"); treatment duration, perceived benefits and adherence; and interaction with health professionals during treatment and advice given. This information would inform the development of guidelines on weight management in women that could be used by pharmacists to provide evidence-based advice.

We are seeking expressions of interest from pharmacies as potential participants for this project, which is planned to begin in February 2011.

It is expected that pharmacies and participants will not be disadvantaged or put at risk in this project. The project involves conducting a 15-20 minute questionnaire with women consumers in the pharmacy premises. The researcher will set up a small booth in the pharmacy where the participants will be able to fill out the questionnaire. The booth will have a sign with the title of the project (please see attached). The researcher will be present the entire time in case the participants require any assistance. Participants will receive a £5 gift voucher once they have completed the questionnaire, which they can use in the pharmacy (not to be used to purchase prescription products).

For your convenience I have attached to this invitation a template expression of interest letter. Should you wish to lodge an expression of interest in participating, please fill in the relevant details and return it via mail to Helen Boardman in the School of Pharmacy at the University of Nottingham. Should you have any questions about the project please feel free to contact me via email or phone. Additionally, my local academic supervisors, Dr Helen Boardman and Prof Claire Anderson, will also be available to answer any questions you may have.

I look forward to hearing from you soon.

Sincerely,

[redacted]

Souhiela Fakih
Pharmacist, PhD Candidate
Department of Pharmacy Practice,
Centre of Medicine Use and Safety
Monash University
[redacted]

Dr. Helen Boardman
Lecturer in Pharmacy Practice
Division of Social Research in Medicines and Health
School of Pharmacy
University of Nottingham,
Nottingham NG7 2RD
[redacted]

Professor Claire Anderson
Professor of Social Pharmacy
Division of Social Research in Medicines and Health
School of Pharmacy
University of Nottingham,
Nottingham, NG7 2RD
[redacted]

Permission Letter for Women's Health and Wellbeing Research Project

Date:

Dr. Helen Boardman
Lecturer in Pharmacy Practice
Division of Social Research in Medicines and Health
School of Pharmacy
University of Nottingham,
Nottingham NG7 2RD

Dear **Helen Boardman**

Thank you for your request to recruit participants from **<insert name of pharmacy>** for the above-named research.

I have read and understood the letter of invitation regarding the Women's Health and Wellbeing Research Project and hereby give permission for this research to be conducted in the pharmacy premises.

<Please include any stipulations / clauses the pharmacy may have about recruitment of human participants>.

Yours Sincerely,

<insert signature of pharmacy owner/manager

MONASH University
Pharmacy and Pharmaceutical Sciences

The University of Nottingham

Information Sheet- Female Pharmacy Consumers

Project Title: Women's Health and Wellbeing Research Project

This information sheet is for you to keep.

My name is Souhiela Fakih B.Pharm (Hons) and I am conducting a research project with Professor Claire Anderson and Dr. Helen Boardman at the Division of Social Research in Medicines and Health, School of Pharmacy, The University of Nottingham, as well as,
Associate Professor Jennifer Marriott and Dr. Safeera Hussainy at the Centre for Medicine Use and Safety, Department of Pharmacy Practice, Faculty of Pharmacy and Pharmaceutical Sciences, Monash University, Australia. I am conducting this research project towards a Doctor of Philosophy at Monash University. This means that I will be writing a thesis which is the equivalent of a 300 page book. A report of the project may also be submitted for publication in a journal or be presented at a conference. We have funding from Monash University and the University of Nottingham research alliance for this project to be conducted in Nottingham.

Why did you choose this particular person / group as participants?
The research project aims to develop weight management guidelines for women visiting community pharmacies; hence the participants for this project are female pharmacy consumers.

Information from women is sought as females use more weight loss products than males, and currently there are no specific guidelines developed for women to help them lose or maintain their weight. Pharmacy consumers were chosen because many women of different backgrounds, ages and qualifications visit pharmacies for a range of purposes, and therefore information can be collected from a range of different women regarding their different experiences with weight loss treatments.

Participants for this project have been chosen at random. Women are chosen based on the time they walk in to the pharmacy. The first female that walks in to the pharmacy every 45 minutes will be asked to participate in this questionnaire. So you have been chosen to participate in this project because you are the first female that walked in to the pharmacy during this 45 minute interval.

The aim / purpose of the research

The aim of this project is to gain information about women's interactions with health care professionals (doctors, nurses, dieticians, pharmacists) and their awareness of the health risks of being overweight or obese. The project also aims to gain an increased knowledge of women pharmacy consumers' experiences with weight loss treatment and perceived problems with current weight loss programs,

This information will later help us develop weight management guidelines specific to women.

Possible benefits
There may be no direct benefit from the participation in this project. By participating in this project participants will provide researchers with valuable information that will later be used for the development of weight management guidelines specific to women. This may benefit certain participants in future to help them lose or maintain their weight.

What does the research involve?
Participation in this project involves completion of a questionnaire about you in general, and your health and weight loss experiences.

How much time will the research take?
The research assistant will need to explain the research project and this may take up to 20-30 minutes. The questionnaire itself will only take about 15-20 minutes for you to complete.

Inconvenience/discomfort
There are no foreseeable risks other than the inconvenience of your time required to complete the questionnaire. If you experience inconvenience or discomfort due to the time required, you are free to withdraw participation at any time while completing the questionnaire. However you cannot withdraw after submitting the questionnaire as it will be unable to be identified.

If you become upset or distressed as a result of your participation in the project, the researcher is able to arrange for counselling or other appropriate support. Any counselling or support will be provided by staff who are not members of the research team and include the Nottingham Counselling Service who can be contacted on 0115 950 1743.

The researcher will be present in the pharmacy the entire time you are filling out the questionnaire, so if you have any questions or need any assistance completing the questionnaire you are free to ask them. If you have any questions or you would like to talk to someone about the research project later on, you are free to contact me or my supervisors on the contact details listed below.

Payment
All participants who complete the questionnaire will be given a £5 voucher that can be used in the pharmacy (cannot be used to purchase prescription products).

Can I withdraw from the research?
Participation in this research project is voluntary and you are under no obligation to participate. If you decide to take part and later change your mind, you are free to withdraw from the project. However once the questionnaire is completed and submitted to the researcher you will not be able to withdraw from the research as the entire questionnaire is anonymous.
If there are certain questions that are in the questionnaire that you feel are too personal or too intrusive you are free to not answer them. This will not affect your participation in the project.

Confidentiality
All the information collected from individual participants during the course of this project will be kept confidential. The questionnaires are completely anonymous and participants will not be able to be identified at any stage during the research project.

In any publication and/or presentation information will be provided in such a way that you cannot be identified.

Storage of data
Storage of the data collected will adhere to the University regulations and kept on University premises in a locked cupboard/filing cabinet for 5 years.

Use of data for other purposes
It is not intended that this data be used for any other purpose for which it is primarily obtained.

Results
If you would like to be informed of the aggregate research finding, please contact myself or my supervisors (see below). The findings will be accessible after all data is collected.

If you would like to contact the researchers about any aspect of this study, please contact the Chief Investigator:	If you have a complaint concerning the manner in which this research <insert your project number here> is being conducted, please contact:
Souhiela Fakih B.Pharm(Hons) PhD candidate Centre for Medicine Use and Safety, Monash University, 381 Royal Parade, Parkville VIC 3052, Australia [redacted] Professor Claire Anderson Professor of Social Pharmacy Division of Social Research in Medicines and Health School of Pharmacy University of Nottingham, Nottingham, NG7 2RD [redacted]	**Executive Officer, Human Research Ethics** **Monash University Human Research Ethics Committee (MUHREC)** **Building 3e Room 111** **Research Office** **Monash University VIC 3800** [redacted]

Dr. Helen Boardman Lecturer in Pharmacy Practice Division of Social Research in Medicines and Health School of Pharmacy University of Nottingham, Nottingham NG7 2RD [redacted] Dr. Safeera Hussainy Lecturer, Academic supervisor Centre for Medicine Use and Safety, Monash University, 381 Royal Parade, Parkville VIC 3052, Australia [redacted] Associate Professor Jennifer Marriott Academic Supervisor Centre for Medicine Use and Safety, Monash University, 381 Royal Parade, Parkville VIC 3052, Australia [redacted]	

Thank you.

[redacted]

Souhiela Fakih B.Pharm(Hons)

MONASH University
Pharmacy and Pharmaceutical Sciences

The University of Nottingham

WOMEN'S HEALTH AND WELLBEING RESEARCH PROJECT QUESTIONNAIRE

Please tick the appropriate box(es) and/or write in the spaces provided.

Section A:

1. Why did you visit the pharmacy today? (You may tick more than one)
   ☐1 To speak to a pharmacist ☐2 To fill a prescription
   ☐3 To buy an over the counter medication ☐4 To buy a vitamin or herbal product
   ☐5 To buy cosmetics or perfumes ☐6 To join a weight loss program
   ☐7 Other (please specify).....

2. How is your health in general?
   ☐1 Very poor ☐2 Poor ☐3 Fair ☐4 Good ☐5 Very good ☐6 Excellent

3. Do you have any medical conditions? (You may tick more than one)
   ☐1 None ☐2 High cholesterol ☐3 High blood pressure
   ☐4 Heart condition ☐5 Diabetes ☐6 Cancer
   ☐7 Depression ☐6 Asthma ☐7 Arthritis
   ☐8 Others (please specify).....

4. Are you currently taking any medications including non-prescription medications and vitamins (e.g. daily supplements, the oral contraceptive pill, asthma puffers, etc)?
   ☐1 Yes (please specify) ☐2 No
   .....
   .....
   .....

5. Which of the following health care professionals have you visited regarding your health in the last 12 months? (You may tick more than one)
   ☐1 Doctor ☐2 Pharmacist ☐3 Dentist
   ☐4 Psychologist ☐5 Physiotherapist ☐6 Dietitian
   ☐7 Optometrist ☐8 Podiatrist ☐9 Others (please specify).....

6. Which single health care professional have you visited **MOST** frequently regarding your health in the last 12 months? (Please tick only one)
   ☐1 Doctor ☐2 Pharmacist ☐3 Dentist
   ☐4 Psychologist ☐5 Physiotherapist ☐6 Dietitian
   ☐7 Optometrist ☐8 Podiatrist ☐9 Others (please specify).....

7. Do you smoke cigarettes?
   ☐1 Yes *(go to question 10)* ☐2 Never smoked *(go to question 11)* ☐3 I quit *(go to question 8)*

8. How long ago did you quit smoking?
   ❑1 0-5 months ago ❑2 6-11 months ago ❑3 1-5 years ago
   ❑4 6-10 years ago ❑5 over 10 years ago

9. Which of the following helped you to quit smoking? (You may tick more than one)
   ❑1 Quit with no help ❑2 Champix® (Varenicline) ❑3 Zyban® (Bupropion)
   ❑4 Quit Helpline ❑5 Nicotine replacement therapy *e.g. Patches, gum, lozenges*
   ❑6 Others (please specify).....

10. Have you ever smoked cigarettes to lose or maintain your weight?
    ❑1 Yes ❑2 No

11. Do you know how much you currently weigh?
    ❑1 Yes, please specify: [| | | Kgs] **Or** [| | | Pounds]
    ❑2 No

    If you would like to know your weight please speak to the research assistant.

12. Do you know how tall you are?
    ❑1 Yes, please specify: [| | | Cms] **Or** [| Feet/inches]
    ❑2 No

    If you would like to know your height please speak to the research assistant.

Section B

13. Have **YOU** ever considered yourself overweight?
    ❑1 Yes ❑2 No

14. Has anyone ever told you that you are overweight?
    ❑1 Yes *(go to question 15)* ❑2 No *(go to question 16)*

15. Who told you that you were overweight? (You may tick more than one)
    ❑1 Partner ❑2 Family ❑3 Friends
    ❑4 Colleagues ❑5 Health care professional (please specify).....

16. What do you believe the benefits of weight loss are? (You may tick more than one)
    ❑1 No benefits ❑2 Increased energy ❑3 Lower risk of heart problems
    ❑4 Improved mobility ❑5 Lower risk of diabetes ❑6 Lower risk of high cholesterol
    ❑7 Decreased blood pressure ❑8 Increased self-esteem ❑8 Increased motivation
    ❑9 Others (please specify).....

17. Have you **EVER** attempted to lose weight in the past?
    ❑1 Never ❑2 Once ❑3 2-5 times
    ❑4 6-10 times ❑5 More than 10 times

    If you answered "Never" to question 17 please go to Section C (page 6).
    If you ticked another response to question 17 please go to question 18.

18. Why did you want to lose weight? (You may tick more than one)
    ❑1 To look and feel good ❑2 For a special event ❑3 For my health
    ❑4 Someone told me to (please specify).....
    ❑5 Other (please specify).....

19. In the last **FIVE** years which of the following methods have you used to try to lose weight? (You may tick more than one)
    ❑1 Decreased calorie intake (healthy eating) ❑2 Increased exercise
    ❑3 Weight loss support meetings, e.g. Weight Watchers (please specify).....
    ❑4 Meal replacement products, *e.g. Slimfast*® (please specify).....
    ❑5 Pharmacy based weight loss programs, *e.g. Boots Pharmacy* (please specify).....
    ❑6 Weight loss medication, *e.g. Alli*® (please specify).....
    ❑7 Vitamins/herbal products marketed for weight loss (please specify).....
    ❑8 Weight reducing surgery *e.g. gastric banding*
    ❑9 Others (please specify).....

20. Which of the following methods do you believe are most effective for **SHORT-TERM** weight loss? (You may tick more than one)
    ❑1 None ❑2 Decreased calorie intake ❑3 Increased exercise
    ❑4 Weight loss support meetings ❑5 Weight loss medication, *e.g. Alli*®
    ❑6 Meal replacement products, *e.g. Slimfast*® ❑7 Pharmacy based weight loss programs
    ❑8 Vitamins/herbal products marketed for weight loss ❑9 Weight reducing surgery
    ❑10Others (please specify).....

21. Which of the following methods do you believe are most effective for **LONG-TERM** weight loss? (You may tick more than one)
    ❑1 None ❑2 Decreased calorie intake ❑3 Increased exercise
    ❑4 Weight loss support meetings ❑5 Weight loss medication, *e.g. Alli*®
    ❑6 Meal replacement products, *e.g. Slimfast*® ❑7 Pharmacy based weight loss programs
    ❑8 Vitamins/herbal products marketed for weight loss ❑9 Weight reducing surgery
    ❑10Others (please specify).....

Questions 22-35 are related to your *LAST* weight loss attempt

22. How long ago was your last weight loss attempt? ..... years ..... months

23. In your ***last*** weight loss attempt, which of the following weight loss methods did you use? (You may tick more than one)
    ❑1 Decreased calorie intake (healthy eating) ❑2 Increased exercise
    ❑3 Weight loss support meetings, e.g. Weight Watchers (please specify).....
    ❑4 Meal replacement products, *e.g. Slimfast*® (please specify).....
    ❑5 Pharmacy based weight loss programs, *e.g. Boots Pharmacy* (please specify).....
    ❑6 Weight loss medication, *e.g. Alli*® (please specify).....
    ❑7 Vitamins/herbal products marketed for weight loss (please specify).....
    ❑8 Weight reducing surgery *e.g. gastric banding*
    ❑9 Others (please specify).....

24. What influenced you to choose this/these method(s) of weight loss? (You may tick more than one)
    ❑1 Nothing ❑2 Family/Friends ❑3 TV/radio/newspaper/magazines
    ❑4 Exercise Consultant e.g. gym instructor ❑5 Internet
    ❑6 Health care professional (please specify).....
    ❑7 Other (please specify).....

25. Where was the ***last*** place you purchased a weight loss product (medication/vitamin/herbal) or joined a weight loss program?
    ❑1 Not applicable ❑2 Supermarket ❑3 Pharmacy
    ❑4 Internet ❑5 Health food store ❑6 Other (please specify).....

26. In your ***last*** weight loss attempt how much weight did you **WANT** to lose?
    ❑1 0-2 kgs ❑2 3-5 kgs ❑3 6-10 kgs
    ❑4 11-15 kgs ❑5 16-20 kgs ❑6 over 20 kgs

27. How much weight did you lose?
    ❑1 0-2 kgs ❑2 3-5 kgs ❑3 6-10 kgs
    ❑4 11-15 kgs ❑5 16-20 kgs ❑6 over 20 kgs

28. How long did you use the weight loss method for?
    ❑1 0-3 weeks ❑2 1-2 months ❑3 3-5 months
    ❑4 6-8 months ❑5 9-11 months ❑6 over 1 year

29. Have you since regained any of the weight you lost?
    ❑1 Yes *(go to question 30)* ❑2 No *(go to question 32)*

30. How long did it take you to regain the weight?
    ❑1 0-3 weeks ❑2 1-3 months ❑3 4-6 months
    ❑4 7-11 months ❑5 1-2 years ❑6 over 2 years

31. What do you think caused you to regain the weight? (You may tick more than one)
    ❑1 Stopped the weight loss method(s) ❑2 Stress
    ❑3 The weight loss method(s) didn't work ❑4 A significant event
    ❑5 Other (please specify).....

32. Did you experience any side effects from the weight loss method(s) you ticked in question 23? (You may tick more than one)
    ❑1 No side effects ❑2 Headache ❑3 Agitation
    ❑4 Nausea/vomiting ❑5 Constipation ❑6 Loss of concentration
    ❑7 Diarrhoea ❑8 Other (please specify).....

33. Did you receive advice from a health care professional before you started or while using this/these method(s) of weight loss? (You may tick more than one)
    ❑1 No advice was received ❑2 Doctor ❑3 Exercise Consultant e.g. gym trainer
    ❑4 Dietitian ❑5 Pharmacist ❑6 Pharmacy Assistant
    ❑7 Other (please specify).....

If you answered "No advice was received" to question 33 then please go to question 36.
If you ticked any of the other responses please go to question 34.

34. What advice did the health care professional(s) give you? (You may tick more than one)
❑1 Decrease calorie intake ❑2 Increase exercise ❑3 Take a vitamin/herbal medication
❑4 Take a weight loss medication e.g. *Alli®, Reductil®, Duromine®*
❑5 Join a weight loss program ❑6 Other (please specify).....

35. Did you find their advice helpful?
❑1 Not at all helpful ❑2 Not helpful ❑3 Unsure
❑4 Somewhat helpful ❑5 Extremely helpful

36. Who/What is your most trusted source for weight loss/maintenance advice?
❑1 Family/Friends ❑2 Internet ❑3 TV/radio/newspaper/magazines
❑4 Exercise consultant ❑5 Health care professional (please specify).....
❑7 No one ❑6 Others (please specify).....

37. How would you feel about a pharmacist giving you advice about weight loss/weight maintenance?
❑1 Not at all comfortable ❑2 Not comfortable ❑3 Unsure
❑4 Somewhat comfortable ❑5 Extremely comfortable

38. What do you think is/are the biggest problem(s) when you are trying to lose or maintain your weight? (You may tick more than one)
❑1 There are no problems ❑2 Lack of motivation
❑3 Lack of support from family and friends ❑4 Lack of time
❑5 Lack of support from health care professionals ❑6 Too little information about what to do
❑7 Side effects of weight loss methods ❑8 Cost of product or program
❑9 Currently available weight loss methods aren't effective
❑10 Other (please specify).....

Questions 39-41 are about your *IDEAL* weight management program.

39. In your program, how would advice and information about weight loss/maintenance be delivered? (You may tick more than one)
❑1 Face to face ❑2 Email ❑3 Telephone calls
❑4 Mobile Phone e.g. SMS ❑5 Postal letter ❑6 Other (please specify).....

40. Which health care professional(s) would you like to involve in your program? (You may tick more than one)
❑1 None ❑2 Doctor ❑3 Dietitian
❑4 Pharmacist ❑5 Psychologist ❑6 Exercise Consultant e.g. gym instructor
❑7 Nurse ❑8 Others (please specify).....

41. Where would your program be located?
❑1 Doctors clinic ❑2 Pharmacy ❑3 Gym
❑4 At the workplace ❑5 Home ❑6 Community Centre
❑7 Other (please specify).....

Section C

42. How old are you (in years)?
    - ❑1 18-24
    - ❑2 25-30
    - ❑3 31-40
    - ❑4 41-50
    - ❑5 51-60
    - ❑6 61-70
    - ❑7 Over 70

43. Are you currently pregnant or breastfeeding?
    - ❑1 Pregnant
    - ❑2 Breastfeeding
    - ❑3 Not pregnant or breastfeeding

44. How many children do you have?
    - ❑1 None
    - ❑2 1
    - ❑3 2
    - ❑4 3
    - ❑5 4
    - ❑6 5
    - ❑6 Other (please specify).....

45. In which country were you born in?
    .....

46. What is your level of education?
    - ❑1 No formal education
    - ❑2 Primary school or less
    - ❑3 Secondary school or less
    - ❑4 Post secondary school certificate
    - ❑5 University student
    - ❑6 University graduate
    - ❑7 Post graduate

47. What is the first part of your postcode of the suburb in which you live?
    .....

THANK YOU FOR YOUR TIME

Women's health and wellbeing Research project

Appendix 4

Ethics approval: Phase 2 (Chapter 6) and Phase 3 (Chapter 7)

MONASH University

Monash University Human Research Ethics Committee (MUHREC)
Research Office

Human Ethics Certificate of Approval

Date:	**7 July 2011**
Project Number:	**CF11/1606 – 2011000897**
Title:	**A national survey exploring community pharmacy weight management services**
Chief Investigator:	**Dr Safeera Hussainy**
Approved:	**From: 7 July 2011** **To: 7 July 2016**

Terms of approval

1. The Chief investigator is responsible for ensuring that permission letters are obtained, if relevant, and a copy forwarded to MUHREC before any data collection can occur at the specified organisation. **Failure to provide permission letters to MUHREC before data collection commences is in breach of the National Statement on Ethical Conduct in Human Research and the Australian Code for the Responsible Conduct of Research**.
2. Approval is only valid whilst you hold a position at Monash University.
3. It is the responsibility of the Chief Investigator to ensure that all investigators are aware of the terms of approval and to ensure the project is conducted as approved by MUHREC.
4. You should notify MUHREC immediately of any serious or unexpected adverse effects on participants or unforeseen events affecting the ethical acceptability of the project.
5. The Explanatory Statement must be on Monash University letterhead and the Monash University complaints clause must contain your project number.
6. **Amendments to the approved project (including changes in personnel):** Requires the submission of a Request for Amendment form to MUHREC and must not begin without written approval from MUHREC. Substantial variations may require a new application.
7. **Future correspondence:** Please quote the project number and project title above in any further correspondence.
8. **Annual reports:** Continued approval of this project is dependent on the submission of an Annual Report. This is determined by the date of your letter of approval.
9. **Final report:** A Final Report should be provided at the conclusion of the project. MUHREC should be notified if the project is discontinued before the expected date of completion.
10. **Monitoring:** Projects may be subject to an audit or any other form of monitoring by MUHREC at any time.
11. **Retention and storage of data:** The Chief Investigator is responsible for the storage and retention of original data pertaining to a project for a minimum period of five years.

[redacted]

Professor Ben Canny
Chair, MUHREC

cc: Assoc Prof Jennifer Marriott, Ms Souhiela Fakih

Postal – Monash University, Vic 3800, Australia
Building 3E, Room 111, Clayton Campus, Wellington Road, Clayton
[redacted] www.monash.edu/research/ethics/human/index/html
ABN 12 377 614 012 CRICOS Provider #00008C

Appendix 5

Phase 2 (Chapter 6) and Phase 3 (Chapter 7) supplementary material: pharmacists

- Invitation letter/reminder letter
- Explanatory statement
- Questionnaire
    - Section A-D: Phase 2 (Chapter 6)
    - Section E: Phase 3 (Chapter 7)

MONASH University
Pharmacy and Pharmaceutical Sciences

October 2011

Document title: Reminder letter

Attention: Pharmacist-in-charge of the pharmacy today

Re: A national random survey exploring community pharmacy weight management services

Dear Pharmacist-in-charge of the pharmacy today

I am writing to you regarding a research project being conducted by the Centre for Medicine Use and Safety, Faculty of Pharmacy and Pharmaceutical Sciences, Monash University, into gaining an insight of pharmacists' and pharmacy assistants' knowledge, attitudes and practices towards weight loss programs and products. This project will form part of the research towards attainment of the degree of Doctor of Philosophy (PhD).

This project aims to survey pharmacists and pharmacy assistants, using a mail questionnaire with a series of questions as well as case vignettes (clinical scenarios), regarding their current weight management recommendations to women of different ages, with different co-morbidities and different weight classifications.

This information will lead to a better understanding of the current recommendations made by pharmacists and pharmacy assistants. This will help with later components of the PhD, which involves the development of women specific weight management guidelines and educational resources for pharmacists and pharmacy assistants.

Attached to this letter are two explanatory statements (one for a pharmacist and one for a pharmacy assistant) which each provides further details on participating in this project. Also attached are two questionnaires; one for a pharmacist to complete and one for a pharmacy assistant to complete.

If a pharmacist and pharmacy assistant in your pharmacy have already completed the attached questionnaires then please kindly ignore this letter.

Should you have any questions about the project please feel free to contact me. Additionally, my academic supervisors, Dr Safeera Hussainy and A/Prof Jennifer Marriott, will also be available to answer any questions you may have.

I look forward to hearing from you soon.

Sincerely,

Souhiela

Ms. Souhiela Fakih
Pharmacist, PhD Candidate
Department of Pharmacy Practice, Centre for Medicine Use and Safety
Monash University
[redacted]

Dr Safeera Hussainy
Lecturer,
Academic Supervisor
Department of Pharmacy Practice, Centre for Medicine Use and Safety
Monash University
[redacted]

A/Prof Jennifer Marriott
Associate Professor,
Academic Supervisor
Department of Pharmacy Practice, Centre for Medicine Use and Safety
Monash University
[redacted]

MONASH University
Pharmacy and Pharmaceutical Sciences

Explanatory Statement: Pharmacists

Project Title: A national survey exploring community pharmacy weight management services

This information sheet is for you to keep.

My name is **Souhiela Fakih B.Pharm (Hons)** and I am conducting a research project with **Associate Professor Jennifer Marriott** and **Dr. Safeera Hussainy** at the Centre for Medicine Use and Safety, Department of Pharmacy Practice, Faculty of Pharmacy and Pharmaceutical Sciences, Monash University. I am conducting this research project towards a Doctor of Philosophy at Monash University. This means that I will be writing a thesis which is the equivalent of a 300 page book. A report of the project may also be submitted for publication in a journal or be presented at a conference.

Who completes the questionnaire?
Only ONE pharmacist employed at the pharmacy needs to complete the pharmacist questionnaire titled "Community pharmacy weight management services- Pharmacists".

The pharmacist-in-charge on the day the questionnaire is intended to be completed should complete this questionnaire. This does not have to be the pharmacist regularly and usually in charge, it can be the pharmacist in charge for the time being i.e. a locum pharmacist, full-time, part-time or casual employee pharmacist.

Why did you choose this particular person/group as participants?
The research project aims to develop women specific weight management guidelines and educational resources for pharmacists and pharmacy assistants; hence the participants for this project are pharmacists and pharmacy assistants.

Information from pharmacists and pharmacy assistants is being sought as prior to developing the intended weight management guidelines it is vital to obtain further information about current pharmacy practices. At present little research investigating Australian pharmacists' and pharmacy assistants' experiences and attitudes with weight loss programs and products has been conducted.

Participants for this project have been chosen at random. The questionnaires have been mailed to random sample of pharmacies across Australia – each pharmacy will receive two copies each – one for a pharmacist and the other for a pharmacy assistant to complete. Details of pharmacies have been obtained from The Pharmacy Guild of Australia website.

The aim/purpose of the research
The aim of the study is to gain an insight into pharmacy assistants' and pharmacists' current weight management recommendations.

This information will lead to a better understanding of the current weight management recommendations made by pharmacists and pharmacy assistants and will therefore help with later phases of the PhD project when developing pharmacy based weight management guidelines and educational resources specific to women.

Possible benefits
There may be no direct benefit from the participation in this project. However, by participating in this project participants will provide researchers with valuable information that will later be used for the development of pharmacy based weight management guidelines and educational resources specific to women, which will be provided to pharmacies later on.

What does the research involve?
Participation in this project involves completion of a questionnaire about yourself in general, your practice as a pharmacist/pharmacy assistant and your experiences and knowledge regarding weight loss programs and/or products.

How much time will the research take?
The time allocated is 30 minutes; this includes the time needed for you to read the explanatory statement and the time needed to complete the questionnaire. The questionnaire itself should only take 15-20 minutes to complete.

Inconvenience/discomfort
There are no foreseeable risks other than the inconvenience of your time required to complete the questionnaire. If you experience inconvenience or discomfort due to the time required, you are free to stop and complete the questionnaire later.
If you become upset or distressed as a result of your participation in the project, the researcher is able to arrange for counselling or other appropriate support. Any counselling or support will be provided by staff who are not members of the research team and include Lifeline Australia who can be contacted on 13 11 14.

If you have any questions or you would like to talk to someone about the research project you are free to contact me or my supervisors on the contact details listed below.

Can I withdraw from the research?
Participation in this research project is voluntary and you are under no obligation to participate. If you decide to take part and later change your mind, you are free to withdraw from the project. However once the questionnaire is completed and submitted to the researcher you will not be able to withdraw from the research as the entire questionnaire is anonymous. If there are certain questions that are in the questionnaire that you feel are too personal or too intrusive you are free to not answer them. This will not affect your participation in the project.

Confidentiality
All the information collected from individual participants during the course of this project will be kept confidential. The questionnaires are anonymous and participants will not be able to be identified at any stage during the research project. In any publication and/or presentation information will be provided in such a way that you cannot be identified.

Storage of data
Storage of the data collected will adhere to the University regulations and kept on University premises in a locked cupboard/filing cabinet for 5 years.

Use of data for other purposes
It is not intended that this data be used for any other purpose for which it is primarily obtained.

Results
If you would like to be informed of the aggregate research finding, please contact myself or my supervisors (see below). Only participants who contact the researchers and provide them with their name, address or email address will be provided with a copy of the results. The findings will be accessible after all data is collected.

If you would like to contact the researchers about any aspect of this study, please contact the Chief Investigator:	If you have a complaint concerning the manner in which this research CF11/1606 - 2011000897is being conducted, please contact:
Souhiela Fakih B.Pharm(Hons) PhD candidate Centre for Medicine Use and Safety, Monash University. [redacted] Dr. Safeera Hussainy Lecturer, Academic supervisor Centre for Medicine Use and Safety, Monash University [redacted] Associate Professor Jennifer Marriott Academic Supervisor Centre for Medicine Use and Safety, Monash University [redacted]	**Executive Officer, Human Research Ethics** **Monash University Human Research Ethics Committee (MUHREC)** **Building 3e Room 111** **Research Office** **Monash University VIC 3800** [redacted]

Thank you,

Souhiela Fakih B.Pharm(Hons)

MONASH University
Pharmacy and Pharmaceutical Sciences

Community Pharmacy Weight Management Services

PHARMACISTS

Please tick the appropriate box(es) and/or write in the spaces provided.

Section A

1. Are you the...?
   ☐1 Pharmacy owner ☐2 Pharmacy manager ☐3 Employee pharmacist

2. Which age group (in years) do you belong to?
   ☐1 20-24 ☐2 25-30 ☐3 31-40
   ☐4 41-50 ☐5 51-60 ☐6 Over 60

3. Are you...? ☐1 Male ☐2 Female

Section B

4. Do you feel pharmacists have a role to play in tackling the overweight and obesity problem in Australia?
   ☐1 Yes ☐2 No ☐3 Not sure

5. Does the pharmacy currently provide literature (leaflets etc.) to customers on healthy eating and exercise?
   ☐1 Yes ☐2 No

6. Does the pharmacy display posters on weight loss or weight loss products?
   ☐1 Yes ☐2 No

7. In the last five years have you had any training/education about giving advice on weight management?
   ☐1 Yes ☐2 No

   If **"YES"**, who did you receive this training from? (Tick all that apply)
   ☐1 University ☐2 Pharmaceutical industry ☐3 Professional organisations

8. What weight classification measure do you use to classify a customer's weight?
   ☐1 None ☐2 Weight (kg) ☐3 Waist Circumference (WC)
   ☐3 Body Mass Index (BMI) ☐4 BMI and WC ☐5 Other (please specify).....

9. What equation is used to calculate BMI? (W= weight and H= height)
   ☐1 BMI= W(kg)/H (m^2) ☐2 W (kg) X H (m^2) ☐3 BMI= W(kg)/H (m)

10. Does your pharmacy currently stock weight loss products?
    ☐1 Yes ☐2 No

    If **"NO"**, please specify why.
    ……..……..
    ……..

    If **"YES"**, where do you display these products?
    ☐1 Behind the counter ☐2 In self-selection areas ☐3 Other (please specify)……..

11. Does your pharmacy have a weight management program for customers?
    ❑1 Yes ❑2 No

    If **"NO"**, is it due to (Tick all that apply):
    ❑1 Lack of time ❑2 Cost ❑3 Lack of knowledge/training
    ❑4 Lack of public interest ❑5 Other (please specify)……

    If **"YES"**, please provide the name(s) of the program(s) your pharmacy provides?
    ……..

12. Have you found this/these program(s) to be successful in terms of pharmacy intervention in the treatment of overweight/obesity?
    ❑1 Yes ❑2 No ❑3 Not applicable

13. Who is the main consumer group for weight loss products/programs at your pharmacy?
    ❑1 Men ❑2 Women ❑3 Both men and women

Section C

14. Do you feel comfortable approaching a customer to discuss weight loss?
    ❑1 Yes ❑2 No ❑3 Unsure

15. When counselling on medications to treat overweight and obesity related conditions such as hypertension, hyperlipidaemia, type 2 diabetes, etc. how often do you counsel on weight loss/maintenance?
    ❑1 Unsure ❑2 Never ❑3 Only when asked by the customer
    ❑4 Sometimes ❑5 Most of the time ❑6 Always

16. If a patient approaches you regarding weight loss, do you ask…? (Tick all that apply)
    ❑1 Their reasons for wanting to lose weight ❑2 How much weight they would like to lose
    ❑3 If they have tried to lose weight before ❑4 About dietary habits
    ❑5 About exercise habits ❑6 About any existing medical conditions/diseases
    ❑7 If they take any medication ❑8 To check their weight/Body Mass Index (BMI)
    ❑9 Other (please specify)……
    ……..
    ……

17. On average, how long would a typical pharmacist-customer consultation take following a request for information on weight loss?
    ❑1 less than 5 minutes ❑2 5-9 minutes ❑3 10-14 minutes
    ❑4 15-19 minutes ❑5 20-29 minutes ❑6 Over 30 minutes

18. Do you usually take customers to a private consultation area?
    ❑1 Yes ❑2 No

    If **"NO"**, please specify why.
    ……..
    ……..

19. At which BMI would it be appropriate to recommend a weight loss product? (Tick all that apply)
    ❑1 Less than 27 ❑2 27-29 with no associated medical conditions
    ❑3 Over 27 with associated medical conditions ❑4 Over 30 with/without medical conditions

20. When responding to a request for a weight loss product, do you…? (Tick all that apply)
    - ❑1 Recommend a product
    - ❑2 Advice against purchasing a weight loss product
    - ❑3 Offer advice on healthy eating
    - ❑4 Offer advice on increased physical activity
    - ❑5 Refer the customer to their GP
    - ❑6 Offer advice on appropriate physical activity
    - ❑7 Discuss available support networks
    - ❑8 Offer a leaflet on weight loss products/advice
    - ❑9 Other (please specify)……
    ……..

21. When recommending a weight loss product, which product(s) do you usually recommend? (Tick all that apply)
    - ❑1 Not applicable - I would never recommend a weight loss product
    - ❑2 Orlistat *(Xenical®)*
    - ❑3 Vitamin/herbal product (please specify).....
    - ❑4 Meal replacement product (please specify).....
    - ❑5 Other (please specify)……

22. When making weight management recommendations to customers do you refer to any guideline(s)?
    - ❑1 Yes
    - ❑2 No

    If **"YES"**, please specify the name(s) of the guideline(s).
    ……..

Section D

23. Which factors do you feel may improve the ability of the community pharmacist to tackle the overweight and obesity problem in Australia? (Tick all that apply)
    - ❑1 Extra staff to provide appropriate counselling, advice and support to assist customers
    - ❑2 Pharmacy specific weight management guidelines, information and educational resources
    - ❑3 Private counselling areas in pharmacies
    - ❑4 Evidence-based weight management clinics
    - ❑5 Healthy eating and increased exercise campaigns
    - ❑6 Further training for pharmacists
    - ❑7 Further training for pharmacy assistants
    - ❑8 Payment for services
    - ❑9 Other (please specify)……
    …….....

24. What further training would help you assist patients in weight management? (Tick all that apply)
    - ❑1 No training required
    - ❑2 Measurement of weight
    - ❑3 Measurement of height
    - ❑4 Measurement of waist circumference
    - ❑5 Calculation of BMI
    - ❑6 Measurement of blood pressure
    - ❑7 Measurement of blood glucose
    - ❑8 Estimation of body fat
    - ❑9 Measurement of blood cholesterol
    - ❑10 Advice on healthy eating
    - ❑11 Advice on physical activity
    - ❑12 Advice on weight loss products
    - ❑13 Advice on weight loss drugs
    - ❑14 Advice on appropriate counselling skills
    - ❑15 Other (please specify)……..
    ……..

25. If weight management educational resources were developed for pharmacy staff how would you like them to be formatted and distributed? (Tick all that apply)
    - ❑1 In a booklet
    - ❑2 In a pamphlet
    - ❑3 Online (webpage)
    - ❑4 On a CD
    - ❑5 On a USB
    - ❑6 In a monthly newsletter/magazine
    - ❑7 Other (please specify)……

Section E

Questions 26-29 relate to the following case study:

Shereen, a 36 year old woman, presents to the pharmacy seeking weight loss advice. She tells you that she weighs about 73 kg and is 165 cm tall (BMI=26.8kg/m^2). It's her brother's wedding in two months time and she desperately needs something to help her lose a few kilos. Her friends have told her about a 'wonder' medication called Xenical® that is supposed to stop all fat entering the body! She wants to buy a box and see if it actually works.

26. Is there any other information you would like to know?
    ☐1 Yes ☐2 No

    If "**YES**", what other information do you need?
    .....
    .....
    .....
    .....
    .....

27. Based on the information given to you in this case scenario, would you sell Shereen a box of Xenical®?
    ☐1 Yes ☐2 No ☐3 Not sure

    If "**YES**", please specify why?
    .....
    .....
    .....

    If **"NO"**, please specify why not?
    .....
    .....
    .....

28. Would you recommend any other weight loss product/program for her?
    ☐1 Yes ☐2 No ☐3 Not sure

    If "**YES**", which one?
    .....

29. Would you recommend any lifestyle changes to assist her lose weight?
    ☐1 Yes ☐2 No

    If **"YES"** what recommendations would you make? (Tick all that apply)
    ☐1 Decrease fat intake
    ☐2 Decrease carbohydrate intake
    ☐3 Increase protein intake
    ☐4 Increase exercise (15 minutes, 3 days a week)
    ☐5 Increase exercise (30 minutes, 5 or more days)
    ☐6 Increase water intake (aim for 8 cups a day)
    ☐7 Keep a food diary

THANK YOU FOR YOUR TIME

Please return your completed questionnaire in the enclosed pre-paid envelope

MONASH University
Pharmacy and Pharmaceutical Sciences

Community Pharmacy Weight Management Services

PHARMACISTS

Please tick the appropriate box(es) and/or write in the spaces provided.

Section A

1. Are you the...?
   ☐1 Pharmacy owner ☐2 Pharmacy manager ☐3 Employee pharmacist

2. Which age group (in years) do you belong to?
   ☐1 20-24 ☐2 25-30 ☐3 31-40
   ☐4 41-50 ☐5 51-60 ☐6 Over 60

3. Are you...? ☐1 Male ☐2 Female

Section B

4. Do you feel pharmacists have a role to play in tackling the overweight and obesity problem in Australia?
   ☐1 Yes ☐2 No ☐3 Not sure

5. Does the pharmacy currently provide literature (leaflets etc.) to customers on healthy eating and exercise?
   ☐1 Yes ☐2 No

6. Does the pharmacy display posters on weight loss or weight loss products?
   ☐1 Yes ☐2 No

7. In the last five years have you had any training/education about giving advice on weight management?
   ☐1 Yes ☐2 No

   If **"YES"**, who did you receive this training from? (Tick all that apply)
   ☐1 University ☐2 Pharmaceutical industry ☐3 Professional organisations

8. What weight classification measure do you use to classify a customer's weight?
   ☐1 None ☐2 Weight (kg) ☐3 Waist Circumference (WC)
   ☐3 Body Mass Index (BMI) ☐4 BMI and WC ☐5 Other (please specify).....

9. What equation is used to calculate BMI? (W= weight and H= height)
   ☐1 BMI= W(kg)/H (m^2) ☐2 W (kg) X H (m^2) ☐3 BMI= W(kg)/H (m)

10. Does your pharmacy currently stock weight loss products?
    ☐1 Yes ☐2 No

    If **"NO"**, please specify why.
    ……...……...
    ……..

    If **"YES"**, where do you display these products?
    ☐1 Behind the counter ☐2 In self-selection areas ☐3 Other (please specify)……..

11. Does your pharmacy have a weight management program for customers?
    ☐1 Yes ☐2 No

    If **"NO"**, is it due to (Tick all that apply):
    ☐1 Lack of time ☐2 Cost ☐3 Lack of knowledge/training
    ☐4 Lack of public interest ☐5 Other (please specify)……

    If **"YES"**, please provide the name(s) of the program(s) your pharmacy provides?
    ……..

12. Have you found this/these program(s) to be successful in terms of pharmacy intervention in the treatment of overweight/obesity?
    ☐1 Yes ☐2 No ☐3 Not applicable

13. Who is the main consumer group for weight loss products/programs at your pharmacy?
    ☐1 Men ☐2 Women ☐3 Both men and women

Section C

14. Do you feel comfortable approaching a customer to discuss weight loss?
    ☐1 Yes ☐2 No ☐3 Unsure

15. When counselling on medications to treat overweight and obesity related conditions such as hypertension, hyperlipidaemia, type 2 diabetes, etc. how often do you counsel on weight loss/maintenance?
    ☐1 Unsure ☐2 Never ☐3 Only when asked by the customer
    ☐4 Sometimes ☐5 Most of the time ☐6 Always

16. If a patient approaches you regarding weight loss, do you ask…? (Tick all that apply)
    ☐1 Their reasons for wanting to lose weight ☐2 How much weight they would like to lose
    ☐3 If they have tried to lose weight before ☐4 About dietary habits
    ☐5 About exercise habits ☐6 About any existing medical conditions/diseases
    ☐7 If they take any medication ☐8 To check their weight/Body Mass Index (BMI)
    ☐9 Other (please specify)……
    ……
    ……

17. On average, how long would a typical pharmacist-customer consultation take following a request for information on weight loss?
    ☐1 less than 5 minutes ☐2 5-9 minutes ☐3 10-14 minutes
    ☐4 15-19 minutes ☐5 20-29 minutes ☐6 Over 30 minutes

18. Do you usually take customers to a private consultation area?
    ☐1 Yes ☐2 No

    If **"NO"**, please specify why.
    ……..
    ……..

19. At which BMI would it be appropriate to recommend a weight loss product? (Tick all that apply)
    ☐1 Less than 27 ☐2 27-29 with no associated medical conditions
    ☐3 Over 27 with associated medical conditions ☐4 Over 30 with/without medical conditions

20. When responding to a request for a weight loss product, do you…? (Tick all that apply)
    - ☐1 Recommend a product
    - ☐2 Advice against purchasing a weight loss product
    - ☐3 Offer advice on healthy eating
    - ☐4 Offer advice on increased physical activity
    - ☐5 Refer the customer to their GP
    - ☐6 Offer advice on appropriate physical activity
    - ☐7 Discuss available support networks
    - ☐8 Offer a leaflet on weight loss products/advice
    - ☐9 Other (please specify)……
    ……..

21. When recommending a weight loss product, which product(s) do you usually recommend? (Tick all that apply)
    - ☐1 Not applicable - I would never recommend a weight loss product
    - ☐2 Orlistat *(Xenical®)*
    - ☐3 Vitamin/herbal product (please specify).....
    - ☐4 Meal replacement product (please specify).....
    - ☐5 Other (please specify)……

22. When making weight management recommendations to customers do you refer to any guideline(s)?
    - ☐1 Yes
    - ☐2 No

    If **"YES"**, please specify the name(s) of the guideline(s).
    ……..

Section D

23. Which factors do you feel may improve the ability of the community pharmacist to tackle the overweight and obesity problem in Australia? (Tick all that apply)
    - ☐1 Extra staff to provide appropriate counselling, advice and support to assist customers
    - ☐2 Pharmacy specific weight management guidelines, information and educational resources
    - ☐3 Private counselling areas in pharmacies
    - ☐4 Evidence-based weight management clinics
    - ☐5 Healthy eating and increased exercise campaigns
    - ☐6 Further training for pharmacists
    - ☐7 Further training for pharmacy assistants
    - ☐8 Payment for services
    - ☐9 Other (please specify)……
    …….....

24. What further training would help you assist patients in weight management? (Tick all that apply)
    - ☐1 No training required
    - ☐2 Measurement of weight
    - ☐3 Measurement of height
    - ☐4 Measurement of waist circumference
    - ☐5 Calculation of BMI
    - ☐6 Measurement of blood pressure
    - ☐7 Measurement of blood glucose
    - ☐8 Estimation of body fat
    - ☐9 Measurement of blood cholesterol
    - ☐10 Advice on healthy eating
    - ☐11 Advice on physical activity
    - ☐12 Advice on weight loss products
    - ☐13 Advice on weight loss drugs
    - ☐14 Advice on appropriate counselling skills
    - ☐15 Other (please specify)……..
    ……..

25. If weight management educational resources were developed for pharmacy staff how would you like them to be formatted and distributed? (Tick all that apply)
    - ☐1 In a booklet
    - ☐2 In a pamphlet
    - ☐3 Online (webpage)
    - ☐4 On a CD
    - ☐5 On a USB
    - ☐6 In a monthly newsletter/magazine
    - ☐7 Other (please specify)……

Section E

Questions 26-27 relate to the following case study:

Effie, a 26 year old woman, comes into the pharmacy asking about folic acid tablets. She and her husband are currently trying to have a baby and she's heard folic acid is recommended prior to conceiving. While talking to her, she tells you she's worried about her weight as she's been told that being overweight can cause problems with fertility. She is currently 85 kg and 160 cm tall (BMI=33kg/m^2). She doesn't know what she can do to lose weight and she's wondering if you could recommend anything.

26. What BMI category is Effie in?
    - ☐1 Underweight
    - ☐2 Normal
    - ☐3 Overweight
    - ☐4 Obese
    - ☐5 Severely obese

27. What would you recommend to help Effie lose weight? (Tick all that apply)
    - ☐1 Nothing, she doesn't need to lose weight
    - ☐2 Nothing, as she's trying to fall pregnant it's not good to lose weight
    - ☐3 Decrease calorie intake
    - ☐4 Increase exercise
    - ☐5 Take Orlistat (Xenical®)
    - ☐6 Take a vitamin/herbal product (please specify).....
    - ☐7 Take a meal replacement product (please specify).....
    - ☐8 Join a pharmacy based weight loss clinic (please specify).....
    - ☐9 Join a weight loss group e.g. Weight Watchers™
    - ☐10 Refer her to a GP

THANK YOU FOR YOUR TIME

Please return your completed questionnaire in the enclosed pre-paid envelope

MONASH University
Pharmacy and Pharmaceutical Sciences

Community Pharmacy Weight Management Services

PHARMACISTS

Please tick the appropriate box(es) and/or write in the spaces provided.

Section A

1. Are you the...?
   ☐1 Pharmacy owner ☐2 Pharmacy manager ☐3 Employee pharmacist

2. Which age group (in years) do you belong to?
   ☐1 20-24 ☐2 25-30 ☐3 31-40
   ☐4 41-50 ☐5 51-60 ☐6 Over 60

3. Are you...? ☐1 Male ☐2 Female

Section B

4. Do you feel pharmacists have a role to play in tackling the overweight and obesity problem in Australia?
   ☐1 Yes ☐2 No ☐3 Not sure

5. Does the pharmacy currently provide literature (leaflets etc.) to customers on healthy eating and exercise?
   ☐1 Yes ☐2 No

6. Does the pharmacy display posters on weight loss or weight loss products?
   ☐1 Yes ☐2 No

7. In the last five years have you had any training/education about giving advice on weight management?
   ☐1 Yes ☐2 No

   If **"YES"**, who did you receive this training from? (Tick all that apply)
   ☐1 University ☐2 Pharmaceutical industry ☐3 Professional organisations

8. What weight classification measure do you use to classify a customer's weight?
   ☐1 None ☐2 Weight (kg) ☐3 Waist Circumference (WC)
   ☐3 Body Mass Index (BMI) ☐4 BMI and WC ☐5 Other (please specify).....

9. What equation is used to calculate BMI? (W= weight and H= height)
   ☐1 BMI= W(kg)/H (m^2) ☐2 W (kg) X H (m^2) ☐3 BMI= W(kg)/H (m)

10. Does your pharmacy currently stock weight loss products?
    ☐1 Yes ☐2 No

    If **"NO"**, please specify why.
    ……..……..
    ……..

    If **"YES"**, where do you display these products?
    ☐1 Behind the counter ☐2 In self-selection areas ☐3 Other (please specify)……..

11. Does your pharmacy have a weight management program for customers?
    ☐1 Yes ☐2 No

    If **"NO"**, is it due to (Tick all that apply):
    ☐1 Lack of time ☐2 Cost ☐3 Lack of knowledge/training
    ☐4 Lack of public interest ☐5 Other (please specify)……

    If **"YES"**, please provide the name(s) of the program(s) your pharmacy provides?
    ……..

12. Have you found this/these program(s) to be successful in terms of pharmacy intervention in the treatment of overweight/obesity?
    ☐1 Yes ☐2 No ☐3 Not applicable

13. Who is the main consumer group for weight loss products/programs at your pharmacy?
    ☐1 Men ☐2 Women ☐3 Both men and women

Section C

14. Do you feel comfortable approaching a customer to discuss weight loss?
    ☐1 Yes ☐2 No ☐3 Unsure

15. When counselling on medications to treat overweight and obesity related conditions such as hypertension, hyperlipidaemia, type 2 diabetes, etc. how often do you counsel on weight loss/maintenance?
    ☐1 Unsure ☐2 Never ☐3 Only when asked by the customer
    ☐4 Sometimes ☐5 Most of the time ☐6 Always

16. If a patient approaches you regarding weight loss, do you ask…? (Tick all that apply)
    ☐1 Their reasons for wanting to lose weight ☐2 How much weight they would like to lose
    ☐3 If they have tried to lose weight before ☐4 About dietary habits
    ☐5 About exercise habits ☐6 About any existing medical conditions/diseases
    ☐7 If they take any medication ☐8 To check their weight/Body Mass Index (BMI)
    ☐9 Other (please specify)……
    ……
    ……

17. On average, how long would a typical pharmacist-customer consultation take following a request for information on weight loss?
    ☐1 less than 5 minutes ☐2 5-9 minutes ☐3 10-14 minutes
    ☐4 15-19 minutes ☐5 20-29 minutes ☐6 Over 30 minutes

18. Do you usually take customers to a private consultation area?
    ☐1 Yes ☐2 No

    If **"NO"**, please specify why.
    ……..
    ……..

19. At which BMI would it be appropriate to recommend a weight loss product? (Tick all that apply)
    ☐1 Less than 27 ☐2 27-29 with no associated medical conditions
    ☐3 Over 27 with associated medical conditions ☐4 Over 30 with/without medical conditions

20. When responding to a request for a weight loss product, do you…? (Tick all that apply)
    - ☐1 Recommend a product
    - ☐2 Advice against purchasing a weight loss product
    - ☐3 Offer advice on healthy eating
    - ☐4 Offer advice on increased physical activity
    - ☐5 Refer the customer to their GP
    - ☐6 Offer advice on appropriate physical activity
    - ☐7 Discuss available support networks
    - ☐8 Offer a leaflet on weight loss products/advice
    - ☐9 Other (please specify)……
    ……..

21. When recommending a weight loss product, which product(s) do you usually recommend? (Tick all that apply)
    - ☐1 Not applicable - I would never recommend a weight loss product
    - ☐2 Orlistat *(Xenical®)*
    - ☐3 Vitamin/herbal product (please specify).....
    - ☐4 Meal replacement product (please specify).....
    - ☐5 Other (please specify)……

22. When making weight management recommendations to customers do you refer to any guideline(s)?
    - ☐1 Yes
    - ☐2 No

    If **"YES"**, please specify the name(s) of the guideline(s).
    ……..

Section D

23. Which factors do you feel may improve the ability of the community pharmacist to tackle the overweight and obesity problem in Australia? (Tick all that apply)
    - ☐1 Extra staff to provide appropriate counselling, advice and support to assist customers
    - ☐2 Pharmacy specific weight management guidelines, information and educational resources
    - ☐3 Private counselling areas in pharmacies
    - ☐4 Evidence-based weight management clinics
    - ☐5 Healthy eating and increased exercise campaigns
    - ☐6 Further training for pharmacists
    - ☐7 Further training for pharmacy assistants
    - ☐8 Payment for services
    - ☐9 Other (please specify)……
    …….....

24. What further training would help you assist patients in weight management? (Tick all that apply)
    - ☐1 No training required
    - ☐2 Measurement of weight
    - ☐3 Measurement of height
    - ☐4 Measurement of waist circumference
    - ☐5 Calculation of BMI
    - ☐6 Measurement of blood pressure
    - ☐7 Measurement of blood glucose
    - ☐8 Estimation of body fat
    - ☐9 Measurement of blood cholesterol
    - ☐10 Advice on healthy eating
    - ☐11 Advice on physical activity
    - ☐12 Advice on weight loss products
    - ☐13 Advice on weight loss drugs
    - ☐14 Advice on appropriate counselling skills
    - ☐15 Other (please specify)……..
    ……..

25. If weight management educational resources were developed for pharmacy staff how would you like them to be formatted and distributed? (Tick all that apply)
    - ☐1 In a booklet
    - ☐2 In a pamphlet
    - ☐3 Online (webpage)
    - ☐4 On a CD
    - ☐5 On a USB
    - ☐6 In a monthly newsletter/magazine
    - ☐7 Other (please specify)……

Section E

Questions 26-30 relate to the following case study:

Teresa, a 32 year old woman, comes into the pharmacy enquiring about "Blooms Svelte" tablets (a herbal product available over-the-counter that's marketed for weight loss). Upon questioning, you discover that Teresa is three months pregnant with her first child. She weighs 70 kg and is 155 cm tall (BMI=29.1kg/m^2). She's heard that being overweight in pregnancy can cause problems so she thinks these herbal tablets will help her stop gaining excess weight. They're herbal, so she thinks they'll be safe in pregnancy. She just wants you to tell her how many tablets she needs to take and whether she needs to have them with or without food.

26. What are the health risks of being overweight or obese while pregnant? (Tick all that apply)
    - ☐1 There are no health risks
    - ☐2 Increased risk of hypertension
    - ☐2 Increased risk of gestational diabetes
    - ☐4 Increased risk of pre-eclampsia
    - ☐5 Increased risk of delivery complications
    - ☐6 Increased risk of obesity in the child

27. For a healthy-weight pregnant woman, how much gestational weight gain is recommended?
    - ☐1 0-4 kg
    - ☐2 5-9 kg
    - ☐3 10-14 kg
    - ☐4 15-20 kg
    - ☐5 > 20 kg

28. For an overweight or obese pregnant woman, how do the gestational weight gain recommendations differ compared to a healthy-weight pregnant woman?
    - ☐1 No difference
    - ☐2 More weight gain is recommended
    - ☐3 Less weight gain is recommended
    - ☐4 No weight gain is recommended

29. Based on the information given to you in this case scenario, would you sell Teresa the "Blooms Svelte" tablets?
    - ☐1 Yes
    - ☐2 No
    - ☐3 Not sure

    If "**NO**", why not?
    .....
    .....
    .....

30. What would you recommend to help Teresa stop gaining *excess weight* in her pregnancy? (Tick all that apply)
    - ☐1 Nothing, she doesn't need to lose weight
    - ☐2 Nothing, as she's pregnant it's not good to try and stop gaining weight
    - ☐3 Decrease calorie intake
    - ☐4 Increase exercise
    - ☐5 Take Orlistat (Xenical®)
    - ☐6 Take a vitamin/herbal product (please specify).....
    - ☐7 Take a meal replacement product (please specify).....
    - ☐8 Join a pharmacy based weight loss clinic (please specify).....
    - ☐9 Join a weight loss group e.g. Weight Watchers™
    - ☐10 Refer her to a GP

THANK YOU FOR YOUR TIME

Please return your completed questionnaire in the enclosed pre-paid envelope

MONASH University
Pharmacy and Pharmaceutical Sciences

Community Pharmacy Weight Management Services

PHARMACISTS

Please tick the appropriate box(es) and/or write in the spaces provided.

Section A

1. Are you the...?
   ☐1 Pharmacy owner ☐2 Pharmacy manager ☐3 Employee pharmacist

2. Which age group (in years) do you belong to?
   ☐1 20-24 ☐2 25-30 ☐3 31-40
   ☐4 41-50 ☐5 51-60 ☐6 Over 60

3. Are you...? ☐1 Male ☐2 Female

Section B

4. Do you feel pharmacists have a role to play in tackling the overweight and obesity problem in Australia?
   ☐1 Yes ☐2 No ☐3 Not sure

5. Does the pharmacy currently provide literature (leaflets etc.) to customers on healthy eating and exercise?
   ☐1 Yes ☐2 No

6. Does the pharmacy display posters on weight loss or weight loss products?
   ☐1 Yes ☐2 No

7. In the last five years have you had any training/education about giving advice on weight management?
   ☐1 Yes ☐2 No

   If **"YES"**, who did you receive this training from? (Tick all that apply)
   ☐1 University ☐2 Pharmaceutical industry ☐3 Professional organisations

8. What weight classification measure do you use to classify a customer's weight?
   ☐1 None ☐2 Weight (kg) ☐3 Waist Circumference (WC)
   ☐3 Body Mass Index (BMI) ☐4 BMI and WC ☐5 Other (please specify).....

9. What equation is used to calculate BMI? (W= weight and H= height)
   ☐1 BMI= W(kg)/H (m^2) ☐2 W (kg) X H (m^2) ☐3 BMI= W(kg)/H (m)

10. Does your pharmacy currently stock weight loss products?
    ☐1 Yes ☐2 No

    If **"NO"**, please specify why.
    ……..……..
    ……..

    If **"YES"**, where do you display these products?
    ☐1 Behind the counter ☐2 In self-selection areas ☐3 Other (please specify)……..

11. Does your pharmacy have a weight management program for customers?
    ❑1 Yes ❑2 No

    If **"NO"**, is it due to (Tick all that apply):
    ❑1 Lack of time ❑2 Cost ❑3 Lack of knowledge/training
    ❑4 Lack of public interest ❑5 Other (please specify)……

    If **"YES"**, please provide the name(s) of the program(s) your pharmacy provides?
    ……..

12. Have you found this/these program(s) to be successful in terms of pharmacy intervention in the treatment of overweight/obesity?
    ❑1 Yes ❑2 No ❑3 Not applicable

13. Who is the main consumer group for weight loss products/programs at your pharmacy?
    ❑1 Men ❑2 Women ❑3 Both men and women

Section C

14. Do you feel comfortable approaching a customer to discuss weight loss?
    ❑1 Yes ❑2 No ❑3 Unsure

15. When counselling on medications to treat overweight and obesity related conditions such as hypertension, hyperlipidaemia, type 2 diabetes, etc. how often do you counsel on weight loss/maintenance?
    ❑1 Unsure ❑2 Never ❑3 Only when asked by the customer
    ❑4 Sometimes ❑5 Most of the time ❑6 Always

16. If a patient approaches you regarding weight loss, do you ask…? (Tick all that apply)
    ❑1 Their reasons for wanting to lose weight ❑2 How much weight they would like to lose
    ❑3 If they have tried to lose weight before ❑4 About dietary habits
    ❑5 About exercise habits ❑6 About any existing medical conditions/diseases
    ❑7 If they take any medication ❑8 To check their weight/Body Mass Index (BMI)
    ❑9 Other (please specify)……
    ……..
    ……

17. On average, how long would a typical pharmacist-customer consultation take following a request for information on weight loss?
    ❑1 less than 5 minutes ❑2 5-9 minutes ❑3 10-14 minutes
    ❑4 15-19 minutes ❑5 20-29 minutes ❑6 Over 30 minutes

18. Do you usually take customers to a private consultation area?
    ❑1 Yes ❑2 No

    If **"NO"**, please specify why.
    ……..
    ……..

19. At which BMI would it be appropriate to recommend a weight loss product? (Tick all that apply)
    ❑1 Less than 27 ❑2 27-29 with no associated medical conditions
    ❑3 Over 27 with associated medical conditions ❑4 Over 30 with/without medical conditions

20. When responding to a request for a weight loss product, do you…? (Tick all that apply)
    - ❑1 Recommend a product
    - ❑2 Advice against purchasing a weight loss product
    - ❑3 Offer advice on healthy eating
    - ❑4 Offer advice on increased physical activity
    - ❑5 Refer the customer to their GP
    - ❑6 Offer advice on appropriate physical activity
    - ❑7 Discuss available support networks
    - ❑8 Offer a leaflet on weight loss products/advice
    - ❑9 Other (please specify)……
    ……..

21. When recommending a weight loss product, which product(s) do you usually recommend? (Tick all that apply)
    - ❑1 Not applicable - I would never recommend a weight loss product
    - ❑2 Orlistat *(Xenical®)*
    - ❑3 Vitamin/herbal product (please specify).....
    - ❑4 Meal replacement product (please specify).....
    - ❑5 Other (please specify)……

22. When making weight management recommendations to customers do you refer to any guideline(s)?
    - ❑1 Yes
    - ❑2 No

    If **"YES"**, please specify the name(s) of the guideline(s).
    ……..

Section D

23. Which factors do you feel may improve the ability of the community pharmacist to tackle the overweight and obesity problem in Australia? (Tick all that apply)
    - ❑1 Extra staff to provide appropriate counselling, advice and support to assist customers
    - ❑2 Pharmacy specific weight management guidelines, information and educational resources
    - ❑3 Private counselling areas in pharmacies
    - ❑4 Evidence-based weight management clinics
    - ❑5 Healthy eating and increased exercise campaigns
    - ❑6 Further training for pharmacists
    - ❑7 Further training for pharmacy assistants
    - ❑8 Payment for services
    - ❑9 Other (please specify)……
    …….....

24. What further training would help you assist patients in weight management? (Tick all that apply)
    - ❑1 No training required
    - ❑2 Measurement of weight
    - ❑3 Measurement of height
    - ❑4 Measurement of waist circumference
    - ❑5 Calculation of BMI
    - ❑6 Measurement of blood pressure
    - ❑7 Measurement of blood glucose
    - ❑8 Estimation of body fat
    - ❑9 Measurement of blood cholesterol
    - ❑10 Advice on healthy eating
    - ❑11 Advice on physical activity
    - ❑12 Advice on weight loss products
    - ❑13 Advice on weight loss drugs
    - ❑14 Advice on appropriate counselling skills
    - ❑15 Other (please specify)……..
    ……..

25. If weight management educational resources were developed for pharmacy staff how would you like them to be formatted and distributed? (Tick all that apply)
    - ❑1 In a booklet
    - ❑2 In a pamphlet
    - ❑3 Online (webpage)
    - ❑4 On a CD
    - ❑5 On a USB
    - ❑6 In a monthly newsletter/magazine
    - ❑7 Other (please specify)……

Section E

Questions 26-29 relate to the following case study:

Madoline, a 28 year old woman, comes into the pharmacy wanting to purchase a box of Optifast®. She has never used Optifast® before but she has heard that it produces fantastic weight loss results. She tells you that she currently weighs 103 kg and is 170 cm tall (BMI=35.6kg/m^2). Madoline gave birth eight months ago to a gorgeous baby girl. Since pre-pregnancy she has gained 15 kg. She feels self-conscious about her weight and really wants to try Optifast®. She is no longer breastfeeding and does not take any medications.

26. Does Madoline need to lose weight?
    ☐1 Yes ☐2 No ☐3 Not sure

27. Based on the information given to you in this case scenario, would you sell Optifast® to Madoline?
    ☐1 Yes ☐2 No ☐3 Not sure

    If "**YES**", what counselling would you provide on Optifast®?
    .....
    .....
    .....
    .....

28. What else could you recommend to help Madoline lose weight? (Tick all that apply)
    ☐1 Nothing, she doesn't need to lose weight
    ☐2 Nothing, as she's recently had a baby it's not good to lose weight
    ☐3 Decrease calorie intake
    ☐4 Increase exercise
    ☐5 Take Orlistat (Xenical®)
    ☐6 Take a vitamin/herbal product (please specify).....
    ☐7 Take a meal replacement product (please specify).....
    ☐8 Join a pharmacy based weight loss clinic (please specify).....
    ☐9 Join a weight loss group e.g. Weight Watchers™
    ☐10 Refer her to a GP

29. Would you recommend any lifestyle changes to assist Madoline lose weight?
    ☐1 Yes ☐2 No

    If **"YES"** what recommendations would you make? (Tick all that apply)
    ☐1 Decrease fat intake
    ☐2 Decrease carbohydrate intake
    ☐3 Increase protein intake
    ☐4 Increase exercise (15 minutes, 3 days a week)
    ☐5 Increase exercise (30 minutes, 5 or more days a week)
    ☐6 Increase water intake (aim for 8 cups a day)
    ☐7 Keep a food diary

THANK YOU FOR YOUR TIME

Please return your completed questionnaire in the enclosed pre-paid envelope

MONASH University
Pharmacy and Pharmaceutical Sciences

Community Pharmacy Weight Management Services

PHARMACISTS

Please tick the appropriate box(es) and/or write in the spaces provided.

Section A

1. Are you the...?
   ☐1 Pharmacy owner ☐2 Pharmacy manager ☐3 Employee pharmacist

2. Which age group (in years) do you belong to?
   ☐1 20-24 ☐2 25-30 ☐3 31-40
   ☐4 41-50 ☐5 51-60 ☐6 Over 60

3. Are you...? ☐1 Male ☐2 Female

Section B

4. Do you feel pharmacists have a role to play in tackling the overweight and obesity problem in Australia?
   ☐1 Yes ☐2 No ☐3 Not sure

5. Does the pharmacy currently provide literature (leaflets etc.) to customers on healthy eating and exercise?
   ☐1 Yes ☐2 No

6. Does the pharmacy display posters on weight loss or weight loss products?
   ☐1 Yes ☐2 No

7. In the last five years have you had any training/education about giving advice on weight management?
   ☐1 Yes ☐2 No

   If **"YES"**, who did you receive this training from? (Tick all that apply)
   ☐1 University ☐2 Pharmaceutical industry ☐3 Professional organisations

8. What weight classification measure do you use to classify a customer's weight?
   ☐1 None ☐2 Weight (kg) ☐3 Waist Circumference (WC)
   ☐3 Body Mass Index (BMI) ☐4 BMI and WC ☐5 Other (please specify).....

9. What equation is used to calculate BMI? (W= weight and H= height)
   ☐1 BMI= W(kg)/H (m^2) ☐2 W (kg) X H (m^2) ☐3 BMI= W(kg)/H (m)

10. Does your pharmacy currently stock weight loss products?
    ☐1 Yes ☐2 No

    If **"NO"**, please specify why.
    ……..……..
    ……..

    If **"YES"**, where do you display these products?
    ☐1 Behind the counter ☐2 In self-selection areas ☐3 Other (please specify)……..

11. Does your pharmacy have a weight management program for customers?
    ☐1 Yes ☐2 No

    If **"NO"**, is it due to (Tick all that apply):
    ☐1 Lack of time ☐2 Cost ☐3 Lack of knowledge/training
    ☐4 Lack of public interest ☐5 Other (please specify)……

    If **"YES"**, please provide the name(s) of the program(s) your pharmacy provides?
    ……..

12. Have you found this/these program(s) to be successful in terms of pharmacy intervention in the treatment of overweight/obesity?
    ☐1 Yes ☐2 No ☐3 Not applicable

13. Who is the main consumer group for weight loss products/programs at your pharmacy?
    ☐1 Men ☐2 Women ☐3 Both men and women

Section C

14. Do you feel comfortable approaching a customer to discuss weight loss?
    ☐1 Yes ☐2 No ☐3 Unsure

15. When counselling on medications to treat overweight and obesity related conditions such as hypertension, hyperlipidaemia, type 2 diabetes, etc. how often do you counsel on weight loss/maintenance?
    ☐1 Unsure ☐2 Never ☐3 Only when asked by the customer
    ☐4 Sometimes ☐5 Most of the time ☐6 Always

16. If a patient approaches you regarding weight loss, do you ask…? (Tick all that apply)
    ☐1 Their reasons for wanting to lose weight ☐2 How much weight they would like to lose
    ☐3 If they have tried to lose weight before ☐4 About dietary habits
    ☐5 About exercise habits ☐6 About any existing medical conditions/diseases
    ☐7 If they take any medication ☐8 To check their weight/Body Mass Index (BMI)
    ☐9 Other (please specify)……
    ……
    ……

17. On average, how long would a typical pharmacist-customer consultation take following a request for information on weight loss?
    ☐1 less than 5 minutes ☐2 5-9 minutes ☐3 10-14 minutes
    ☐4 15-19 minutes ☐5 20-29 minutes ☐6 Over 30 minutes

18. Do you usually take customers to a private consultation area?
    ☐1 Yes ☐2 No

    If **"NO"**, please specify why.
    ……..
    ……..

19. At which BMI would it be appropriate to recommend a weight loss product? (Tick all that apply)
    ☐1 Less than 27 ☐2 27-29 with no associated medical conditions
    ☐3 Over 27 with associated medical conditions ☐4 Over 30 with/without medical conditions

20. When responding to a request for a weight loss product, do you…? (Tick all that apply)
    - ☐1 Recommend a product
    - ☐2 Advice against purchasing a weight loss product
    - ☐3 Offer advice on healthy eating
    - ☐4 Offer advice on increased physical activity
    - ☐5 Refer the customer to their GP
    - ☐6 Offer advice on appropriate physical activity
    - ☐7 Discuss available support networks
    - ☐8 Offer a leaflet on weight loss products/advice
    - ☐9 Other (please specify)……
    ……..

21. When recommending a weight loss product, which product(s) do you usually recommend? (Tick all that apply)
    - ☐1 Not applicable - I would never recommend a weight loss product
    - ☐2 Orlistat *(Xenical®)*
    - ☐3 Vitamin/herbal product (please specify).....
    - ☐4 Meal replacement product (please specify).....
    - ☐5 Other (please specify)……

22. When making weight management recommendations to customers do you refer to any guideline(s)?
    - ☐1 Yes
    - ☐2 No

    If **"YES"**, please specify the name(s) of the guideline(s).
    ……..

Section D

23. Which factors do you feel may improve the ability of the community pharmacist to tackle the overweight and obesity problem in Australia? (Tick all that apply)
    - ☐1 Extra staff to provide appropriate counselling, advice and support to assist customers
    - ☐2 Pharmacy specific weight management guidelines, information and educational resources
    - ☐3 Private counselling areas in pharmacies
    - ☐4 Evidence-based weight management clinics
    - ☐5 Healthy eating and increased exercise campaigns
    - ☐6 Further training for pharmacists
    - ☐7 Further training for pharmacy assistants
    - ☐8 Payment for services
    - ☐9 Other (please specify)……
    …….....

24. What further training would help you assist patients in weight management? (Tick all that apply)
    - ☐1 No training required
    - ☐2 Measurement of weight
    - ☐3 Measurement of height
    - ☐4 Measurement of waist circumference
    - ☐5 Calculation of BMI
    - ☐6 Measurement of blood pressure
    - ☐7 Measurement of blood glucose
    - ☐8 Estimation of body fat
    - ☐9 Measurement of blood cholesterol
    - ☐10 Advice on healthy eating
    - ☐11 Advice on physical activity
    - ☐12 Advice on weight loss products
    - ☐13 Advice on weight loss drugs
    - ☐14 Advice on appropriate counselling skills
    - ☐15 Other (please specify)……..
    ……..

25. If weight management educational resources were developed for pharmacy staff how would you like them to be formatted and distributed? (Tick all that apply)
    - ☐1 In a booklet
    - ☐2 In a pamphlet
    - ☐3 Online (webpage)
    - ☐4 On a CD
    - ☐5 On a USB
    - ☐6 In a monthly newsletter/magazine
    - ☐7 Other (please specify)……

Section E

Questions 26-30 relate to the following case study:

Sarah, a 48 year old woman, comes into the pharmacy enquiring about your new weight management program that involves two meal replacements a day and a protein meal. She tells you that ever since her doctor told her that she has reached menopause (four years ago), she's gained about 20 kg. She's always been on the 'heavy side' but now she's getting really concerned. She weighs about 110 kg and is 160 cm tall *(BMI=43kg/m^2)*. She's tried everything to lose weight and this program is her last option.

26. What BMI category is Sarah in?
    - ☐1 Underweight ☐2 Normal ☐3 Overweight
    - ☐4 Obese ☐5 Severely obese

27. What health conditions is Sarah at an increased risk of (tick all that apply)?
    - ☐1 Nothing ☐2 Type 2 diabetes ☐3 Gastro-oesophageal reflux disease
    - ☐4 Cardiovascular disease ☐5 Osteoarthritis ☐6 Depression
    - ☐7 Gallstones ☐8 Certain cancers ☐9 Sleep apnoea
    - ☐10 Others (please specify).....

28. Based on the information given to you in this case scenario, would you refer Sarah to her GP?
    - ☐1 Yes ☐2 No ☐3 Unsure

    If "**YES**", why? If **"NO"**, why not?
    .....
    .....
    .....

29. Would the new pharmacy weight management program be appropriate for her?
    - ☐1 Yes ☐2 No ☐3 Unsure

    If "**YES" or "NO"**, please specify why.
    .....
    .....
    .....

30. What else could you recommend to help Sarah lose weight? (Tick all that apply)
    - ☐1 Nothing, she doesn't need to lose weight
    - ☐2 Nothing, she's already tried everything
    - ☐3 Decrease calorie intake
    - ☐4 Increase exercise
    - ☐5 Take Orlistat (Xenical®)
    - ☐6 Take a vitamin/herbal product (please specify).....
    - ☐7 Take a meal replacement product (please specify).....
    - ☐8 Join a weight loss group e.g. Weight Watchers™

THANK YOU FOR YOUR TIME

Please return your completed questionnaire in the enclosed pre-paid envelope

Appendix 6

Phase 2 (Chapter 6) and Phase 3 (Chapter 7) supplementary material: pharmacy assistants

- Invitation letter/reminder letter
- Explanatory statement
- Questionnaire
    - Section A-D: Phase 2 (Chapter 6)
    - Section E: Phase 3 (Chapter 7)

MONASH University
Pharmacy and Pharmaceutical Sciences

October 2011

Document title: Reminder letter

Attention: Pharmacist-in-charge of the pharmacy today

Re: A national random survey exploring community pharmacy weight management services

Dear Pharmacist-in-charge of the pharmacy today

I am writing to you regarding a research project being conducted by the Centre for Medicine Use and Safety, Faculty of Pharmacy and Pharmaceutical Sciences, Monash University, into gaining an insight of pharmacists' and pharmacy assistants' knowledge, attitudes and practices towards weight loss programs and products. This project will form part of the research towards attainment of the degree of Doctor of Philosophy (PhD).

This project aims to survey pharmacists and pharmacy assistants, using a mail questionnaire with a series of questions as well as case vignettes (clinical scenarios), regarding their current weight management recommendations to women of different ages, with different co-morbidities and different weight classifications.

This information will lead to a better understanding of the current recommendations made by pharmacists and pharmacy assistants. This will help with later components of the PhD, which involves the development of women specific weight management guidelines and educational resources for pharmacists and pharmacy assistants.

Attached to this letter are two explanatory statements (one for a pharmacist and one for a pharmacy assistant) which each provides further details on participating in this project. Also attached are two questionnaires; one for a pharmacist to complete and one for a pharmacy assistant to complete.

If a pharmacist and pharmacy assistant in your pharmacy have already completed the attached questionnaires then please kindly ignore this letter.

Should you have any questions about the project please feel free to contact me. Additionally, my academic supervisors, Dr Safeera Hussainy and A/Prof Jennifer Marriott, will also be available to answer any questions you may have.

I look forward to hearing from you soon.

Sincerely,

Souhiela

Ms. Souhiela Fakih
Pharmacist, PhD Candidate
Department of Pharmacy Practice, Centre for Medicine Use and Safety
Monash University
[redacted]

Dr Safeera Hussainy
Lecturer,
Academic Supervisor
Department of Pharmacy Practice, Centre for Medicine Use and Safety
Monash University
[redacted]

A/Prof Jennifer Marriott
Associate Professor,
Academic Supervisor
Department of Pharmacy Practice, Centre for Medicine Use and Safety
Monash University
[redacted]

MONASH University
Pharmacy and Pharmaceutical Sciences

Explanatory Statement: Pharmacy assistants

Project Title: A national survey exploring community pharmacy weight management services

This information sheet is for you to keep.

My name is **Souhiela Fakih B.Pharm (Hons)** and I am conducting a research project with **Associate Professor Jennifer Marriott** and **Dr. Safeera Hussainy** at the Centre for Medicine Use and Safety, Department of Pharmacy Practice, Faculty of Pharmacy and Pharmaceutical Sciences, Monash University. I am conducting this research project towards a Doctor of Philosophy at Monash University. This means that I will be writing a thesis which is the equivalent of a 300 page book. A report of the project may also be submitted for publication in a journal or be presented at a conference.

Who completes the questionnaire?
*Only **ONE** pharmacy assistant employed at the pharmacy needs to complete the pharmacy assistant questionnaire titled "Community pharmacy weight management services-Pharmacy Assistants".*
.
The pharmacy assistant in charge of the pharmacy weight management program, **OR** in the case where there is no pharmacy weight management program, the pharmacy assistant in charge of the vitamin section, **OR** the regularly and usually in-charge pharmacy assistant of the pharmacy should complete this questionnaire

Why did you choose this particular person/group as participants?
The research project aims to develop women specific weight management guidelines and educational resources for pharmacists and pharmacy assistants; hence the participants for this project are pharmacists and pharmacy assistants.

Information from pharmacists and pharmacy assistants is being sought as prior to developing the intended weight management guidelines it is vital to obtain further information about current pharmacy practices. At present little research investigating Australian pharmacists' and pharmacy assistants' experiences and attitudes with weight loss programs and products has been conducted.

Participants for this project have been chosen at random. The questionnaires have been mailed to random sample of pharmacies across Australia – each pharmacy will receive two copies each – one for a pharmacist and the other for a pharmacy assistant to complete. Details of pharmacies have been obtained from The Pharmacy Guild of Australia website.

The aim/purpose of the research
The aim of the study is to gain an insight into pharmacy assistants' and pharmacists' current weight management recommendations.

This information will lead to a better understanding of the current weight management recommendations made by pharmacists and pharmacy assistants and will therefore help with later phases of the PhD project when developing pharmacy based weight management guidelines and educational resources specific to women.

Possible benefits
There may be no direct benefit from the participation in this project. However, by participating in this project participants will provide researchers with valuable information that

will later be used for the development of pharmacy based weight management guidelines and educational resources specific to women, which will be provided to pharmacies later on.

What does the research involve?
Participation in this project involves completion of a questionnaire about yourself in general, your practice as a pharmacist/pharmacy assistant and your experiences and knowledge regarding weight loss programs and/or products.

How much time will the research take?
The time allocated is 30 minutes; this includes the time needed for you to read the explanatory statement and the time needed to complete the questionnaire. The questionnaire itself should only take 15-20 minutes to complete.

Inconvenience/discomfort
There are no foreseeable risks other than the inconvenience of your time required to complete the questionnaire. If you experience inconvenience or discomfort due to the time required, you are free to stop and complete the questionnaire later.

If you become upset or distressed as a result of your participation in the project, the researcher is able to arrange for counselling or other appropriate support. Any counselling or support will be provided by staff who are not members of the research team and include Lifeline Australia who can be contacted on 13 11 14.

If you have any questions or you would like to talk to someone about the research project you are free to contact me or my supervisors on the contact details listed below.

Can I withdraw from the research?
Participation in this research project is voluntary and you are under no obligation to participate. If you decide to take part and later change your mind, you are free to withdraw from the project. However once the questionnaire is completed and submitted to the researcher you will not be able to withdraw from the research as the entire questionnaire is anonymous. If there are certain questions that are in the questionnaire that you feel are too personal or too intrusive you are free to not answer them. This will not affect your participation in the project.

Confidentiality
All the information collected from individual participants during the course of this project will be kept confidential. The questionnaires are anonymous and participants will not be able to be identified at any stage during the research project. In any publication and/or presentation information will be provided in such a way that you cannot be identified.

Storage of data
Storage of the data collected will adhere to the University regulations and kept on University premises in a locked cupboard/filing cabinet for 5 years.

Use of data for other purposes
It is not intended that this data be used for any other purpose for which it is primarily obtained.

Results
If you would like to be informed of the aggregate research finding, please contact myself or my supervisors (see below). Only participants who contact the researchers and provide them with their name, address or email address will be provided with a copy of the results. The findings will be accessible after all data is collected.

If you would like to contact the researchers about any aspect of this study, please contact the Chief Investigator:	If you have a complaint concerning the manner in which this research CF11/1606 - 2011000897is being conducted, please contact:
Souhiela Fakih B.Pharm(Hons) PhD candidate Centre for Medicine Use and Safety, Monash University. [redacted] Dr. Safeera Hussainy Lecturer, Academic supervisor Centre for Medicine Use and Safety, Monash University [redacted] Associate Professor Jennifer Marriott Academic Supervisor Centre for Medicine Use and Safety, Monash University [redacted]	**Executive Officer, Human Research Ethics** **Monash University Human Research Ethics Committee (MUHREC)** **Building 3e Room 111** **Research Office** **Monash University VIC 3800** [redacted]

Thank you,

Souhiela Fakih B.Pharm(Hons)

MONASH University
Pharmacy and Pharmaceutical Sciences

Community Pharmacy Weight Management Services

PHARMACY ASSISTANTS

Please tick the appropriate box(es) and/or write in the spaces provided.

Section A

1. What is your main role as a pharmacy assistant?
   ☐1 Weight loss consultant ☐2 Vitamin consultant ☐3 Retail manager
   ☐4 Dispensary technician ☐5 General pharmacy assistant

2. How long have you been a pharmacy assistant for?
   ☐1 Less than 6 months ☐2 6-11 months ☐3 1-4 years
   ☐4 5-9 years ☐5 10-19 years ☐6 Over 20 years

3. Which age group (in years) do you belong to?
   ☐1 15-19 ☐2 20-24 ☐3 25-29
   ☐4 30-39 ☐5 40-49 ☐6 Over 50

4. Are you...? ☐1 Male ☐2 Female

Section B

5. Do you feel pharmacies have a role to play in tackling the overweight and obesity problem in Australia?
   ☐1 Yes ☐2 No ☐3 Not sure

6. Does the pharmacy currently provide literature (leaflets etc.) to customers on healthy eating and exercise?
   ☐1 Yes ☐2 No

7. Does the pharmacy display posters on weight loss or weight loss products?
   ☐1 Yes ☐2 No

8. In the last five years have you had any training/education about giving advice on weight management?
   ☐1 Yes ☐2 No

   If **"YES"**, who did you receive this training from? (Tick all that apply)
   ☐1 Pharmacist ☐2 Pharmacy magazines ☐3 Professional organisations

9. Who is the main consumer group for weight loss products/programs at your pharmacy?
   ☐1 Men ☐2 Women ☐3 Both men and women

10. Does your pharmacy currently stock weight loss products?
    ☐1 Yes ☐2 No

    If **"NO"**, please specify why.
    ……..……..
    ……,

    If **"YES"**, where do you display these products?
    ☐1 Behind the counter ☐2 In self-selection areas ☐3 Other (please specify)……..

11. Does your pharmacy have a weight management program for customers?
    ❑1 Yes ❑2 No

    If **"NO"**, is it due to (Tick all that apply):
    ❑1 Lack of time ❑2 Cost ❑3 Lack of knowledge/training
    ❑4 Lack of public interest ❑5 Other (please specify)……

    If **"YES"**, please provide the name(s) of the program(s) your pharmacy provides?
    ……..

12. Have you found this/these program(s) to be successful in terms of pharmacy intervention in the treatment of overweight/obesity?
    ❑1 Yes ❑2 No ❑3 Not applicable

13. What weight classification measure do you use to classify a customer's weight?
    ❑1 None ❑2 Weight (kg) ❑3 Waist Circumference (WC)
    ❑3 Body Mass Index (BMI) ❑4 BMI and WC ❑3 Other (please specify).....

14. What equation is used to calculate BMI? (W= weight and H= height)
    ❑1 BMI= W(kg)/H (m^2) ❑2 W (kg) X H (m^2) ❑3 BMI= W(kg)/H (m)

Section C

15. Do you feel comfortable approaching a customer to discuss weight loss?
    ❑1 Yes ❑2 No ❑3 Unsure

16. If a patient approaches you regarding weight loss, do you ask…? (Tick all that apply)
    ❑1 Their reasons for wanting to lose weight ❑2 How much weight they would like to lose
    ❑3 If they have tried to lose weight before ❑4 About dietary habits
    ❑5 About exercise habits ❑6 About any existing medical conditions/diseases
    ❑7 If they take any medication ❑8 To check their weight/Body Mass Index (BMI)
    ❑9 Other (please specify)……
    ……..
    ……..

17. On average, how long would a typical pharmacy assistant-customer consultation take following a request for information on weight loss?
    ❑1 less than 5 minutes ❑2 5-9 minutes ❑3 10-14 minutes
    ❑4 15-19 minutes ❑5 20-29 minutes ❑6 Over 30 minutes

18. Do you usually take customers to a private consultation area?
    ❑1 Yes ❑2 No

    If **"NO"**, please specify why.
    …….....
    ……..

19. At which BMI would it be appropriate to recommend a weight loss product? (Tick all that apply)
    ❑1 Less than 27 ❑2 27-29 with no associated medical conditions
    ❑3 Over 27 with associated medical conditions ❑4 Over 30 with/without medical conditions

20. When responding to a request for a weight loss product, do you…? (Tick all that apply)
    - ❑1 Recommend a product
    - ❑2 Advice against purchasing a weight loss product
    - ❑3 Offer advice on healthy eating
    - ❑4 Offer advice on increased physical activity
    - ❑5 Offer advice on appropriate physical activity
    - ❑6 Refer the customer to the pharmacist
    - ❑7 Discuss available support networks
    - ❑8 Offer a leaflet on weight loss products/ advice
    - ❑9 Other (please specify)……
    ……..

21. When recommending a weight loss product, which product(s) do you usually recommend? (Tick all that apply)
    - ❑1 Not applicable - I would never recommend a weight loss product
    - ❑2 Vitamin/herbal product (please specify).....
    - ❑3 Meal replacement product (please specify).....
    - ❑4 Other (please specify)……
    ……..

22. When making weight management recommendations to customers do you refer to any guideline(s)?
    - ❑1 Yes
    - ❑2 No

    If **"YES"**, please specify the name(s) of the guideline(s).
    ……..

Section D

23. Which factors do you feel may improve the ability of pharmacy staff to tackle the overweight and obesity problem in Australia? (Tick all that apply)
    - ❑1 Extra staff to provide appropriate counselling, advice and support to assist customers
    - ❑2 Pharmacy specific weight management guidelines, information and educational resources
    - ❑3 Private counselling areas in pharmacies
    - ❑4 Evidence-based weight management clinics
    - ❑5 Healthy eating and increased exercise campaigns
    - ❑6 Further training for pharmacists
    - ❑7 Further training for pharmacy assistants
    - ❑8 Payment for services
    - ❑9 Other (please specify)……
    …….....

24. What further training would help you assist patients in weight management? (Tick all that apply)
    - ❑1 No training required
    - ❑2 Measurement of weight
    - ❑3 Measurement of height
    - ❑4 Measurement of waist circumference
    - ❑5 Calculation of BMI
    - ❑6 Measurement of blood pressure
    - ❑7 Measurement of blood glucose
    - ❑8 Estimation of body fat
    - ❑9 Measurement of blood cholesterol
    - ❑10 Advice on healthy eating
    - ❑11 Advice on physical activity
    - ❑12 Advice on weight loss products
    - ❑13 Advice on weight loss drugs
    - ❑14 Advice on appropriate counselling skills
    - ❑15 Other (please specify)……..
    ……..

25. If weight management educational resources were developed for pharmacy staff how would you like them to be formatted and distributed? (Tick all that apply)
    - ❑1 In a booklet
    - ❑2 In a pamphlet
    - ❑3 Online (webpage)
    - ❑4 On a CD
    - ❑5 On a USB
    - ❑6 In a monthly newsletter/magazine
    - ❑7 Other (please specify)……

Section E

Questions 26-29 relate to the following case study:

Shereen, a 36 year old woman, presents to the pharmacy seeking weight loss advice. She tells you that she weighs about 73 kg and is 165 cm tall (BMI=26.8kg/m^2). It's her brother's wedding in two months time and she desperately needs something to help her lose a few kilos. Her friends have told her about a 'wonder' medication called Xenical® that is supposed to stop all fat entering the body! She wants to buy a box and see if it actually works.

26. Is there any other information you would like to know?
    ❑1 Yes ❑2 No

    If "**YES**", what other information do you need?
    .....
    .....
    .....
    .....
    .....
    .....

27. Based on the information given to you in this case scenario, would you...?
    ❑1 Sell Shereen the box of Xenical®
    ❑2 Refuse to sell Xenical®
    ❑3 Refer Shereen to the pharmacist

    Please specify why you chose the above answer
    .....
    .....

28. Would you recommend any other weight loss product/program for her?
    ❑1 Yes ❑2 No ❑3 Not sure

    If "**YES**", which one?
    .....

29. Would you recommend any lifestyle changes to assist her lose weight?
    ❑1 Yes ❑2 No

    If **"YES"** what recommendations would you make? (Tick all that apply)
    ❑1 Decrease fat intake
    ❑2 Decrease carbohydrate intake
    ❑3 Increase protein intake
    ❑4 Increase exercise (15 minutes, 3 days a week)
    ❑5 Increase exercise (30 minutes, 5 or more days a week)
    ❑6 Increase water intake (aim for 8 cups a day)
    ❑7 Keep a food diary

THANK YOU FOR YOUR TIME

Please return your completed questionnaire in the enclosed pre-paid envelope

MONASH University
Pharmacy and Pharmaceutical Sciences

Community Pharmacy Weight Management Services

PHARMACY ASSISTANTS

Please tick the appropriate box(es) and/or write in the spaces provided.

Section A

1. What is your main role as a pharmacy assistant?
   ☐1 Weight loss consultant ☐2 Vitamin consultant ☐3 Retail manager
   ☐4 Dispensary technician ☐5 General pharmacy assistant

2. How long have you been a pharmacy assistant for?
   ☐1 Less than 6 months ☐2 6-11 months ☐3 1-4 years
   ☐4 5-9 years ☐5 10-19 years ☐6 Over 20 years

3. Which age group (in years) do you belong to?
   ☐1 15-19 ☐2 20-24 ☐3 25-29
   ☐4 30-39 ☐5 40-49 ☐6 Over 50

4. Are you...? ☐1 Male ☐2 Female

Section B

5. Do you feel pharmacies have a role to play in tackling the overweight and obesity problem in Australia?
   ☐1 Yes ☐2 No ☐3 Not sure

6. Does the pharmacy currently provide literature (leaflets etc.) to customers on healthy eating and exercise?
   ☐1 Yes ☐2 No

7. Does the pharmacy display posters on weight loss or weight loss products?
   ☐1 Yes ☐2 No

8. In the last five years have you had any training/education about giving advice on weight management?
   ☐1 Yes ☐2 No

   If **"YES"**, who did you receive this training from? (Tick all that apply)
   ☐1 Pharmacist ☐2 Pharmacy magazines ☐3 Professional organisations

9. Who is the main consumer group for weight loss products/programs at your pharmacy?
   ☐1 Men ☐2 Women ☐3 Both men and women

10. Does your pharmacy currently stock weight loss products?
    ☐1 Yes ☐2 No

    If **"NO"**, please specify why.
    ……..……..
    ……,

    If **"YES"**, where do you display these products?
    ☐1 Behind the counter ☐2 In self-selection areas ☐3 Other (please specify)……..

11. Does your pharmacy have a weight management program for customers?
    ❑1 Yes ❑2 No

    If **"NO"**, is it due to (Tick all that apply):
    ❑1 Lack of time ❑2 Cost ❑3 Lack of knowledge/training
    ❑4 Lack of public interest ❑5 Other (please specify)……

    If **"YES"**, please provide the name(s) of the program(s) your pharmacy provides?
    ……..

12. Have you found this/these program(s) to be successful in terms of pharmacy intervention in the treatment of overweight/obesity?
    ❑1 Yes ❑2 No ❑3 Not applicable

13. What weight classification measure do you use to classify a customer's weight?
    ❑1 None ❑2 Weight (kg) ❑3 Waist Circumference (WC)
    ❑3 Body Mass Index (BMI) ❑4 BMI and WC ❑3 Other (please specify).....

14. What equation is used to calculate BMI? (W= weight and H= height)
    ❑1 BMI= W(kg)/H (m^2) ❑2 W (kg) X H (m^2) ❑3 BMI= W(kg)/H (m)

Section C

15. Do you feel comfortable approaching a customer to discuss weight loss?
    ❑1 Yes ❑2 No ❑3 Unsure

16. If a patient approaches you regarding weight loss, do you ask…? (Tick all that apply)
    ❑1 Their reasons for wanting to lose weight ❑2 How much weight they would like to lose
    ❑3 If they have tried to lose weight before ❑4 About dietary habits
    ❑5 About exercise habits ❑6 About any existing medical conditions/diseases
    ❑7 If they take any medication ❑8 To check their weight/Body Mass Index (BMI)
    ❑9 Other (please specify)……
    ……..
    ……..

17. On average, how long would a typical pharmacy assistant-customer consultation take following a request for information on weight loss?
    ❑1 less than 5 minutes ❑2 5-9 minutes ❑3 10-14 minutes
    ❑4 15-19 minutes ❑5 20-29 minutes ❑6 Over 30 minutes

18. Do you usually take customers to a private consultation area?
    ❑1 Yes ❑2 No

    If **"NO"**, please specify why.
    …….....
    ……..

19. At which BMI would it be appropriate to recommend a weight loss product? (Tick all that apply)
    ❑1 Less than 27 ❑2 27-29 with no associated medical conditions
    ❑3 Over 27 with associated medical conditions ❑4 Over 30 with/without medical conditions

20. When responding to a request for a weight loss product, do you…? (Tick all that apply)
    - ❑1 Recommend a product
    - ❑2 Advice against purchasing a weight loss product
    - ❑3 Offer advice on healthy eating
    - ❑4 Offer advice on increased physical activity
    - ❑5 Offer advice on appropriate physical activity
    - ❑6 Refer the customer to the pharmacist
    - ❑7 Discuss available support networks
    - ❑8 Offer a leaflet on weight loss products/ advice
    - ❑9 Other (please specify)……
    ……..

21. When recommending a weight loss product, which product(s) do you usually recommend? (Tick all that apply)
    - ❑1 Not applicable - I would never recommend a weight loss product
    - ❑2 Vitamin/herbal product (please specify).....
    - ❑3 Meal replacement product (please specify).....
    - ❑4 Other (please specify)……
    ……..

22. When making weight management recommendations to customers do you refer to any guideline(s)?
    - ❑1 Yes
    - ❑2 No

    If **"YES"**, please specify the name(s) of the guideline(s).
    ……..

Section D

23. Which factors do you feel may improve the ability of pharmacy staff to tackle the overweight and obesity problem in Australia? (Tick all that apply)
    - ❑1 Extra staff to provide appropriate counselling, advice and support to assist customers
    - ❑2 Pharmacy specific weight management guidelines, information and educational resources
    - ❑3 Private counselling areas in pharmacies
    - ❑4 Evidence-based weight management clinics
    - ❑5 Healthy eating and increased exercise campaigns
    - ❑6 Further training for pharmacists
    - ❑7 Further training for pharmacy assistants
    - ❑8 Payment for services
    - ❑9 Other (please specify)……
    …….....

24. What further training would help you assist patients in weight management? (Tick all that apply)
    - ❑1 No training required
    - ❑2 Measurement of weight
    - ❑3 Measurement of height
    - ❑4 Measurement of waist circumference
    - ❑5 Calculation of BMI
    - ❑6 Measurement of blood pressure
    - ❑7 Measurement of blood glucose
    - ❑8 Estimation of body fat
    - ❑9 Measurement of blood cholesterol
    - ❑10 Advice on healthy eating
    - ❑11 Advice on physical activity
    - ❑12 Advice on weight loss products
    - ❑13 Advice on weight loss drugs
    - ❑14 Advice on appropriate counselling skills
    - ❑15 Other (please specify)……..
    ……..

25. If weight management educational resources were developed for pharmacy staff how would you like them to be formatted and distributed? (Tick all that apply)
    - ❑1 In a booklet
    - ❑2 In a pamphlet
    - ❑3 Online (webpage)
    - ❑4 On a CD
    - ❑5 On a USB
    - ❑6 In a monthly newsletter/magazine
    - ❑7 Other (please specify)……

Section E

Questions 26-27 relate to the following case study:

Effie, a 26 year old woman, comes into the pharmacy asking about folic acid tablets. She and her husband are currently trying to have a baby and she's heard folic acid is recommended prior to conceiving. While talking to her, she tells you she's worried about her weight as she's been told that being overweight can cause problems with fertility. She is currently 85 kg and 160 cm tall (BMI=33kg/m^2). She doesn't know what she can do to lose weight and she's wondering if you could recommend anything.

26. What BMI category is Effie in?
    - ☐1 Underweight ☐2 Normal ☐3 Overweight
    - ☐4 Obese ☐5 Severely obese

27. What would you recommend to help Effie lose weight? (Tick all that apply)
    - ☐1 Nothing, she doesn't need to lose weight
    - ☐2 Nothing, as she's trying to fall pregnant it's not good to lose weight
    - ☐3 Decrease calorie intake
    - ☐4 Increase exercise
    - ☐5 Take a vitamin/herbal product (please specify).....
    - ☐6 Take a meal replacement product (please specify).....
    - ☐7 Join a pharmacy based weight loss clinic (please specify).....
    - ☐8 Join a weight loss group e.g. Weight Watchers™
    - ☐9 Refer her to a pharmacist

THANK YOU FOR YOUR TIME

Please return your completed questionnaire in the enclosed pre-paid envelope

MONASH University
Pharmacy and Pharmaceutical Sciences

Community Pharmacy Weight Management Services

PHARMACY ASSISTANTS

Please tick the appropriate box(es) and/or write in the spaces provided.

Section A

1. What is your main role as a pharmacy assistant?
   ☐1 Weight loss consultant ☐2 Vitamin consultant ☐3 Retail manager
   ☐4 Dispensary technician ☐5 General pharmacy assistant

2. How long have you been a pharmacy assistant for?
   ☐1 Less than 6 months ☐2 6-11 months ☐3 1-4 years
   ☐4 5-9 years ☐5 10-19 years ☐6 Over 20 years

3. Which age group (in years) do you belong to?
   ☐1 15-19 ☐2 20-24 ☐3 25-29
   ☐4 30-39 ☐5 40-49 ☐6 Over 50

4. Are you...? ☐1 Male ☐2 Female

Section B

5. Do you feel pharmacies have a role to play in tackling the overweight and obesity problem in Australia?
   ☐1 Yes ☐2 No ☐3 Not sure

6. Does the pharmacy currently provide literature (leaflets etc.) to customers on healthy eating and exercise?
   ☐1 Yes ☐2 No

7. Does the pharmacy display posters on weight loss or weight loss products?
   ☐1 Yes ☐2 No

8. In the last five years have you had any training/education about giving advice on weight management?
   ☐1 Yes ☐2 No

   If **"YES"**, who did you receive this training from? (Tick all that apply)
   ☐1 Pharmacist ☐2 Pharmacy magazines ☐3 Professional organisations

9. Who is the main consumer group for weight loss products/programs at your pharmacy?
   ☐1 Men ☐2 Women ☐3 Both men and women

10. Does your pharmacy currently stock weight loss products?
    ☐1 Yes ☐2 No

    If **"NO"**, please specify why.
    ……..……..
    ……,

    If **"YES"**, where do you display these products?
    ☐1 Behind the counter ☐2 In self-selection areas ☐3 Other (please specify)……..

11. Does your pharmacy have a weight management program for customers?
    ❑1 Yes ❑2 No

    If **"NO"**, is it due to (Tick all that apply):
    ❑1 Lack of time ❑2 Cost ❑3 Lack of knowledge/training
    ❑4 Lack of public interest ❑5 Other (please specify)……

    If **"YES"**, please provide the name(s) of the program(s) your pharmacy provides?
    ……..

12. Have you found this/these program(s) to be successful in terms of pharmacy intervention in the treatment of overweight/obesity?
    ❑1 Yes ❑2 No ❑3 Not applicable

13. What weight classification measure do you use to classify a customer's weight?
    ❑1 None ❑2 Weight (kg) ❑3 Waist Circumference (WC)
    ❑3 Body Mass Index (BMI) ❑4 BMI and WC ❑3 Other (please specify).....

14. What equation is used to calculate BMI? (W= weight and H= height)
    ❑1 BMI= W(kg)/H (m^2) ❑2 W (kg) X H (m^2) ❑3 BMI= W(kg)/H (m)

Section C

15. Do you feel comfortable approaching a customer to discuss weight loss?
    ❑1 Yes ❑2 No ❑3 Unsure

16. If a patient approaches you regarding weight loss, do you ask…? (Tick all that apply)
    ❑1 Their reasons for wanting to lose weight ❑2 How much weight they would like to lose
    ❑3 If they have tried to lose weight before ❑4 About dietary habits
    ❑5 About exercise habits ❑6 About any existing medical conditions/diseases
    ❑7 If they take any medication ❑8 To check their weight/Body Mass Index (BMI)
    ❑9 Other (please specify)……
    ……..
    ……..

17. On average, how long would a typical pharmacy assistant-customer consultation take following a request for information on weight loss?
    ❑1 less than 5 minutes ❑2 5-9 minutes ❑3 10-14 minutes
    ❑4 15-19 minutes ❑5 20-29 minutes ❑6 Over 30 minutes

18. Do you usually take customers to a private consultation area?
    ❑1 Yes ❑2 No

    If **"NO"**, please specify why.
    …….....
    ……..

19. At which BMI would it be appropriate to recommend a weight loss product? (Tick all that apply)
    ❑1 Less than 27 ❑2 27-29 with no associated medical conditions
    ❑3 Over 27 with associated medical conditions ❑4 Over 30 with/without medical conditions

20. When responding to a request for a weight loss product, do you…? (Tick all that apply)
    - ❑1 Recommend a product
    - ❑2 Advice against purchasing a weight loss product
    - ❑3 Offer advice on healthy eating
    - ❑4 Offer advice on increased physical activity
    - ❑5 Offer advice on appropriate physical activity
    - ❑6 Refer the customer to the pharmacist
    - ❑7 Discuss available support networks
    - ❑8 Offer a leaflet on weight loss products/ advice
    - ❑9 Other (please specify)……
    ……..

21. When recommending a weight loss product, which product(s) do you usually recommend? (Tick all that apply)
    - ❑1 Not applicable - I would never recommend a weight loss product
    - ❑2 Vitamin/herbal product (please specify).....
    - ❑3 Meal replacement product (please specify).....
    - ❑4 Other (please specify)……
    ……..

22. When making weight management recommendations to customers do you refer to any guideline(s)?
    - ❑1 Yes
    - ❑2 No

    If **"YES"**, please specify the name(s) of the guideline(s).
    ……..

Section D

23. Which factors do you feel may improve the ability of pharmacy staff to tackle the overweight and obesity problem in Australia? (Tick all that apply)
    - ❑1 Extra staff to provide appropriate counselling, advice and support to assist customers
    - ❑2 Pharmacy specific weight management guidelines, information and educational resources
    - ❑3 Private counselling areas in pharmacies
    - ❑4 Evidence-based weight management clinics
    - ❑5 Healthy eating and increased exercise campaigns
    - ❑6 Further training for pharmacists
    - ❑7 Further training for pharmacy assistants
    - ❑8 Payment for services
    - ❑9 Other (please specify)……
    …….....

24. What further training would help you assist patients in weight management? (Tick all that apply)
    - ❑1 No training required
    - ❑2 Measurement of weight
    - ❑3 Measurement of height
    - ❑4 Measurement of waist circumference
    - ❑5 Calculation of BMI
    - ❑6 Measurement of blood pressure
    - ❑7 Measurement of blood glucose
    - ❑8 Estimation of body fat
    - ❑9 Measurement of blood cholesterol
    - ❑10 Advice on healthy eating
    - ❑11 Advice on physical activity
    - ❑12 Advice on weight loss products
    - ❑13 Advice on weight loss drugs
    - ❑14 Advice on appropriate counselling skills
    - ❑15 Other (please specify)……..
    ……..

25. If weight management educational resources were developed for pharmacy staff how would you like them to be formatted and distributed? (Tick all that apply)
    - ❑1 In a booklet
    - ❑2 In a pamphlet
    - ❑3 Online (webpage)
    - ❑4 On a CD
    - ❑5 On a USB
    - ❑6 In a monthly newsletter/magazine
    - ❑7 Other (please specify)……

Section E

Questions 26-27 relate to the following case study:

Teresa, a 32 year old woman, comes into the pharmacy enquiring about "Blooms Svelte" tablets (a herbal product available over-the-counter that's marketed for weight loss). Upon questioning, you discover that Teresa is three months pregnant with her first child. She weighs 70 kg and is 155 cm tall (BMI=29.1kg/m^2). She's heard that being overweight in pregnancy can cause problems so she thinks these herbal tablets will help her stop gaining excess weight. They're herbal, so she thinks they'll be safe in pregnancy. She just wants you to tell her how many tablets she needs to take and whether she needs to have them with or without food.

26. Based on the information given to you in this case scenario, would you sell Teresa the "Blooms Svelte" tablets?
    ☐1 Yes ☐2 No ☐3 Not sure

    If **"YES"**, why?
    .....
    .....
    .....

    If "**NO"**, why not?
    .....
    .....
    .....

27. What would you recommend to help Teresa stop gaining *excess weight* in her pregnancy? (Tick all that apply)
    ☐1 Nothing, she doesn't need to lose weight
    ☐2 Nothing, as she's pregnant it's not good to lose weight
    ☐3 Decrease calorie intake
    ☐4 Increase exercise
    ☐5 Take a vitamin/herbal product (please specify).....
    ☐6 Take a meal replacement product (please specify).....
    ☐7 Join a pharmacy based weight loss clinic (please specify).....
    ☐8 Join a weight loss group e.g. Weight Watchers™
    ☐9 Refer her to a pharmacist

THANK YOU FOR YOUR TIME

Please return your completed questionnaire in the enclosed pre-paid envelope

MONASH University
Pharmacy and Pharmaceutical Sciences

Community Pharmacy Weight Management Services

PHARMACY ASSISTANTS

Please tick the appropriate box(es) and/or write in the spaces provided.

Section A

1. What is your main role as a pharmacy assistant?
   ☐1 Weight loss consultant ☐2 Vitamin consultant ☐3 Retail manager
   ☐4 Dispensary technician ☐5 General pharmacy assistant

2. How long have you been a pharmacy assistant for?
   ☐1 Less than 6 months ☐2 6-11 months ☐3 1-4 years
   ☐4 5-9 years ☐5 10-19 years ☐6 Over 20 years

3. Which age group (in years) do you belong to?
   ☐1 15-19 ☐2 20-24 ☐3 25-29
   ☐4 30-39 ☐5 40-49 ☐6 Over 50

4. Are you...? ☐1 Male ☐2 Female

Section B

5. Do you feel pharmacies have a role to play in tackling the overweight and obesity problem in Australia?
   ☐1 Yes ☐2 No ☐3 Not sure

6. Does the pharmacy currently provide literature (leaflets etc.) to customers on healthy eating and exercise?
   ☐1 Yes ☐2 No

7. Does the pharmacy display posters on weight loss or weight loss products?
   ☐1 Yes ☐2 No

8. In the last five years have you had any training/education about giving advice on weight management?
   ☐1 Yes ☐2 No

   If **"YES"**, who did you receive this training from? (Tick all that apply)
   ☐1 Pharmacist ☐2 Pharmacy magazines ☐3 Professional organisations

9. Who is the main consumer group for weight loss products/programs at your pharmacy?
   ☐1 Men ☐2 Women ☐3 Both men and women

10. Does your pharmacy currently stock weight loss products?
    ☐1 Yes ☐2 No

    If **"NO"**, please specify why.
    ……..……..
    ……,

    If **"YES"**, where do you display these products?
    ☐1 Behind the counter ☐2 In self-selection areas ☐3 Other (please specify)……..

11. Does your pharmacy have a weight management program for customers?
    ❑1 Yes ❑2 No

    If **"NO"**, is it due to (Tick all that apply):
    ❑1 Lack of time ❑2 Cost ❑3 Lack of knowledge/training
    ❑4 Lack of public interest ❑5 Other (please specify)……

    If **"YES"**, please provide the name(s) of the program(s) your pharmacy provides?
    ……..

12. Have you found this/these program(s) to be successful in terms of pharmacy intervention in the treatment of overweight/obesity?
    ❑1 Yes ❑2 No ❑3 Not applicable

13. What weight classification measure do you use to classify a customer's weight?
    ❑1 None ❑2 Weight (kg) ❑3 Waist Circumference (WC)
    ❑3 Body Mass Index (BMI) ❑4 BMI and WC ❑3 Other (please specify).....

14. What equation is used to calculate BMI? (W= weight and H= height)
    ❑1 BMI= W(kg)/H (m^2) ❑2 W (kg) X H (m^2) ❑3 BMI= W(kg)/H (m)

Section C

15. Do you feel comfortable approaching a customer to discuss weight loss?
    ❑1 Yes ❑2 No ❑3 Unsure

16. If a patient approaches you regarding weight loss, do you ask…? (Tick all that apply)
    ❑1 Their reasons for wanting to lose weight ❑2 How much weight they would like to lose
    ❑3 If they have tried to lose weight before ❑4 About dietary habits
    ❑5 About exercise habits ❑6 About any existing medical conditions/diseases
    ❑7 If they take any medication ❑8 To check their weight/Body Mass Index (BMI)
    ❑9 Other (please specify)……
    ……..
    ……..

17. On average, how long would a typical pharmacy assistant-customer consultation take following a request for information on weight loss?
    ❑1 less than 5 minutes ❑2 5-9 minutes ❑3 10-14 minutes
    ❑4 15-19 minutes ❑5 20-29 minutes ❑6 Over 30 minutes

18. Do you usually take customers to a private consultation area?
    ❑1 Yes ❑2 No

    If **"NO"**, please specify why.
    …….....
    ……..

19. At which BMI would it be appropriate to recommend a weight loss product? (Tick all that apply)
    ❑1 Less than 27 ❑2 27-29 with no associated medical conditions
    ❑3 Over 27 with associated medical conditions ❑4 Over 30 with/without medical conditions

20. When responding to a request for a weight loss product, do you…? (Tick all that apply)
    - ❑1 Recommend a product
    - ❑2 Advice against purchasing a weight loss product
    - ❑3 Offer advice on healthy eating
    - ❑4 Offer advice on increased physical activity
    - ❑5 Offer advice on appropriate physical activity
    - ❑6 Refer the customer to the pharmacist
    - ❑7 Discuss available support networks
    - ❑8 Offer a leaflet on weight loss products/ advice
    - ❑9 Other (please specify)……
    ……..

21. When recommending a weight loss product, which product(s) do you usually recommend? (Tick all that apply)
    - ❑1 Not applicable - I would never recommend a weight loss product
    - ❑2 Vitamin/herbal product (please specify).....
    - ❑3 Meal replacement product (please specify).....
    - ❑4 Other (please specify)……
    ……..

22. When making weight management recommendations to customers do you refer to any guideline(s)?
    - ❑1 Yes
    - ❑2 No

    If **"YES"**, please specify the name(s) of the guideline(s).
    ……..

Section D

23. Which factors do you feel may improve the ability of pharmacy staff to tackle the overweight and obesity problem in Australia? (Tick all that apply)
    - ❑1 Extra staff to provide appropriate counselling, advice and support to assist customers
    - ❑2 Pharmacy specific weight management guidelines, information and educational resources
    - ❑3 Private counselling areas in pharmacies
    - ❑4 Evidence-based weight management clinics
    - ❑5 Healthy eating and increased exercise campaigns
    - ❑6 Further training for pharmacists
    - ❑7 Further training for pharmacy assistants
    - ❑8 Payment for services
    - ❑9 Other (please specify)……
    …….....

24. What further training would help you assist patients in weight management? (Tick all that apply)
    - ❑1 No training required
    - ❑2 Measurement of weight
    - ❑3 Measurement of height
    - ❑4 Measurement of waist circumference
    - ❑5 Calculation of BMI
    - ❑6 Measurement of blood pressure
    - ❑7 Measurement of blood glucose
    - ❑8 Estimation of body fat
    - ❑9 Measurement of blood cholesterol
    - ❑10 Advice on healthy eating
    - ❑11 Advice on physical activity
    - ❑12 Advice on weight loss products
    - ❑13 Advice on weight loss drugs
    - ❑14 Advice on appropriate counselling skills
    - ❑15 Other (please specify)……..
    ……..

25. If weight management educational resources were developed for pharmacy staff how would you like them to be formatted and distributed? (Tick all that apply)
    - ❑1 In a booklet
    - ❑2 In a pamphlet
    - ❑3 Online (webpage)
    - ❑4 On a CD
    - ❑5 On a USB
    - ❑6 In a monthly newsletter/magazine
    - ❑7 Other (please specify)……

Section E

Questions 26-29 relate to the following case study:

Madoline, a 28 year old woman, comes into the pharmacy wanting to purchase a box of Optifast®. She has never used Optifast® before but she has heard that it produces fantastic weight loss results. She tells you that she currently weighs 103 kg and is 170 cm tall (BMI=35.6kg/m^2). Madoline gave birth eight months ago to a gorgeous baby girl. Since pre-pregnancy she has gained 15 kg. She feels self-conscious about her weight and really wants to try Optifast®. She is no longer breastfeeding and does not take any medications.

26. Does Madoline need to lose weight?
    ❑$_1$ Yes ❑$_2$ No ❑$_3$ Not sure

27. Based on the information given to you in this case scenario, would you sell Optifast® to Madoline?
    ❑$_1$ Yes ❑$_2$ No ❑$_3$ Not sure

    If "**YES**", what counselling would you provide on Optifast®?
    .....
    .....
    .....
    .....

28. What else could you recommend to help Madoline lose weight? (Tick all that apply)
    ❑$_1$ Nothing, she doesn't need to lose weight
    ❑$_2$ Nothing, as she's recently had a baby it's not good to lose weight
    ❑$_3$ Decrease calorie intake
    ❑$_4$ Increase exercise
    ❑$_5$ Take a vitamin/herbal product (please specify).....
    ❑$_6$ Take a meal replacement product (please specify).....
    ❑$_7$ Join a pharmacy based weight loss clinic (please specify).....
    ❑$_8$ Join a weight loss group e.g. Weight Watchers™
    ❑$_9$ Refer her to a pharmacist

29. Would you recommend any lifestyle changes to assist Madoline lose weight?
    ❑$_1$ Yes ❑$_2$ No

    If **"YES"** what recommendations would you make? (Tick all that apply)
    ❑$_1$ Decrease fat intake
    ❑$_2$ Decrease carbohydrate intake
    ❑$_3$ Increase protein intake
    ❑$_4$ Increase exercise (15 minutes, 3 days a week)
    ❑$_5$ Increase exercise (30 minutes, 5 or more days a week)
    ❑$_6$ Increase water intake (aim for 8 cups a day)
    ❑$_7$ Keep a food diary

THANK YOU FOR YOUR TIME

Please return your completed questionnaire in the enclosed pre-paid envelope

MONASH University
Pharmacy and Pharmaceutical Sciences

Community Pharmacy Weight Management Services

PHARMACY ASSISTANTS

Please tick the appropriate box(es) and/or write in the spaces provided.

Section A

1. What is your main role as a pharmacy assistant?
   ☐1 Weight loss consultant ☐2 Vitamin consultant ☐3 Retail manager
   ☐4 Dispensary technician ☐5 General pharmacy assistant

2. How long have you been a pharmacy assistant for?
   ☐1 Less than 6 months ☐2 6-11 months ☐3 1-4 years
   ☐4 5-9 years ☐5 10-19 years ☐6 Over 20 years

3. Which age group (in years) do you belong to?
   ☐1 15-19 ☐2 20-24 ☐3 25-29
   ☐4 30-39 ☐5 40-49 ☐6 Over 50

4. Are you...? ☐1 Male ☐2 Female

Section B

5. Do you feel pharmacies have a role to play in tackling the overweight and obesity problem in Australia?
   ☐1 Yes ☐2 No ☐3 Not sure

6. Does the pharmacy currently provide literature (leaflets etc.) to customers on healthy eating and exercise?
   ☐1 Yes ☐2 No

7. Does the pharmacy display posters on weight loss or weight loss products?
   ☐1 Yes ☐2 No

8. In the last five years have you had any training/education about giving advice on weight management?
   ☐1 Yes ☐2 No

   If **"YES"**, who did you receive this training from? (Tick all that apply)
   ☐1 Pharmacist ☐2 Pharmacy magazines ☐3 Professional organisations

9. Who is the main consumer group for weight loss products/programs at your pharmacy?
   ☐1 Men ☐2 Women ☐3 Both men and women

10. Does your pharmacy currently stock weight loss products?
    ☐1 Yes ☐2 No

    If **"NO"**, please specify why.
    ……..……..
    ……,

    If **"YES"**, where do you display these products?
    ☐1 Behind the counter ☐2 In self-selection areas ☐3 Other (please specify)……..

11. Does your pharmacy have a weight management program for customers?
    ❑1 Yes ❑2 No

    If **"NO"**, is it due to (Tick all that apply):
    ❑1 Lack of time ❑2 Cost ❑3 Lack of knowledge/training
    ❑4 Lack of public interest ❑5 Other (please specify)……

    If **"YES"**, please provide the name(s) of the program(s) your pharmacy provides?
    ……..

12. Have you found this/these program(s) to be successful in terms of pharmacy intervention in the treatment of overweight/obesity?
    ❑1 Yes ❑2 No ❑3 Not applicable

13. What weight classification measure do you use to classify a customer's weight?
    ❑1 None ❑2 Weight (kg) ❑3 Waist Circumference (WC)
    ❑3 Body Mass Index (BMI) ❑4 BMI and WC ❑3 Other (please specify).....

14. What equation is used to calculate BMI? (W= weight and H= height)
    ❑1 BMI= W(kg)/H (m^2) ❑2 W (kg) X H (m^2) ❑3 BMI= W(kg)/H (m)

Section C

15. Do you feel comfortable approaching a customer to discuss weight loss?
    ❑1 Yes ❑2 No ❑3 Unsure

16. If a patient approaches you regarding weight loss, do you ask…? (Tick all that apply)
    ❑1 Their reasons for wanting to lose weight ❑2 How much weight they would like to lose
    ❑3 If they have tried to lose weight before ❑4 About dietary habits
    ❑5 About exercise habits ❑6 About any existing medical conditions/diseases
    ❑7 If they take any medication ❑8 To check their weight/Body Mass Index (BMI)
    ❑9 Other (please specify)……
    ……..
    ……..

17. On average, how long would a typical pharmacy assistant-customer consultation take following a request for information on weight loss?
    ❑1 less than 5 minutes ❑2 5-9 minutes ❑3 10-14 minutes
    ❑4 15-19 minutes ❑5 20-29 minutes ❑6 Over 30 minutes

18. Do you usually take customers to a private consultation area?
    ❑1 Yes ❑2 No

    If **"NO"**, please specify why.
    …….....
    ……..

19. At which BMI would it be appropriate to recommend a weight loss product? (Tick all that apply)
    ❑1 Less than 27 ❑2 27-29 with no associated medical conditions
    ❑3 Over 27 with associated medical conditions ❑4 Over 30 with/without medical conditions

20. When responding to a request for a weight loss product, do you…? (Tick all that apply)
    - ❑1 Recommend a product
    - ❑2 Advice against purchasing a weight loss product
    - ❑3 Offer advice on healthy eating
    - ❑4 Offer advice on increased physical activity
    - ❑5 Offer advice on appropriate physical activity
    - ❑6 Refer the customer to the pharmacist
    - ❑7 Discuss available support networks
    - ❑8 Offer a leaflet on weight loss products/ advice
    - ❑9 Other (please specify)……
    ……..

21. When recommending a weight loss product, which product(s) do you usually recommend? (Tick all that apply)
    - ❑1 Not applicable - I would never recommend a weight loss product
    - ❑2 Vitamin/herbal product (please specify).....
    - ❑3 Meal replacement product (please specify).....
    - ❑4 Other (please specify)……
    ……..

22. When making weight management recommendations to customers do you refer to any guideline(s)?
    - ❑1 Yes
    - ❑2 No

    If **"YES"**, please specify the name(s) of the guideline(s).
    ……..

Section D

23. Which factors do you feel may improve the ability of pharmacy staff to tackle the overweight and obesity problem in Australia? (Tick all that apply)
    - ❑1 Extra staff to provide appropriate counselling, advice and support to assist customers
    - ❑2 Pharmacy specific weight management guidelines, information and educational resources
    - ❑3 Private counselling areas in pharmacies
    - ❑4 Evidence-based weight management clinics
    - ❑5 Healthy eating and increased exercise campaigns
    - ❑6 Further training for pharmacists
    - ❑7 Further training for pharmacy assistants
    - ❑8 Payment for services
    - ❑9 Other (please specify)……
    …….....

24. What further training would help you assist patients in weight management? (Tick all that apply)
    - ❑1 No training required
    - ❑2 Measurement of weight
    - ❑3 Measurement of height
    - ❑4 Measurement of waist circumference
    - ❑5 Calculation of BMI
    - ❑6 Measurement of blood pressure
    - ❑7 Measurement of blood glucose
    - ❑8 Estimation of body fat
    - ❑9 Measurement of blood cholesterol
    - ❑10 Advice on healthy eating
    - ❑11 Advice on physical activity
    - ❑12 Advice on weight loss products
    - ❑13 Advice on weight loss drugs
    - ❑14 Advice on appropriate counselling skills
    - ❑15 Other (please specify)……..
    ……..

25. If weight management educational resources were developed for pharmacy staff how would you like them to be formatted and distributed? (Tick all that apply)
    - ❑1 In a booklet
    - ❑2 In a pamphlet
    - ❑3 Online (webpage)
    - ❑4 On a CD
    - ❑5 On a USB
    - ❑6 In a monthly newsletter/magazine
    - ❑7 Other (please specify)……

Section E

Questions 26-30 relate to the following case study:

Sarah, a 48 year old woman, comes into the pharmacy enquiring about your new weight management program that involves two meal replacements a day and a protein meal. She tells you that ever since her doctor told her that she has reached menopause (four years ago), she's gained about 20 kg. She's always been on the 'heavy side' but now she's getting really concerned. She weighs about 110 kg and is 160 cm tall *(BMI=43kg/m^2)*. She's tried everything to lose weight and this program is her last option.

26. What BMI category is Sarah in?
    - ☐1 Underweight ☐2 Normal ☐3 Overweight
    - ☐4 Obese ☐5 Severely obese

27. What health conditions is Sarah at an increased risk of (tick all that apply)?
    - ☐1 Nothing ☐2 Type 2 diabetes ☐3 Gastro-oesophageal reflux disease
    - ☐4 Cardiovascular disease ☐5 Osteoarthritis ☐6 Depression
    - ☐7 Gallstones ☐8 Certain cancers ☐9 Sleep apnoea
    - ☐10 Others (please specify).....

28. Based on the information given to you in this case scenario, would you refer Sarah to the pharmacist?
    - ☐1 Yes ☐2 No ☐3 Unsure

    If "**YES**", why? If **"NO"**, why not?
    .....
    .....
    .....

29. Would the new pharmacy weight management program be appropriate for her?
    - ☐1 Yes ☐2 No ☐3 Unsure

    If "**YES" or "NO"**, please specify why.
    .....
    .....
    .....

30. What else could you recommend to help Sarah lose weight? (Tick all that apply)
    - ☐1 Nothing, she doesn't need to lose weight
    - ☐2 Nothing, she's already tried everything
    - ☐3 Decrease calorie intake
    - ☐4 Increase exercise
    - ☐5 Take a vitamin/herbal product (please specify).....
    - ☐6 Take a meal replacement product (please specify).....
    - ☐7 Join a weight loss group e.g. Weight Watchers™

THANK YOU FOR YOUR TIME

Please return your completed questionnaire in the enclosed pre-paid envelope

Appendix 7

Ethics approval: Phase 3 (Chapter 8 and 9)

MONASH University

Monash University Human Research Ethics Committee (MUHREC)
Research Office

Human Ethics Certificate of Approval

Date:	**28 June 2012**
Project Number:	**CF12/0817 - 2012000357**
Project Title:	**Exploring community pharmacy weight management services - A mystery shopper study**
Chief Investigator:	**Dr Safeera Hussainy**
Approved:	**From: 28 June 2012 To: 28 June 2017**

Terms of approval

1. The Chief investigator is responsible for ensuring that permission letters are obtained, if relevant, and a copy forwarded to MUHREC before any data collection can occur at the specified organisation. **Failure to provide permission letters to MUHREC before data collection commences is in breach of the National Statement on Ethical Conduct in Human Research and the Australian Code for the Responsible Conduct of Research**.
2. Approval is only valid whilst you hold a position at Monash University.
3. It is the responsibility of the Chief Investigator to ensure that all investigators are aware of the terms of approval and to ensure the project is conducted as approved by MUHREC.
4. You should notify MUHREC immediately of any serious or unexpected adverse effects on participants or unforeseen events affecting the ethical acceptability of the project.
5. The Explanatory Statement must be on Monash University letterhead and the Monash University complaints clause must contain your project number.
6. **Amendments to the approved project (including changes in personnel):** Requires the submission of a Request for Amendment form to MUHREC and must not begin without written approval from MUHREC. Substantial variations may require a new application.
7. **Future correspondence:** Please quote the project number and project title above in any further correspondence.
8. **Annual reports:** Continued approval of this project is dependent on the submission of an Annual Report. This is determined by the date of your letter of approval.
9. **Final report:** A Final Report should be provided at the conclusion of the project. MUHREC should be notified if the project is discontinued before the expected date of completion.
10. **Monitoring:** Projects may be subject to an audit or any other form of monitoring by MUHREC at any time.
11. **Retention and storage of data:** The Chief Investigator is responsible for the storage and retention of original data pertaining to a project for a minimum period of five years.

[redacted]

Professor Ben Canny
Chair, MUHREC

cc: Assoc Prof Jennifer Marriott, Ms Souhiela Fakih

Postal – Monash University, Vic 3800, Australia
Building 3E, Room 111, Clayton Campus, Wellington Road, Clayton
[redacted] www.monash.edu/research/ethics/human/index/html
ABN 12 377 614 012 CRICOS Provider #00008C

Appendix 8

Phase 3 (Chapter 8 and 9) supplementary material

- Mystery shopper information letter to community pharmacies
- Data collection form
- Complete mystery shopper scenario 1
- Complete mystery shopper scenario 2

MONASH University
Pharmacy and Pharmaceutical Sciences

August 2012

Re: ***Exploring community pharmacy weight management services – A mystery shopper study***

Dear Pharmacy staff,

I am writing to you regarding a research project being conducted by the Centre for Medicine Use and Safety, Faculty of Pharmacy and Pharmaceutical Sciences, Monash University, into gaining an insight of pharmacists' and pharmacy assistants' knowledge, attitudes and practices towards weight loss programs and products. This project will form part of my research towards attainment of the degree of Doctor of Philosophy (PhD).

This project aims to use mystery shoppers to determine what pharmacy assistants and/or pharmacists are currently recommending for weight management in a real life setting to women of different ages, with different co-morbidities and different weight classifications. This information will lead to a better understanding of the current recommendations made by pharmacists and pharmacy assistants. This will help with later components of the PhD, which involves the development of women specific weight management educational resources for pharmacists and pharmacy assistants.

Two-hundred and fifty pharmacies across Victoria have been mailed at random from the complete list of Victorian community pharmacies available from the Pharmacy Board of Victoria, regarding this project, however only thirty pharmacies will have the project conducted in their pharmacy. The thirty pharmacies that will be visited by mystery shoppers will be chosen from those mailed.

The research will involve having two different mystery shopper visits in the pharmacy across a two-month period. These women will have been hired by Monash University and will be trained in the case scenario they will be required to role play. The pharmacy staff members who approach the mystery shopper will be blinded to the mystery shopper (the pharmacy will not know when the mystery shopper will be visiting and will not know who the mystery shopper is) and they will just be required to perform the normal, daily tasks as specified in their job description. Details of the pharmacy staff member who interacted with the mystery shopper will not be recorded and the identity of the pharmacy staff member will not be revealed at any point of the study.

Following the mystery shopper study, the researchers will present the overall findings in a feedback session to each pharmacy so that all pharmacy staff members can see common errors in weight management recommendations. In these sessions, they will also be given advice on what the current evidence-based

weight management recommendations are, so that they can improve their knowledge and skills.

Should you have any questions about the project in the mean time, please feel free to contact me. Additionally, my academic supervisors, Dr Safeera Hussainy and A/Prof Jennifer Marriott, will also be available to answer any questions you may have. If you do not wish to have this research project conducted in your pharmacy please contact myself or my supervisors on the details provided below.

If you would like to contact the researchers about any aspect of this study, please contact the Chief Investigator:	If you have a complaint concerning the manner in which this research **CF12/0817 - 2012000357** is being conducted, please contact:
Souhiela Fakih B.Pharm(Hons) PhD candidate Centre for Medicine Use and Safety, Monash University. [redacted] Dr. Safeera Hussainy Lecturer, Academic supervisor Centre for Medicine Use and Safety, Monash University [redacted] Associate Professor Jennifer Marriott Academic Supervisor Centre for Medicine Use and Safety, Monash University [redacted]	Executive Officer, Human Research Ethics Monash University Human Research Ethics Committee (MUHREC) Building 3e Room 111 Research Office Monash University VIC 3800 [redacted]

Sincerely,

[redacted]

Ms. Souhiela Fakih
Pharmacist, PhD Candidate
Centre for Medicine Use and Safety
Monash University
[redacted]

MONASH University
Pharmacy and Pharmaceutical Science

MYSTERY SHOPPER DATA COLLECTION FORM

Please tick "Yes" for every item that has been asked by the pharmacy staff member. For every item that was not been asked please tick "No". For questions that require a written response

PHARMACY INFORMATION		
Pharmacy name:		
Duration of consultation: **Start time:** **End time:** **Time taken to be attended to:**		
Did the pharmacy staff member approach you?	☐ Yes	☐ No
Did you speak to a pharmacy assistant?	☐ Yes	☐ No
Did you speak to the pharmacist?	☐ Yes	☐ No

PERSONAL HEALTH HISTORY		
Name of the patient	☐ Yes	☐ No
Marital status	☐ Yes	☐ No
Age	☐ Yes	☐ No
Occupation	☐ Yes	☐ No
Nationality	☐ Yes	☐ No
Pregnancy	☐ Yes	☐ No
How far into your pregnancy you are	☐ Yes	☐ No
Breastfeeding	☐ Yes	☐ No

CO-MORBIDITY ASSESSMENT		
Medical conditions	☐ Yes	☐ No
Medication use	☐ Yes	☐ No
Allergies	☐ Yes	☐ No

OBESITY ASSESSMENT		
Height	☐ Yes	☐ No
Weight	☐ Yes	☐ No
Was BMI calculated	☐ Yes	☐ No
If BMI was calculated was it calculated correctly	☐ Yes	☐ No
Waist circumference	☐ Yes	☐ No

READINESS TO CHANGE ASSESSMENT		
Reason for weight loss	☐ Yes	☐ No
How important is it for you to lose weight	☐ Yes	☐ No
How confident are you that you will lose weight?	☐ Yes	☐ No

RISK FACTOR ASSESSMENT			
Family history of obesity		☐ Yes	☐ No
Previous weight history		☐ Yes	☐ No
Any outside factors that may have contributed to weight gain		☐ Yes	☐ No
Stage of life (pregnancy, trying to fall pregnant, menopause etc)		☐ Yes	☐ No
DIET, EXERCISE & LIFESTYLE INFORMATION			
Exercise	Amount of physical activity (daily, weekly)	☐ Yes	☐ No
	Type of physical activity	☐ Yes	☐ No
Diet	Number of meals a day	☐ Yes	☐ No
	Number of serves of vegetables a day	☐ Yes	☐ No
	Number of serves of fruit a day	☐ Yes	☐ No
	Number of serves of deep fried, pan-fried or commercially baked or fried food (food that is high in saturated fat) a day	☐ Yes	☐ No
	Number of times a week take away food is consumed	☐ Yes	☐ No
	Assessment of water intake/other drinks	☐ Yes	☐ No
	Association of food with a reward or comfort	☐ Yes	☐ No
	List of what is eaten at breakfast, lunch, dinner, snacks	☐ Yes	☐ No
Caffeine	Do you drink caffeinated drinks	☐ Yes	☐ No
	Number of cups/cans a day	☐ Yes	☐ No
Alcohol	Do you drink alcohol	☐ Yes	☐ No
	What kind	☐ Yes	☐ No
	Amount per day/week	☐ Yes	☐ No
Smoking	Smoking status	☐ Yes	☐ No
	Amount a day/week	☐ Yes	☐ No

PREVIOUS WEIGHT LOSS ATTEMPTS		
Previous weight loss attempts	☐ Yes	☐ No
Previous weight loss methods utilised	☐ Yes	☐ No
Duration of previous weight loss methods	☐ Yes	☐ No
Side effects related to previous weight loss methods	☐ Yes	☐ No

CURRENT WEIGHT LOSS GOALS		
Patient's goal weight	☐ Yes	☐ No
Time frame to reach goal weight	☐ Yes	☐ No
Preferences to weight loss methods	☐ Yes	☐ No
Time since last been at the specified goal weight	☐ Yes	☐ No

ASSESSMENT OF MAIN CAUSES OF OBESITY & THINGS TO CONSIDER		
Diet	☐ Yes	☐ No
Exercise	☐ Yes	☐ No

ASSESSMENT OF MAIN CAUSES OF OBESITY & THINGS TO CONSIDER		
Stress	☐ Yes	☐ No
Psychological issues	☐ Yes	☐ No
Other	☐ Yes	☐ No

INTERVENTION AND MANAGEMENT STRATEGY ***Please record any of the advice given in regards to the following (if no advice was given please tick***		
Reduce dietary energy intake		
Changes to dietary intake? How?	☐ Yes	☐ No
Changes to alcohol/water/other drink consumption? How?	☐ Yes	☐ No
Increased physical activity		
Increased physical activity in daily living (climbing stairs, parking the car away from work etc.)? How?	☐ Yes	☐ No
Increased planned physical activity (aerobic exercise etc.)? How? Duration? Frequency?	☐ Yes	☐ No
Behavioural modification techniques (eg. Food diary)		
Use of food diary?	☐ Yes	☐ No
Use of smaller plates/smaller portions?	☐ Yes	☐ No
Referral to support to support networks, websites, groups? Which ones?	☐ Yes	☐ No

Product or program recommendation ***Record name of product, how to use it, duration of use, side effects that may be experienced and any additional counselling points provided (only record information that is actually provided)***		
Vitamin/Herbal product	☐ Yes	☐ No
Orlistat (Xenical)	☐ Yes	☐ No
Product or program recommendation ***Record name of product, how to use it, duration of use, side effects that may be experienced and any additional counseling points provided (only record information that is actually provided)***		
Meal replacement products (not pharmacy based programs)	☐ Yes	☐ No
Pharmacy based programs	☐ Yes	☐ No

GOALS ***Please record any of the advice given in regards to the following:***
Short term goals (first 3 months)
Medium term goals (3-12 months)
Long term goals (>12months)

ADDITIONAL COUNSELLING PROVIDED ***Please record any of the advice given in regards to the following:***
Did the pharmacy staff member provide any pamphlets, information leaflets, written information (if yes, which ones)?

Did the pharmacy staff member request a follow up visit (When? How often? Etc)?
Did the pharmacy staff member refer the patient to any other health care professional? *Dietitian? Psychologist? Doctor due to medications, medical conditions or a health check?*

OTHER COMMENTS
Please provide any other comments that you feel are important regarding the mystery shopper – pharmacy staff member consultation and visit including where the consultation was done.

Original Date:
Dates Revised:

WEIGHT MANAGEMENT CASE STUDY INFO SHEET- SHEREEN

PERSONAL HEALTH HISTORY			
Name *(Last, First, M.I.):*	Shereen ☐ M ☒ F	**Age:**	26 years old
Marital status:	☐ Single ☐ Partnered ☒ Married ☐ Separated ☐ Divorced ☐ Widowed		
Address:	Glen Huntley		
Occupation: Receptionist		**Nationality:** Egyptian	
Is she pregnant? *If yes, how far along is she?*		☐ Yes	☒ No
Is she breastfeeding?		☐ Yes	☒ No

CO-MORBIDITY ASSESSMENT		
Does the patient suffer from any of the following medical conditions?		
Diabetes or a family history of diabetes?	☐ Yes	☒ No
High blood pressure?	☐ Yes	☒ No
High cholesterol?	☐ Yes	☒ No
Heart attack or stroke?	☐ Yes	☒ No
Arthritis (sore joints)?	☐ Yes	☒ No
Polycystic ovary disease?	☐ Yes	☒ No
Low thyroid problems?	☐ Yes	☒ No
Depression or a mood disorder?	☐ Yes	☒ No
Other? *Please specify*	☐ Yes	☒ No

List the patient's prescribed medications and over-the-counter medications, such as vitamins and inhalers		
Name of Medicine	Strength	Frequency Taken

Allergies to medications or other substances	
Name of medicine/substance	Reaction patient had
Penicillin	Rash

OBESITY ASSESSMENT	
Height (m):	1.65
Weight (kg): 73	
BMI (kg/m^2):	26.8

Waist circumference (cm): 90cm		
READINESS TO CHANGE ASSESSMENT		
Is the patient asking about weight loss at their own initiative?	☒ Yes	☐ No
Why does the patient want to lose weight? The patient would like to lose weight because her brother's wedding is in two months time and she wants to look good in the red dress she has her eye on in her favourite clothes store (Alannah Hill). Her friends have told her about the medication Xenical and she really wants to try it.		
On a scale of 1-10 (10 being high), how important is it for her to lose weight? 8		
On a scale of 1-10 (10 being high), how confident is she that she will lose weight if she tries? 7		

RISK FACTOR ASSESSMENT		
Does the patient have a family history of obesity?	☐ Yes	☒ No
Can the patient describe their weight history (when did they start gaining weight etc)? Shereen has always been an average sized woman. She was never skinny at school and was always considered the "bigger" girl in her family. She knows that she is not "fat" but before a special occasion she likes to lose a few kilos just so that she can look great (A lot of family comes down from Egypt and she doesn't want them to think she's let her self go). Usually she's able to lose the kilos she needs but this time she thinks she's left the weight loss too late and she doesn't think she can make it.		
Have there been any outside factors that the patient feels may have contributed to their weight gain (quitting smoking, stress, marriage etc)? Shereen got married 3 years ago. She gained weight after marriage but she also lost a lot of weight before her wedding day. She has always weighed around 70-75kgs.		
What stage of your life are you currently in (trying to have a baby, pregnant, just had a baby, reached menopause etc)? Shereen wants to have a baby, but she will not be trying until after her brother's wedding		

DIET, EXERCISE & LIFESTYLE INFORMATION				
Exercise	☒ Sedentary (No exercise)			
	☐ Mild exercise (i.e., climb stairs, walk 3 blocks, golf)			
	☐ Occasional vigorous exercise (i.e., work or recreation, less than 4x/week for 30 min.)			
	☐ Regular vigorous exercise (i.e., work or recreation 4x/week for 30 minutes)			
Diet	Number of meals the patient eats in an average day? 2			
	How many serves of vegetables does the patient eat in a day? 3			
	How many serves of fruit does the patient eat in a day? 2			
	How many times a day does the patient eat deep fried, pan-fried or commercially baked or fried food (food that is high in saturated fat)? 1			
	How many times per week does the patient eat take-away meals/eat out? 4			
	Does the patient drink 2L of water? No she does not. She doesn't like the taste of water very much.			
	Does the patient use food as a source of reward or comfort?		☐ Yes	☒ No
	Rank fat intake	☐ Hi	☒ Med	☐ Low
	Can the patient list the type of foods they consume on an average day for each of these meals?			
	Breakfast: No breakfast, just coffee			
	Lunch: Buy it from the café at work, usually a pasta, risotto, foccasia			
	Dinner: protein meal with rice or pasta, vegetables, salad			

	Snacks: muffins, cupcakes, little chocolates, yoghurt (has 3 snacks a day)			
Caffeine	☐ None	☒ Coffee	☐ Tea	☒ Coke
	Number of cups/cans per day? 4			
Alcohol	Does the patient drink alcohol?		☐ Yes	☒ No
	If yes, what kind?			
	How many drinks per week?			
Smoking	Does the patient smoke?		☐ Yes	☒ No
	Number of cigarettes per day			

PREVIOUS WEIGHT LOSS ATTEMPTS
Has the patient tried to lose weight before? When? Yes, the last time she tried to lose weight was before her wedding (3 years ago). She lost 10kgs and she thought she looked amazing. She weighed 65kgs
What weight loss methods has she already tried? She lost weight through diet and exercise. Shereen joined the gym and she cut out all the fat in her diet (no muffins, cupcakes etc)
How long did she use these weight loss methods for? When she was dieting for her wedding she was good for 6 months. And then after the wedding the weight slowly crept back on.
Did the weight loss method(s) work for you? Yes it did. She was able to lose the weight that she needed to.

CURRENT WEIGHT LOSS GOALS
What is the patient's goal weight? 65kgs
In what time frame would the patient like to reach their goal weight? 2 months
How long ago was the patient last at their goal weight? 3 years ago at her wedding
How would the patient like to lose weight? (any preferences in terms of available products/programs) Shereen really wants to try Xenical to help her lose weight, she doesn't feel that diet and exercise will work as there isn't enough time before her brother's wedding.

Expert Advice- Dietitian and exercise physiologist

ASSESSMENT OF MAIN CAUSES OF OBESITY *Comment on each of these factors and how they fit in to the person's weight profile*
Diet Shereen has a diet that is very high in fat and sugar. She needs to replace a lot of her sugary snacks with healthy ones. She needs to also start eating breakfast and make healthier decisions for her lunch time meals.
Exercise Shereen is currently not doing any exercise. She needs to be encouraged to increase her physical activity throughout the day and week. Maybe also needs someone to help her set up an exercise regime for the week to help her get motivated
Stress Shereen doesn't appear to be stressed at the moment. Her main stress is that she wants to look good at her brother's wedding.
Psychological issues Shereen's main psychological issue is that she feels that she is "fat" and she doesn't want people in her family to feel that she has gained too much weight since she's been married. This may need to be considered.
Other Raise issue of "problems" with "short term" dieting – destructive and not sustainable

INTERVENTION AND MANAGEMENT STRATEGY *Please record any of the advice given in regards to the following:*		
Reduce dietary energy intake		
Changes to dietary intake? How? 80-90% of the weight loss will come from diet modification Introduce breakfast (research shows that people who skip breakfast find it harder to lose weight) Encourage regular meals Provide ideas for 'healthier' lunch and dinner options (swap it website, DAA's smart eating for you website) Healthier take away options	☒ Yes	☐ No
Changes to alcohol/caffeine consumption? Stop (swap?) coke to water	☒ Yes	☐ No
Increased physical activity		
Increased physical activity in daily living (climbing stairs, parking the car away from work etc.)? How? Climb the stairs Park the car further away from work/shops or if you can walk to places close to home. If she catches public transport get off a few stops earlier Go for a lunchtime walk with a group of friends from the office	☒ Yes	☐ No
Increased planned physical activity (aerobic exercise etc.)? How? Duration? Frequency? To lose the amount of weight she wants she will need to perform at least 2 hours of aerobic exercise a day (one hour in the morning and one hour afternoon. Moderate exercise intensity with few periods of high intensity exercise (similar to "interval training"). With time she will probably need to increase the duration of the "high intensity" periods. From practical point of view: just "walking" one hour will not assist her with weight loss. She will need to perform aerobic exercises (such as running, cycling, cross-trainer etc')	☒ Yes	☐ No

Most of her weight loss will come from diet. Exercise will only help 10-20%		
Behavioural modification techniques (eg. Food diary)		
Use of food diary?	☒ Yes	☐ No
Use of smaller plates?	☒ Yes	☐ No
Referral to support to support networks, websites, groups? Which ones? 'Swap it, don't stop it' website (www.swapit.gov.au) Go for 2 and 5 website (www.gofor2and5.com.au) Dietitians Association of Australia (www.daa.asn ... <For the public; Smart eating for you>	☒ Yes	☐ No
Product or program recommendation ***Record name of product, how to use it, duration of use, side effects that may be experienced and any additional counseling points provided***		
Vitamin/Herbal product	☐ Yes	☒ No
Orlistat (Xenical) Discuss Xenical mode of action – mainly through 'forced' decreased fat consumption, due to side-effects if not ceased/reduced (steatorrhoea); From (old) NHMRC overweight and obesity guidelines, "Xenical can result in weight loss of 6-13kg in 1-2 years"; this is equivalent to loss of 1/4kg (to 1/2kg) to 1 kg a month – very achievable with slight modifications to current intake	☐ Yes	☒ No
Meal replacement products (not pharmacy based programs)	☐ Yes	☒ No
Pharmacy based programs	☐ Yes	☒ No

GOALS *Please record any of the advice given in regards to the following:*
Short term goals Expect weight loss of 1-2 kg per month
Medium term goals Aim for 4-5kg in 3-6 months
Long term goals Ways to maintain ideal body weight with healthy eating and exercise

ADDITIONAL COUNSELLING PROVIDED *Please record any of the advice given in regards to the following:*
Any pamphlets, information leaflets, written information given? (if yes, which ones) PSA Self Care Card on healthy eating & weight loss CMI on Optifast if sold Dietary guidelines and physical activity guidelines from a trusted government source
Patient follow up review (When? How often? Etc) Shereen can be followed up every week to measure weight and waist circumference. This would be motivational.

Does the patient need to be referred to any other health care professional? *Dietitian? Psychologist? Doctor due to medications, medical conditions or a health check?* Not at the moment

Original Date:
Dates Revised:

WEIGHT MANAGEMENT CASE STUDY INFO SHEET- MADELINE

PERSONAL HEALTH HISTORY						
Name *(Last, First, M.I.):*	☐ M ☒ F			**Age:** 32 years old		
Marital status:	☐ Single	☐ Partnered	☒ Married	☐ Separated	☐ Divorced	☐ Widowed
Address: Kew						
Occupation: Teacher (currently on maternity leave)				**Nationality:** Australian		
Is she pregnant? *If yes, how far along is she?*					☐ Yes	☒ No
Is she breastfeeding?					☐ Yes	☒ No

CO-MORBIDITY ASSESSMENT		
Does the patient suffer from any of the following medical conditions?		
Diabetes or a family history of diabetes	☐ Yes	☒ No
High blood pressure?	☐ Yes	☒ No
High cholesterol?	☐ Yes	☒ No
Heart attack or stroke?	☐ Yes	☒ No
Arthritis (sore joints)?	☐ Yes	☒ No
Polycystic ovary disease?	☐ Yes	☒ No
Low thyroid problems?	☐ Yes	☒ No
Depression or a mood disorder?	☐ Yes	☒ No
Other? *Please specify*	☐ Yes	☒ No

List the patient's prescribed medications and over-the-counter medications, such as vitamins and inhalers		
Name of Medicine	Strength	Frequency Taken
Women's multivitamin		1 daily

Allergies to medications/substances	
Name of medicine/substance	Reaction You Had

OBESITY ASSESSMENT
Height (m): 170cm
Weight (kg): 103kg
BMI (kg/m^2): 35.6kg/m^2

Waist circumference (cm): 110cm		
READINESS TO CHANGE ASSESSMENT		
Is the patient asking about weight loss at their own initiative?	☒ Yes	☐ No
Why does the patient want to lose weight? Madeline is having trouble losing the weight she gained while she was pregnant with her first child (Anna). She really wants to lose weight because she feels uncomfortable and she wants to fall pregnant with her second child when Anna turns one.		
On a scale of 1-10 (10 being high), how important is it for her to lose weight? 10		
On a scale of 1-10 (10 being high), how confident is she that she will lose weight if she tries? 8		

RISK FACTOR ASSESSMENT		
Does the patient have a family history of obesity?	☐ Yes	☒ No
Can the patient describe their weight history (when did they start gaining weight etc)? Madeline started gaining weight at uni and then after she got married she gained a little bit more weight. Her pre-pregnancy weight was about 88kg. She gained about 30kg in her pregnancy and the nurse mentioned that it was too much for a single birth. She lost 15kg almost immediately after delivering Anna but she struggled to lose the rest. She breastfed for three months but this had little effect on her weight.		
Have there been any outside factors that the patient feels may have contributed to their weight gain (quitting smoking, stress, marriage etc)? Pregnancy		
What stage of your life are you currently in (trying to have a baby, pregnant, just had a baby, reached menopause etc)? Madeline delivered her first child 8 months ago but would like to fall pregnant again in the next 4-6 months.		

DIET, EXERCISE & LIFESTYLE INFORMATION				
Exercise	☐ Sedentary (No exercise)			
	☒ Mild exercise (i.e., climb stairs, walk 3 blocks, golf) Looking after Anna and housework			
	☐ Occasional vigorous exercise (i.e., work or recreation, less than 4x/week for 30 min.)			
	☐ Regular vigorous exercise (i.e., work or recreation 4x/week for 30 minutes)			
Diet	Number of meals the patient eats in an average day? 3			
	How many serves of vegetables does the patient eat in a day? 5			
	How many serves of fruit does the patient eat in a day? 3			
	How many times a day does the patient eat deep fried, pan-fried or commercially baked or fried food (food that is high in saturated fat)? 1-2			
	How many times per week does the patient eat take-away meals/eat out? 1			
	Does the patient drink 2Ls of water a day? No she does not. She only drinks about 500mL of water a day if she's lucky.			
	Does the patient use food as a source of reward or comfort?		☐ Yes	☒ No
	Rank fat intake	☐ Hi	☒ Med	☐ Low
	Can the patient list the type of foods they consume on an average day for each of these meals?			
	Breakfast: Sandwich, 2 pieces of toast, cereal			

	Lunch: leftovers from last night's dinner			
	Dinner: pasta, rice, steak/chicken with potatoes and rice. Food generally high in carbohydrates			
	Snacks: fruit			
Caffeine	☐ None	☒ Coffee	☐ Tea	☐ Coke
	Number of cups/cans per day? 1			
Alcohol	Does the patient drink alcohol?		☐ Yes	☒ No
	If yes, what kind?			
	How many drinks per week?			
Smoking	Does the patient smoke?		☐ Yes	☒ No
	Number of cigarettes per day			

PREVIOUS WEIGHT LOSS ATTEMPTS
Has the patient tried to lose weight before? When? Once. 5 years ago, just before her wedding
What weight loss methods has she already tried? Reduced calorie intake and increased exercise
How long did she use these weight loss methods for? She was on this diet plan for 6 months
Did it work for her? It did work for her and she was able to lose the weight that she needed. But she was very motivated then.

CURRENT WEIGHT LOSS GOALS
What is the patient's goal weight? 85kg
In what time frame would the patient like to reach their goal weight? 4-6 months
How long ago was the patient last at their goal weight? Before she fell pregnant (15 months)
How would the patient like to lose weight? (any preferences in terms of available products/programs) She's heard of a meal replacement called Optifast and she wants to try that.

Expert Advice- Dietitian and exercise physiologist

ASSESSMENT OF MAIN CAUSES OF OBESITY & THINGS TO CONSIDER *Comment on each of these factors and how they fit in to the person's weight profile*
Diet Diet seems to be high in carbohydrates and fats. Need to maybe address portion sizes and number of servings a day. Rapid weight loss pre-pregnancy is not ideal and often we see rapid weight rebound in first trimester i.e. optifast or any VLCD is not recommended (to the full 3 sachets/day); perhaps working with a dietitian this could be managed at 1 (or 2, at a pinch) sachets a day to instigate weight loss in the first instance.
Exercise Need to introduce exercise into Madeline's lifestyle. Can also take Anna into account and work around Madeline's schedule.
Stress Madeline is a new mum and she also wants to have her second child so need to take that into consideration.
Psychological issues
Other Congratulate on previous weight loss attempt/success – healthy eating and increasing physical activity is achievable and sustainable; if she's done it before, she's very likely to be able to do it again – will potentially need/benefit from professional support.

INTERVENTION AND MANAGEMENT STRATEGY *Please record any of the advice given in regards to the following:*		
Reduce dietary energy intake		
Changes to dietary intake? How? Ensure she is getting her 5 vegetables a day. Would be good to cut down to 2 fruit/day Ensure sufficient dairy serves (low fat), adequate serves of wholegrains and cereals, lean protein sources Discuss healthy takeaway options	☒ Yes	☐ No
Changes to alcohol/caffeine consumption? Can continue to drink one cup of coffee a day	☒ Yes	☐ No
Increased physical activity		
Increased physical activity in daily living (climbing stairs, parking the car away from work etc.)? How? Climb the stairs Park the car further away from work/shops or if you can walk to places close to home. If she catches public transport get off a few stops earlier Go for a lunchtime walk with a group of friends- mother's groups with prams etc.	☒ Yes	☐ No
Increased planned physical activity (aerobic exercise etc.)? How? Duration? Frequency? Look at ways to increase physical activity (incidental and planned; National Physical Activity Guidelines, 30mins on most if not all days (~5d/wk)... can be 3 lots of 10 or 2 lots of 5;	☒ Yes	☐ No

minimum of 10mins for 'health giving benefits'; more is better, but 30 mins can be easy to achieve		
Behavioural modification techniques (eg. Food diary)		
Use of food diary?	☒ Yes	☐ No
Use of smaller plates?	☒ Yes	☐ No
Referral to support to support networks, websites, groups? Which ones? 'Swap it, don't stop it' website (www.swapit.gov.au) Go for 2 and 5 website (www.gofor2and5.com.au)	☒ Yes	☐ No
Product or program recommendation ***Record name of product, how to use it, duration of use, side effects that may be experienced and any additional counseling points provided***		
Vitamin/Herbal product	☐ Yes	☒ No
Orlistat (Xenical)	☐ Yes	☒ No
Meal replacement products (not pharmacy based programs)	☐ Yes	☒ No
Pharmacy based programs	☐ Yes	☒ No

GOALS *Please record any of the advice given in regards to the following:*
Short term goals Expect weight loss of 1-2 kg per month
Medium term goals Aim for 4-5kg loss before pregnancy
Long term goals Her recommended weight gain when she becomes pregnant (if she does manage to lose ~5kg) would be 5-9kg and women who commence pregnancy in a higher BMI range do find it harder to manage and curb weight gain; based on first pregnancy it'd be ideal for her to work with a dietitian to manage gestational weight gain when she falls pregnant and post partum.

ADDITIONAL COUNSELLING PROVIDED *Please record any of the advice given in regards to the following:*
Any pamphlets, information leaflets, written information given? (if yes, which ones) PSA Self Care Card on healthy eating & weight loss CMI on Optifast if sold Dietary guidelines and physical activity guidelines from a trusted government source

Patient follow up review (When? How often? Etc) If given Optifast, Madeline should be followed up weekly
Does the patient need to be referred to any other health care professional? *Dietitian? Psychologist? Doctor due to medications, medical conditions or a health check?* Referral to a dietitian seems very appropriate. She needs to build up a good relationship with the dietitian before she falls pregnant so that she can keep an eye on gestational weight gain. Will also be beneficial for post-partum weight loss.

Appendix 9

Ethics approval: Phase 4 (Chapter 10)

MONASH University

Monash University Human Research Ethics Committee (MUHREC)
Research Office

Human Ethics Certificate of Approval

Date:	**7 February 2013**
Project Number:	**CF13/303 – 2013000139**
Project Title:	**Developing weight management educational resources- what do pharmacists, pharmacy assistants and women want?**
Chief Investigator:	**Dr Safeera Hussainy**
Approved:	**From: 7 February 2013 To: 7 February 2018**

Terms of approval

1. The Chief investigator is responsible for ensuring that permission letters are obtained, if relevant, and a copy forwarded to MUHREC before any data collection can occur at the specified organisation. **Failure to provide permission letters to MUHREC before data collection commences is in breach of the National Statement on Ethical Conduct in Human Research and the Australian Code for the Responsible Conduct of Research**.
2. Approval is only valid whilst you hold a position at Monash University.
3. It is the responsibility of the Chief Investigator to ensure that all investigators are aware of the terms of approval and to ensure the project is conducted as approved by MUHREC.
4. You should notify MUHREC immediately of any serious or unexpected adverse effects on participants or unforeseen events affecting the ethical acceptability of the project.
5. The Explanatory Statement must be on Monash University letterhead and the Monash University complaints clause must contain your project number.
6. **Amendments to the approved project (including changes in personnel):** Requires the submission of a Request for Amendment form to MUHREC and must not begin without written approval from MUHREC. Substantial variations may require a new application.
7. **Future correspondence:** Please quote the project number and project title above in any further correspondence.
8. **Annual reports:** Continued approval of this project is dependent on the submission of an Annual Report. This is determined by the date of your letter of approval.
9. **Final report:** A Final Report should be provided at the conclusion of the project. MUHREC should be notified if the project is discontinued before the expected date of completion.
10. **Monitoring:** Projects may be subject to an audit or any other form of monitoring by MUHREC at any time.
11. **Retention and storage of data:** The Chief Investigator is responsible for the storage and retention of original data pertaining to a project for a minimum period of five years.

[redacted]

Professor Ben Canny
Chair, MUHREC

cc: Assoc Prof Jennifer Marriott, Ms Souhiela Fakih

Postal – Monash University, Vic 3800, Australia
Building 3E, Room 111, Clayton Campus, Wellington Road, Clayton
[redacted] www.monash.edu/research/ethics/human/index/html
ABN 12 377 614 012 CRICOS Provider #00008C

Appendix 10

Phase 4 (Chapter 10) supplementary material

- Recruitment flyer for women
- Invitation letter
- Explanatory statement
- Consent form
- Confidentiality statement declaration form
- Focus group topic guide

MONASH University
Pharmacy and Pharmaceutical Sciences

Developing weight management educational resources– what do pharmacists, pharmacy assistants and women want?

We are looking for women interested in taking part in a study looking at possible approaches in developing weight management educational resources

As a participant in this study, you will be asked to be involved in a group discussion with five other women or in a group discussion involving three pharmacists, three pharmacy assistants and two other women. These discussions will take approximately 2 hours

The discussion will be organised at a place and time convenient for all the participants. Refreshments will be provided for all the participants.

The group discussion will ask women their opinions and views on pharmacy involvement in weight management, what educational resources they feel are needed and how they would like potential resources to be developed

Your valuable opinions and ideas will assist us to develop a suitable weight management educational resource for women, pharmacists and pharmacy assistants in future.

In appreciation for your time, you will receive an honorarium of $75 Myer/Coles gift voucher.

For more information about this study, or to participate in this study, please contact:

Souhiela Fakih
PhD researcher
[redacted]

Souhiela Fakih #99039170
Souhiela Fakih #99039170
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MONASH University
Pharmacy and Pharmaceutical Sciences

Dear Pharmacists and pharmacy assistants,

My name is Souhiela Fakih B.Pharm (Hons) and I am conducting a research project with Associate Professor Jennifer Marriott and Dr. Safeera Hussainy at the Centre for Medicine Use and Safety, Department of Pharmacy Practice, Faculty of Pharmacy and Pharmaceutical Sciences, Monash University. I am conducting this research project towards a Doctor of Philosophy at Monash University.

My PhD project is looking at promoting evidence based weight management recommendations for women pharmacy consumers across Australian community pharmacies.

From previous studies that the researchers have conducted, it has been shown that women, pharmacists and pharmacy assistants are in need of weight management educational resources. The aim of this study is to elicit the views, opinions and ideas on the content, design and accessibility of potential weight management educational resources that may be developed. We are inviting pharmacists, pharmacy assistants and women of the general population to participate in a group discussion, which is known as a focus group, so that the researchers can obtain ideas and opinions so that they are able to develop resources that are suitable for the needs of women, pharmacists and pharmacy assistants.

All four focus groups will be conducted at Monash University at 381 Royal Parade, Parkville. All focus groups will begin with light refreshments at 6pm and will formally begin at 6.30pm. The dates of the focus groups are as follows:

Thursday March 14th: Women only focus group (6 participants)
Tuesday March 19th: Pharmacist only focus group (6 participants)
Thursday March 21st: Pharmacy assistant only focus groups (6 participants)
Tuesday March 26th: Women, pharmacists and pharmacy assistants' focus group (9 participants)

Each participant will receive a $75 Coles/Myer gift voucher on completion of the focus group.

If you or any other pharmacist, pharmacy assistant or women of the general public would like to be involved in any of these focus groups you can contact me on the following details:

[redacted]

Thank you so much for your assistance and time in this project. I am looking forward to hearing from you soon.

Kind regards,
Souhiela Fakih

Souhiela Fakih B.Pharm(Hons)
PhD candidate
Centre for Medicine Use and Safety, Monash University.
[redacted]

MONASH University
Pharmacy and Pharmaceutical Sciences

Explanatory Statement

Project Title: Developing weight management educational resources- what do pharmacists, pharmacy assistants and women want?

This information sheet is for you to keep.

Dear <Title & name>,

My name is **Souhiela Fakih B.Pharm (Hons)** and I am conducting a research project with **Associate Professor Jennifer Marriott** and **Dr. Safeera Hussainy** at the Centre for Medicine Use and Safety, Department of Pharmacy Practice, Faculty of Pharmacy and Pharmaceutical Sciences, Monash University. I am conducting this research project towards a Doctor of Philosophy at Monash University. This means that I will be writing a thesis which is the equivalent of a 300 page book. A report of the project may also be submitted for publication in a journal or be presented at a conference.

What is the purpose of the study?
From previous studies that the researchers have conducted, it has been shown that women, pharmacists and pharmacy assistants are in need of weight management educational resources. The aim of this study is to elicit your views, opinions and ideas on the content, design and accessibility of potential weight management educational resources that may be developed in future. We are inviting you to participate in a group discussion which is known as a focus group so that the researchers can obtain ideas and opinions from a group of people so that they are able to develop resources that are suited for a number of different people.

Why have I been chosen?
You have been chosen to participate in this focus group because you have contacted the researches and expressed your interest in being involved.

What are the possible benefits of taking part?
There may be no direct benefit from the participation in this project. By participating in this project participants will provide researchers with valuable information that will later be used for the development women specific weight management educational resources that pharmacists, pharmacy assistants and women will have access to.

What does the study involve?
Participation in this study involves a group discussion with other <women> OR < pharmacists> OR <pharmacy assistants> OR <women, pharmacists and pharmacy assistants>. Each participant will receive some information about past research that is related to this study and the questions that they will be asked during the group discussion one week prior to the scheduled meeting date. Six to nine women will be invited for discussion, which will last approximately two hours. The group discussion will take place at a place and time convenient for all the participants. I will be

moderating the group discussion. Another member of the research team will also be present to take some written notes of the discussion. The discussion will be audio-recorded to make sure that we do not miss any valuable information provided by the participants. You will be identified only by a unique code in the transcript; any personal information that could reveal the identity of individual participants will be removed from the transcript.

How much time will the research take?
The reading material prior to the group discussion will take approximately 30 minutes of your time. The group discussion will take approximately two hours to complete.

Payment
In recognition of your contribution to the study, an honourarium of $75 Myer/Coles gift voucher will be provided to you at the end of the group discussion. Refreshments will also be provided during the group discussion.

Inconvenience/discomfort
There are no foreseeable risks other than the inconvenience of your time required to attend the group discussion or potential discomfort while answering questions during the group discussion. However the moderator during the group discussion will not ask you any personal or sensitive questions. You will also be given a copy of the questions that will be asked in the group discussion prior to attending. If you have any concerns about the questions you can contact the researchers on the details provided below prior to the group discussion. If you become upset or distressed during or after the group discussion, please notify the moderator or the researchers immediately and they will be able to arrange for counselling or other appropriate support. Any counselling or support will be provided by staff who are not members of the research team and include Lifeline Australia who can be contacted on 13 11 14.

Can I choose not to take part?
Participating in this study is voluntary, it is up to you to decide whether to take part or not. If you choose not to take part, this will not affect your relationship with Monash University, the researchers or other stakeholders. However, your taking part will be very useful for us. Even if you consent to participate, you may withdraw at any time prior to the group discussion. Once the group discussion has been conducted, any information provided by you during the discussion will be utilised in a way that will make you unidentifiable, in the study results.

What if I decide to take part?
If you decide to take part, please complete the enclosed consent form and return it to me in the reply-paid envelope provided. Please send us your contact phone number and suitable times for us to contact you, so that we can arrange a suitable time for the group discussion. Alternatively you can contact Souhiela Fakih on (03) 9903 9170 to discuss your availability. Your contact details will not be used for other purposes. You may retain this information sheet for your records.

Will my taking part in the study be kept confidential?
All the information collected from individual participants throughout the course of this study will be kept confidential. To ensure your participation remain anonymous and confidential, we will ask all participants in the group discussion to sign a confidentiality declaration statement form.

How will the data be stored?
Storage of the information will adhere to the Monash University's regulations. Audiotapes and transcripts will be kept in the University premises in a locked cabinet for 5 years and electronic data or files will be stored in a password protected computer.

Will the data be used for other purposes?
A report of the study may be submitted for publication in a healthcare journal and/or presentation at a conference. However, individual participants will not be named or identified in such a report or publications resulting from the study. In addition, the information collected during this study may be used for future work conducted by the researchers, the results again will remain confidential and individual participants will not be named or identified in any future work.

How to access the results of the study?
If you would like to be informed of the study findings or would like to obtain a copy of the study report, please contact Souhiela Fakih [redacted]. The findings will be accessible after all data is collected.

If you would like to contact the researchers about any aspect of this study, please contact one of the investigators:	If you have a complaint concerning the manner in which this research **<insert your project number here>** is being conducted, please contact:
Dr. Safeera Hussainy (Chief investigator) Lecturer, Academic supervisor Centre for Medicine Use and Safety, Monash University [redacted] Souhiela Fakih B.Pharm(Hons) (Student researcher) PhD candidate Centre for Medicine Use and Safety, Monash University. [redacted]	**Executive Officer** **Monash University Human Research Ethics Committee (MUHREC)** **Building 3e Room 111** **Research Office** **Monash University VIC 3800** [redacted]

Thank you,
[redacted]
Souhiela Fakih B.Pharm(Hons)

Consent Form for group discussion (focus group)

Title: Developing weight management educational resources- what do pharmacists, pharmacy assistants and women want?

NOTE: This consent form will remain with the Monash University researcher for their records.

I understand I have been asked to take part in the Monash University research project specified above. I have had the project explained to me, and I have read the Explanatory Statement, which I keep for my records.

I understand that agreeing to take part means that:	YES	NO
- **I agree to be involved in a group discussion**	☐	☐
- **I will be part of a group discussion (focus group) of up to nine people**	☐	☐
- **Unless I otherwise inform the researcher before the interview I agree to allow the interview to be audio-taped**	☐	☐
Please read the following statement and answer accordingly		
- **I agree for any information provided by me in this research project to be utilised in future research projects in a way that keeps me anonymous**	☐	☐

1. I understand that my participation is voluntary, that I can choose not to participate in part or all of the project, and that I can withdraw at any stage of the project prior to the commencement of the group discussion without being penalised or disadvantaged in any way.

2. I understand that any data that the researcher extracts from the group discussion (focus group) for use in reports or published findings will not, under any circumstances, contain names or identifying characteristics without my signed consent below.

3. I understand that I will be given a transcript of data concerning me for my approval before it is included in the write up of the research.

4. I understand that I may ask at any time/prior to giving final consent and commencement of the group discussion (focus group session) for my data to be withdrawn from the project.

5. I understand that no information I have provided that could lead to the identification of any other individual will be disclosed in any reports on the project, or to any other party.

6. I understand that data from the group interview (focus group) will be kept in secure storage and accessible to the research team. I also understand that the data will be destroyed after a five year period unless I consent to it being used in future research.

7. I understand I will remain anonymous at all times in any reports or publications from the project.

Participant's name: ……

Are you a? (tick one box) ☐ Woman from the general public

☐ Pharmacist ☐ Pharmacy assistant

Contact phone number: ……

Suitable time for contact: ……

Signature: ……...

Date: ……

Please return the consent form in the reply paid envelope Souhiela Fakih, Monash University, 381 Royal Parade, Parkville VIC 3052; or [redacted]

Thank you for your participation.

Participant confidentially statement declaration form

Participant confidentiality statement declaration form
Group discussion (Focus group)

I, hereby agree to the research team of *Developing weight management educational resources- what do pharmacists, pharmacy assistants and women want*? from the Centre for Medicine Use and Safety at Monash University, to abide by a list of terms for ensuring participants' confidentiality and privacy.

I understand that:

1. All information discussed, observed or recorded during the group discussion is to be kept strictly private and confidential.
2. Any information disclosed by the group members during the group discussion shall not be communicated to any other individual or organisation.
3. Any personal information concerning the group members, including their identities, shall not be made used for other purposes without his/her consent.
4. The information collected from this group discussion will be published in the form of health care journals, reports or conference presentations, which will in no way identify any participants involved in the group discussion.
5. If I have any doubts as to whether the information is confidential or not, I will contact the research team for advice prior to disclosing any information.

I, hereby undersign to agree to the above terms.

Name : …….

Signature :…….

Date :…….

FOCUS GROUP TOPIC GUIDE

1. Reasons why pharmacists, pharmacy assistants and pharmacies DO have a role to play in the weight management area.
2. Reasons why pharmacists, pharmacy assistants and pharmacies DO NOT have a role to play in the weight management area.
3. What are the factors that you feel are limiting your capacity or the capacity of your community pharmacy to help your consumers in the weight management area? (pharmacists and pharmacy assistants only)
4. Do you feel other health care professionals are more appropriately suited to be involved in this area? If so, which healthcare professionals?
5. How do you think multidisciplinary team approach to weight management will work the best?
6. What type of weight management educational resources (if any) do you think are needed?
7. Do you feel that the internet is the most appropriate medium to deliver these resources? If not, what other delivery approaches do you think will be more appropriate?
8. If a weight management educational resource was developed for online access how would you want an internet site designed and made accessible i.e. just online, in a smart-phone application, printable resources etc?
9. What material do you want in these educational resources? e.g. information on diet, exercise, meal plans, behavioural modification techniques etc.
10. What other tools do you want in these educational resources? e.g. calorie counter, online discussion group, exercise diary etc.