



# MONASH University

**Investigating the psychosocial issues impacting  
older people in the out-of-hospital environment,  
and building the awareness and capacity of  
paramedic graduates to recognise and address  
these issues.**

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**A thesis submitted for the degree of Doctor of Philosophy at**



**Monash University**

**Department of Community Emergency Health & Paramedic Practice**

**School of Primary & Allied Health Care**

**Faculty of Medicine, Nursing and Health Sciences**

**2017**

"It's very tiring, being so old. But I do love living."

*DAME ELISABETH MURDOCH, at 102*

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# Abstract

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## Introduction

The Australian population is growing with the most significant growth in older age groups. Aging is associated with declining health and the increased likelihood of chronic complex disease and psychosocial issues. These factors are contributing to growing utilisation rates of emergency ambulance resources. Paramedics are responsible for providing care for these patients and must be adequately educated and equipped to meet the needs of this growing population. The aims of this thesis were therefore to investigate the psychosocial issues impacting older people in the out-of-hospital environment, and how to build the awareness and capacity of paramedic graduates to recognise and address these issues.

## Methods

This is a thesis by publication and contains five discrete studies utilising a variety of methodologies. Both quantitative and qualitative methods including analysis of ambulance case data, focus group data, paper-based survey data, existing literature and observations were used. Specific methodologies utilised are described in each chapter's method section.

## Results

Older people comprised one quarter of the Ambulance Victoria emergency workload. They experience psychosocial issues including anxiety, depression, loneliness, fear of falling and dying in addition to physical issues. Paramedics feel greater education and resources would better equip them to meet the complex needs of these patients. Student paramedics have low levels of knowledge and slightly positive attitudes toward older people. Educational interventions involving interactions with real older people can help paramedic students understand the patient's perspective and improve interpersonal communication skills with them.

## Conclusion

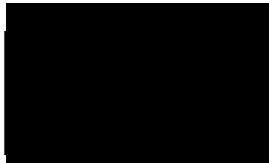
This thesis has added new knowledge to what little is known about older people and paramedic students and offered recommendations for future practice and research. Older people experience complex psychosocial issues in addition to physical ailments which require them to use emergency ambulance services at a growing rate. Paramedic graduates need to be equipped to recognise, assess and manage these psychosocial issues in order to provide the best possible care to older patients. They can be supported in this by targeted undergraduate education, and experience which fosters the development of non-technical interpersonal skills and awareness of older people's needs. Ambulance services can support paramedics in the provision of quality care to older patients by supporting ongoing education and providing resources directed at more appropriate care alternatives. A combined effort and undertaking by educators, paramedics and ambulance services is required for older people suffering from psychosocial issues to be provided with quality holistic care.

## Candidate's General Declaration

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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.

Signature:



Print Name: Linda Jane Ross

Date: 1<sup>st</sup> December 2017

## Thesis including published works declaration

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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 four original papers published in peer reviewed journals and one manuscript submitted for publication. The themes of this thesis are the psychosocial issues impacting older patients in the out-of-hospital environment, and building the awareness and capacity of paramedic graduates to recognise and address these issues. The ideas, development and writing up of all the papers in this thesis were the principal responsibility of myself, the student, working within the Department of Community Emergency Health and Paramedic Practice under the supervision of Professor Brett Williams and Associate Professor Paul Jennings.

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

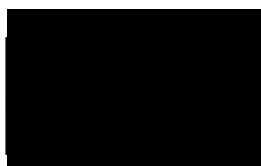
In the case of chapters 2 - 6 my contribution to the work involved the following:

Thesis Chapter	Publication Title	Status (published, in press, accepted or returned for revision)	Nature and % of student contribution	Co-author name(s) Nature and % of Co-author's contribution*	Co-author(s), Monash student Y/N*
2	Paramedic attendance to older patients in Australia and the prevalence and implications of psychosocial issues	Published	60%. Concept, data collection, analysis and manuscript preparation.	1. Paul Jennings, input into concept, data analysis and manuscript editing 20% 2. Brett Williams, input into concept, and manuscript editing 10% 3. Karen Smith input into concept and manuscript editing 10%	No
3	Psychosocial support issues affecting older patients: a cross-	Published	70%. Concept, data collection, analysis and	1. Paul Jennings, input into concept, data analysis and manuscript editing 15%	No

	sectional paramedic perspective		manuscript preparation.	2. Brett Williams, input into concept, data analysis and manuscript editing 15%	
4	Experience, knowledge and attitudes: Are paramedic students prepared to care for older patients?	Published	70%. Concept, data collection, analysis and manuscript preparation.	1. Paul Jennings, input into concept, data analysis and manuscript editing 15% 2. Brett Williams, input into concept, data analysis and manuscript editing 15%	No
5	Improving health care student attitudes toward older adults through educational interventions: a systematic review	Published	70%. Concept, data collection, analysis and manuscript preparation.	1. Paul Jennings, input into concept, and manuscript editing 10% 2. Brett Williams, input into concept, data synthesis and manuscript editing 20%	No
6	Experiential education enhancing paramedic perspective and interpersonal communication with older patients: A controlled study	Submitted	60%. Concept, data collection, analysis and manuscript preparation.	1. Paul Jennings, input into concept, and manuscript editing 10% 2. Brett Williams, input into concept, data analysis and manuscript editing 15% 3. Cameron Gosling, input into concept, data analysis and manuscript editing 15%	No

I have not renumbered sections of submitted or published papers in order to generate a consistent presentation within the thesis.

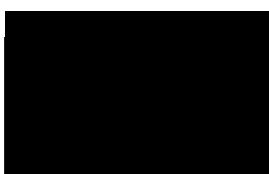
**Student signature:**



**Date:** 1<sup>st</sup> December 2017

The undersigned hereby certify that the above declaration correctly reflects the nature and extent of the student's and co-authors' contributions to this work. In instances where I am not the responsible author I have consulted with the responsible author to agree on the respective contributions of the authors.

**Main Supervisor signature:**



**Date:** 1<sup>st</sup> December 2017

## Acknowledgements

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Upon ending my clinical career and beginning a new career in academia never did I imagine or foresee that I would undertake a PhD; yet here I am writing the finishing touches. While this thesis bears my name it would not have been possible without the assistance, guidance support and encouragement of many people.

Thank you my primary supervisor, Brett Williams, who has not only been a supervisor but a mentor to me. He encouraged and supported me to peruse research and career endeavours beyond that which I thought I was capable. He willingly gave of his time and expertise while guiding me, but also allowing me to follow my own path. Thanks also to my secondary supervisor, Paul Jennings, who provided a clear perspective, sound advice, and gave of his time generously. This PhD has been a true collaboration in which their knowledge, experience, guidance and support has been invaluable.

Many other individuals and groups assisted me during my candidature with advice, encouragement, and support. I could not have completed this PhD without them. My sincere thanks and gratitude goes to:-

- My colleagues at the Department of Community Emergency Health and Paramedic Practice, and the broader Monash community, who took an interest and offered time, advice, expertise and encouragement.
- The participants in the various studies including paramedic students and older people who gave generously of their time to make this research possible.
- Those that provided financial support during my candidature which allowed me to conduct projects and disseminate findings. Details are included under Awards & Grants.
- Ambulance Victoria and it's paramedics who provided valuable case data.

Thank you also to my family and friends, for your interest and encouragement. Finally, thanks most of all to Chris and Blake, my greatest supports, for their unwavering belief in me which enabled me to complete this thesis.



## Publications, Presentations, Grants & Awards

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### Peer Reviewed Publications

1. **Ross L**, Jennings P, Smith K, Williams B. Paramedic Attendance to Older Patients in Australia, and the Prevalence and Implications of Psychosocial Issues. *Prehospital Emergency Care*. (2016);21(1):32-38.
2. **Ross L**, Jennings P, Williams B. Psychosocial support issues affecting older patients: a paramedic perspective. *INQUIRY: The Journal of Health Care Organization, Provision, and Financing*. (2017);54:1-6.
3. **Ross L**, Jennings P, Williams B. Experience, knowledge and attitudes: Are paramedic students prepared to care for older patients? *Educational Gerontology*. (2016);42(4):241-252.
4. **Ross L**, Jennings P, Williams B. Improving health care student attitudes toward older adults through educational interventions: a systematic review. *Gerontology and Geriatric Education*. (2017);Online

### Submitted Manuscript

5. **Ross L**, Jennings P, Gosling C, Williams B. Experiential education enhancing paramedic perspective and interpersonal communication with older patients: A controlled study. (*BMC Medical Education* - Under review)

### Conference Oral Presentations

1. **Ross L**, Williams B, Jennings P. Paramedic student's experience, knowledge, and attitudes toward older adults. Paper presented at Paramedics Australasia International Conference (PAIC): 2015, Adelaide, Australia.
2. **Ross L**, Jennings P, Williams B. An examination of the relationship between experience, knowledge and attitudes toward older adults in paramedic students. Paper presented at 17th Ottawa Conference and the ANZAHPE 2016 Conference: 2016, Perth, Australia.
3. **Ross L**, Williams B, Jennings P. Paramedic Attendance to Older Adults: More than meets the eye. Paper presented at International Federation on Ageing 13th Global Conference: 2016, Brisbane, Australia.

4. **Ross L**, Williams B, Jennings P. Emergency paramedic attendance to older patients in Victoria. Paper presented at Australian Association of Gerontology: 2016, Canberra, Australia.
5. **Ross L**, Williams B, Jennings P. Educational intervention to improve paramedic knowledge, attitudes and behaviour toward older adults. Future research presented at Victorian Showcase of Educational Research in the Health Professions: 2016, Melbourne, Australia.
6. **Ross L**, Williams B, Jennings P. The prevalence and nature of paramedic attendance to older adults in Australia. Paper presented at the International Association of Gerontology and Geriatrics World Congress: 2017, San Francisco, USA.

### Invited Presentations

1. **Ross L**. Psychosocial needs of older patients in the pre-hospital setting. Monash University, Department of Community Emergency Health and Paramedic Practice, Prehospital Research: Developing an agenda and fostering capacity: 2014, Melbourne, Australia.
2. **Ross L**. Increasing paramedic awareness and capacity to meet the psychosocial needs of older patients. Monash Educational Excellence Research Group (MEERG) Symposium: 2014, Melbourne, Australia.
3. **Ross L**. Interpersonal communication skills in health care education: Learning through experience. Monash Educational Excellence Research Group (MEERG) Seminar Series: 2015, Melbourne, Australia.
4. **Ross L**. Paramedic assessment of older patients: are we missing something? Cutting Edge Research in Ageing: Australian Association of Gerontology Student and Early Career research Group: 2016, Melbourne, Australia.

### Conference Poster Presentations

1. **Ross L**, Jennings P, Williams B. The grey tsunami is descending on us – are we ready and able? Poster presented at the Paramedics Australasia International Conference (PAIC): 2017, Melbourne, Australia.
2. **Ross L**, Jennings P, Gosling C, Williams B. Improving paramedic interpersonal communication with older people: a controlled study. Poster presented at the Faculty of Medicine, Nursing and Health Sciences ECR Symposium: 2017, Melbourne, Australia.

## Awards and Grants

Year	Grant	Amount
2014	VACIS Collaboration/Paramedics Australasia Bursary	\$10,000
2015	Better Learning Better Teaching Grant, Monash University	\$4,345
2015	School of Primary Health Care Travel Grant, Monash University	\$1,500
2015	Medicine, Nursing and Health Science Travel Grant, Monash University	\$500
2016	Office of Learning and Teaching Education Focused Support Grant, Monash University	\$7,500

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N.B. All other figures and tables are embedded within published papers and do not appear in this list

## Abbreviations

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ABS	Australian Bureau of Statistics
ASD	Aging Semantic Differential
AV	Ambulance Victoria
COPD	Chronic Obstructive Pulmonary Disease
DW	Clinical Data Warehouse
ELT	Experiential Learning Theory
ePCR	Electronic Patient Care Record
FAQ2	Australian Facts on Aging Quiz 2
GRACC	Geriatric Respect, Awareness, Care and Compassion
KCSA	Kalamazoo Communication Skills Assessment
MUHREC	Monash University Human Research Ethics Committee
SPSS	Statistical Package for the Social Sciences
TPB	Theory of Planned Behaviour
VACIS	Victorian Ambulance Clinical Information System

## Chapter 1: Introduction

---

### 1.1 Background and Rationale

The research contained within this thesis is related to two unique yet related groups: older people and student paramedics. They are connected in that older people are high volume users of emergency ambulance services, and student paramedics are the future care providers responsible for assessing and treating them. The following background and rationale will discuss these groups individually while bearing in mind the relationship one has to the other.

#### Older People

The Australian population is aging along with other nations with high-income economies. The Australian Bureau of Statistics (ABS) 2016 Census provides us with the most current facts in relation to older people. The proportion of the population aged 65 years and over rose from 14% in 2011 to 16% in 2016 (1). This is predicted to rise to 24% by 2056 (2). One in six Australian's are now over 65, compared to one in seven in 2011 and one in 25 in 1911 (1). Numbers in older age groups are rising also with 2.1% of the population 85 years and older, an increase of 84,000 people since 2011 (1).

Prosperity and advances in medical practices and pharmaceuticals are the two most significant factors contributing to increasing longevity and the decline in adult mortality rates (3, 4). Aspirations for increased quality of life as well as longevity drives medical advancements which ensures people live longer and reach older age in better condition (5). In Australia, the life expectancy is now 80.4 years for males and 84.5 years for females, compared to 67.9 and 74.2 years half a century ago (6). Also contributing to the increased numbers in this age bracket is the coming of age of baby boomers (people born during the post-World War 2 baby boom between 1946 and 1966) (7).

As people age so too does the likelihood that they will experience declining health and chronic conditions at some stage during their lifetime. Seventy five percent of 65 year olds and 95% of 85 year olds will have at least one chronic condition (8). Also increasing is the complexity and multifactorial nature of health conditions with 25% of 65 year olds, and 50% of 85 year olds having

at least three chronic conditions (8). How individuals age is influenced by intertwined biopsychosocial factors such as genetics, socioeconomic status, lifestyle, education, family, community, work and social situation. Physical conditions may include, but are not limited to, hypertension, heart disease, diabetes, arthritis, dementia and chronic obstructive pulmonary disease (COPD) (9). Common psychological issues affecting older patients may include anxiety, depression, delirium, dementia, personality disorders and substance abuse (10). Other challenges associated with aging may involve social isolation, financial constraints, transportation issues, lack of education, impaired access to health care services, reduced autonomy, grief, fear and loneliness (11, 12).

The Biopsychosocial Model (discussed later in this chapter) asserts that determinants of health do not occur in isolation and have implications and influence over other aspects of a person's wellbeing. Psychosocial issues for example can contribute to physical health and vice versa. Stress, anxiety, depression, social isolation and poor relationships are linked to increased risk of cardiovascular disease, hypertension and stroke (13, 14). Similarly, chronic physical conditions such as hearing loss, cancer, diabetes, arthritis, cardiovascular and respiratory diseases and are associated with increased rates of loneliness and depression (15, 16).

Given the propensity for, the complexity of, and the array of conditions possible in older age, it is not surprising that the demand for health care services is on the rise. The aging population is a major contributor to the rise in overall emergency ambulance utilisation rates, with transportations set to continue to rise dramatically, particularly in the 85 and over age group (17). It therefore follows that if paramedics are to attend, assess and treat older people holistically they must have an awareness and understanding of the unique needs of this growing special population group.

### **Summary of what is known about older people....**

- The aged population is increasing
- Utilisation rates for emergency paramedic services are rising
- The aging population is a major contributor to the rise in utilisation rates

- As people age they are more likely to suffer from chronic conditions
- They can suffer from multiple, complex and interrelated conditions
- Conditions can cover a wide array of biopsychosocial issues

### **Student Paramedics and Education**

Australia is made up of six states and two territories, each with their own emergency ambulance service. Historically these services employed a vocational post-employment training model. Over the past 20 years they have transitioned to university based pre-employment education with most services requiring a Bachelor degree as a minimum qualification (18). Impending national registration of paramedics (due to commence in 2018) will cement this as the minimum qualification in most jurisdictions (19).

The change in employment and education models has contributed to a decrease in the average age of undergraduate paramedics, with older individuals already in the workforce and encumbered with family and financial commitments less likely to return to full time study. While the proportion of school leavers compared to mature age students fluctuates from university to university and from year to year, the average age of students is much lower than under the previous model (20). This has been said to contribute directly to paramedic graduates who lack the maturity, life experience, community awareness and social skills considered necessary to be job-ready (20-22). This is not to suggest that all 'young paramedic students' fall into this category, nor does it suggest that novice paramedics should be astute at all facets of their job upon graduation. What it does suggest is that this is an identified weakness of graduating paramedics which can impact patient care and should therefore be addressed in undergraduate education.

Given the aging population and the increasing utilisation of emergency services, knowledge and awareness of biopsychosocial issues effecting older people is important for paramedics. While there is no empirical evidence of a deficiency in this area several undergraduate paramedic programs have now included whole units of study on geriatrics and aged care clinical placements (23). The inclusion



of community placements and interaction with real older patients has been shown to improve student rapport building skills, empathy and confidence in communicating with them (24). It is therefore important that educators continue to explore and assess pedagogical approaches to increase student paramedic knowledge and awareness of older people.

Undergraduate paramedics are also accused of being disproportionately focused on clinical knowledge and skills, preferring to spend time and effort on these over interpersonal non-technical skills such as communication, rapport building and empathy (11). Students often enter paramedic courses motivated by a skewed perception of what the job entails (25, 26). While paramedics are involved in performing life or death actions in a highly charged, fast paced environment, these cases are far less frequent than routine medical, mental or social complaints which require lower level clinical skills and/or interventions (26). More often than not cases will require well developed communication, problem solving and decision making skills to ascertain and enact the best course of action for a particular patient (11). While biomedicine and clinical skills are absolutely important, so too are interpersonal skills. Interpersonal non-technical skills are said to be vital to the establishment of a therapeutic relationship conducive to positive patient outcomes (27). The importance of these skills can therefore not be underestimated in the paramedic patient encounter. Educators and curriculum developers must seek to raise awareness of the importance of these skills and the impact they can have on patient wellbeing and outcomes.

A combination of the above factors can contribute substantially to the ability of student paramedics to provide quality patient care to older patients. While the onus is on the individual paramedic and the service that employs them to hone and develop their knowledge and skill, it is the responsibility of educators to produce graduates with the skills and abilities necessary to do their job, i.e. produce job ready graduates.

#### **Summary of what is known about student paramedics and education....**

- They are young, lack maturity and life experience

- They lack community awareness and social skills
- They prioritise learning and practicing clinical skills over interpersonal skills
- They have a skewed perception of what the paramedic role entails

## 1.2 Research Questions

This thesis will seek to address some of the things we do not know about older people and paramedic students, and add to the body of research and knowledge discussed in the previous section. The overarching thesis research question is:-

What are the psychosocial issues impacting older patients in the out-of-hospital environment, and how can we better prepare paramedic graduates to recognise and address these issues?

In order to answer the overarching question this thesis will address numerous smaller discrete research questions across five core chapters. Each question and chapter is related to either the psychosocial issues of older people in the out-of-hospital environment, or building awareness and capacity of paramedic graduates to recognise and address these issues. The following questions are numbered based on the chapter addressing them.

- 2.1 How many older people are using emergency paramedic resources in Victoria, Australia and for what reasons?
- 2.2 What is the prevalence of psychosocial factors which may contribute to older patients requiring emergency paramedic attendance?
- 3.1 What are the psychosocial needs of older people in the out-of-hospital environment from the paramedics' perspective?
- 3.2 What are the barriers to meeting the psychosocial needs of older people in the out-of-hospital environment from the paramedics' perspective and what would assist them to do so?

- 4.1 What level of experience with, knowledge of, and attitudes toward older adults do undergraduate paramedics have?
- 4.2 What is the relationship between these factors, and is greater knowledge and experience associated with more positive attitudes?
- 5.1 What educational interventions are effective in improving health care student's attitudes and/or behaviour toward older people?
- 6.1 What impact will an educational intervention with older people have on student paramedic knowledge, attitudes and behaviour toward them?

### **1.3 Theoretical Frameworks**

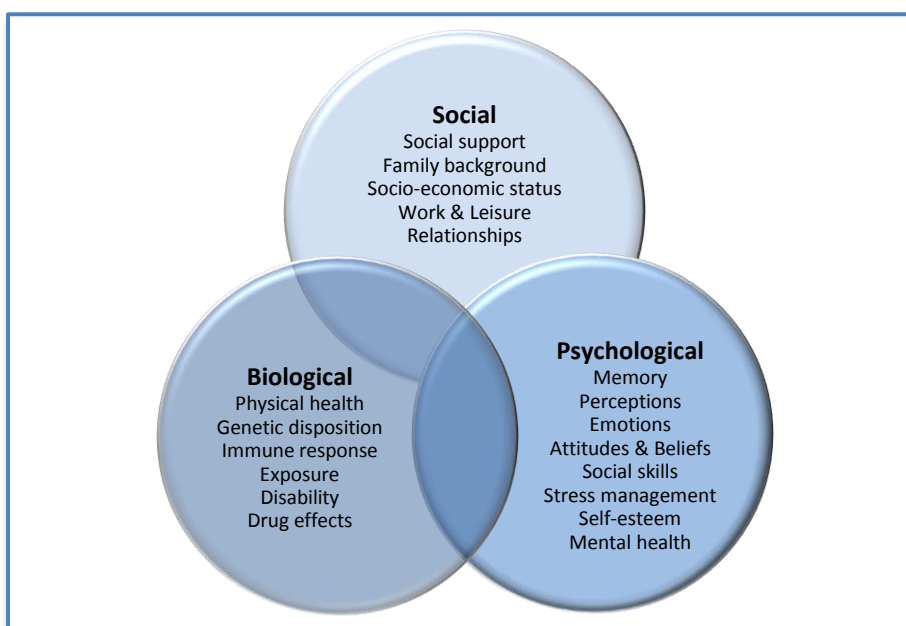
A number of theories underpin this research and will be addressed through the course of this thesis. Theories present a model or a framework for observation and understanding which enable us to make links between the abstract and concrete (28). The Theory of Planned Behaviour (TPB), the Experiential Learning Theory (ELT) and the Biopsychosocial Model of care are the most relevant to this thesis topic. By applying these theories to the current research it will facilitate the evaluation of findings and comparison with other research in order to draw conclusions and implications for practice.

#### **The Biopsychosocial Model**

Engel first described the Biopsychosocial Model in 1977 in an effort to challenge the medical and psychiatric fraternities to see patients holistically (29). His theory, which is now widely accepted and practiced, asserts that somatic illness and diseases cannot be considered in isolation and must account for cultural, social and psychosocial factors (29). Furthermore he suggested that concentration on only one element, at the exclusion of other factors, can be detrimental to patient care and outcomes (29). The intertwined nature of an individual's physical, mental, emotional health and social situation has since been well established and supports this model (Figure 1). Research for

example shows that psychosocial issues including anxiety, depression, stress and lack of social support are significantly associated with increased risk of cardiovascular morbidity and mortality (13, 30). Conversely physical conditions such as hearing loss for example can lead to social isolation and depression (16, 31).

It is therefore important that paramedics consider biological, psychological and social factors, and their relationship when assessing and managing patients. This model is discussed throughout the thesis as the preferred model of care in paramedic education and practice.



**Figure 1. Biopsychosocial Model [Adapted from Engel, 1977 ] (29)]**

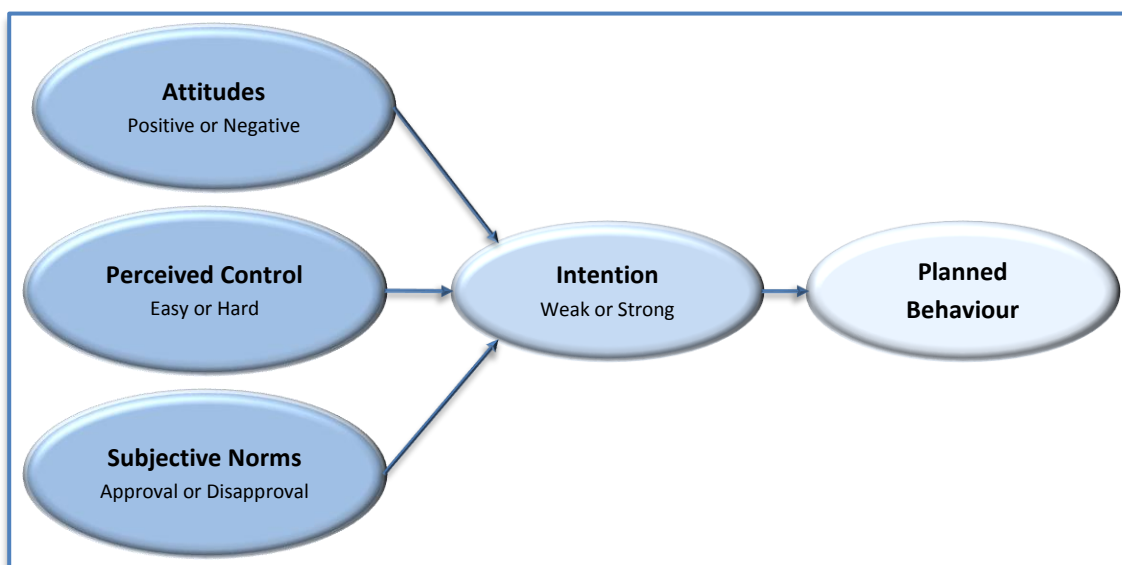
### **The Theory of Planned Behaviour**

Ajzen first described the TPB in 1977. This theory asserts that human behaviour is guided by three considerations; behavioural beliefs (about the likely outcome of the behaviour), normative beliefs (expectations of others and motivation to comply) and control beliefs (factors that may facilitate or impede the behaviour) (32). Behavioural beliefs produce positive or negative attitudes toward ideas, events, objects, or people. Normative beliefs are attitudes and behaviours that are considered normal, typical, or average. They determine others approval or disapproval of the behaviour. Control

beliefs refer to the amount of direction one has over the environment. It suggests if the task will be easy or difficult to accomplish. Intention to perform a planned behaviour is therefore believed to be determined by these three things: attitude, perceived control, and subjective norms (Figure 2) (32).

It is important therefore when conducting research on how to build the capacity of paramedics to meet the needs of older patients that we consider what contributes to behaviour toward them.

While perceived control and subjective norms also contribute to intention and behaviour the research conducted in this thesis focuses on the third element – attitudes. Factors that impact attitude formation, and the impact attitudes have on behaviour, are discussed throughout this thesis.



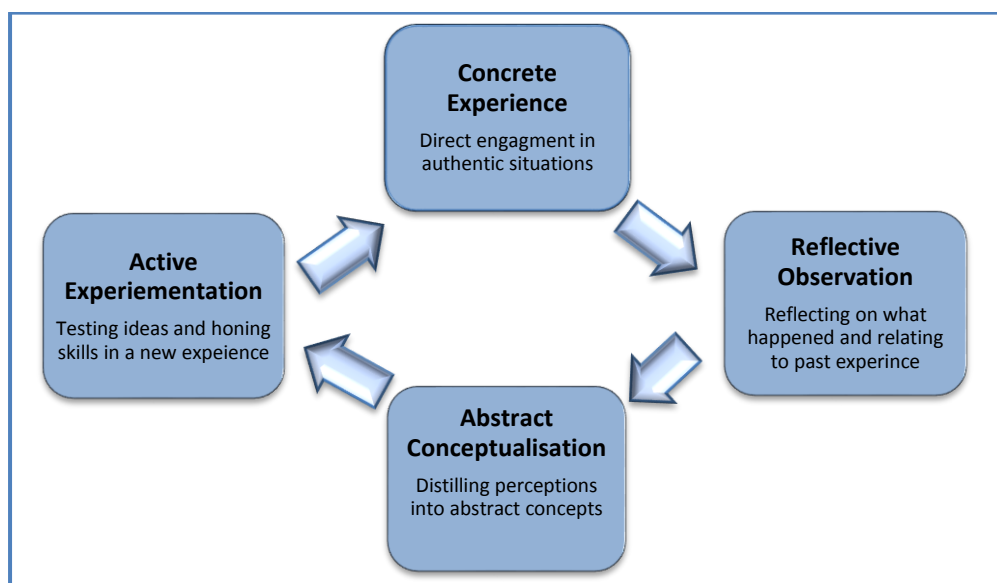
**Figure 2. Theory of Planned Behaviour [Adapted from Ajzen, (1991) (32)]**

### **The Experiential Learning Theory**

The Experiential Learning Theory (ELT) was developed by Kolb in the 1970's. This theory explains the process of learning through engaging in concrete experiences. This incorporates periods of reflection, analysis and formation of concepts, and experimentation. Learning builds and develops with further reflection, analysis, experimentation and experience. This forms a continuous ongoing

cycle as depicted in Figure 3. The ELT suggests learners are able to gain a deeper understanding of new knowledge and concepts, and retain information for longer (33).

This theory is relevant to paramedic educators in the development of curriculum and pedagogy that assists students to bridge the theory practice gap when developing patient assessment and care skills. It will be discussed most notably in Chapter 6 which presents an experiential educational intervention.



**Figure 3. Experiential Learning Theory [Adapted from Kolb, (2014) (33)]**

## 1.4 Thesis Structure

This is a PhD thesis by publication. Five discrete, yet related papers, make up the five core chapters of this thesis. They are bookended by an introduction, discussion and concluding chapters. The first two papers explore older people, the reasons why they call paramedics, and what experienced paramedics think their needs are. The next two papers change focus and look at paramedic students. What do they know and think about older people, and how can that be improved? The final core chapter tests an educational intervention designed to improve student paramedic attitudes and behaviour toward older patients. A diagram representing the relationship and flow of the core chapters is found in Figure 4.

## **Chapter 1 - Introduction**

This current chapter presents the background to this thesis topic as well as a rationale for the choice of topic. It also outlines the theoretical frameworks underpinning this research and the specific research questions to be answered.

## **Chapter 2 - Paramedic attendance to older patients**

This chapter provides a comprehensive analysis of the current numbers of older patients requiring emergency paramedic attendance. It explores three years of Ambulance Victoria (AV) case data and provides a detailed evaluation of the reasons for paramedic attendance, including somatic and psychosocial complaints.

## **Chapter 3 - Paramedic perspectives on older patients**

This chapter takes a qualitative approach to gain more specific detail about paramedic attendance to older patients from paramedics themselves. It reports on the results from focus groups with experienced paramedics on the psychosocial needs of older patients, and the barriers to meeting these needs.

## **Chapter 4 - Experience, knowledge and attitudes of paramedic students**

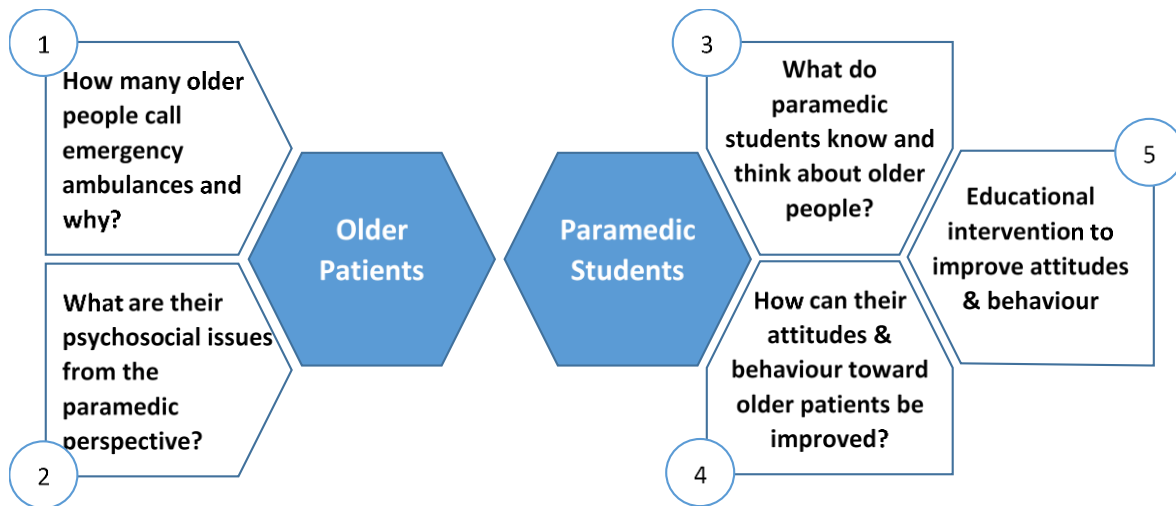
Chapter 4 moves on from older patients to the future providers of out-of-hospital care; paramedic students. This chapter examines the baseline experience, knowledge, and attitudes of paramedic students toward older patients.

## **Chapter 5 - Educational interventions systematic review**

This chapter presents a systematic review of educational interventions designed to improve health care student attitudes and behaviour toward older people.

## **Chapter 6 - Controlled educational intervention**

This chapter presents a controlled study using an educational intervention designed to improve paramedic knowledge, attitudes and interpersonal communication with older people.



**Figure 4. Core chapter content and flow**

## **Chapter 7 - Discussion**

This chapter will summarise the key findings of this thesis, how they relate to the overarching thesis question, and what they have added to the field.

## **Chapter 8 – Implications for Practice**

This chapter will discuss the findings and implications for practice in paramedicine and paramedic education.

## **Chapter 9 – Further Research**

This chapter will discuss where this research has led us and what future directions it could take. It will also discuss further research questions and ideas which this thesis has highlighted as potential future directions.

## **Chapter 10 – Conclusion**

This final chapter will consist of the final concluding remarks.



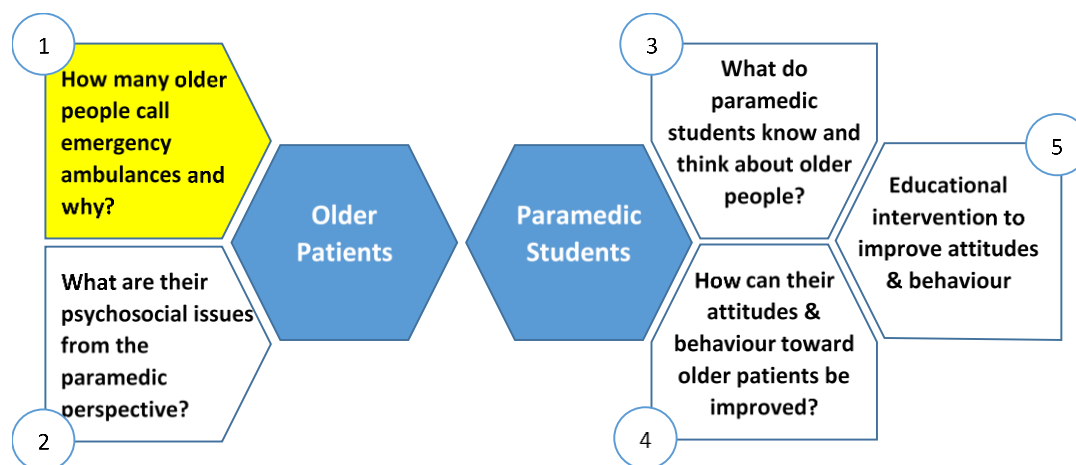
## Chapter 2: Paramedic attendance to older patients and the prevalence of psychosocial issues

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### 2.1 Overview

As discussed in the introductory chapter the Australian population is aging, and health service utilisation rates are on the rise. Older patients experience a multitude of complex and intertwined conditions that often require the use of emergency paramedic services.

This chapter, the first of five core chapters, presents a published paper describing the use of emergency paramedic services by older patients.



**Figure 4.1 Core chapter progression**

This retrospective descriptive analysis of three years of AV data aimed to:-

1. Determine the number and reasons for emergency paramedic attendances to older adults in Victoria, Australia between 2011 and 2014.
2. Investigate the prevalence of psychosocial factors which may contribute to older patients requiring emergency paramedic attendance.

Supplementary information associated with this chapter can be found in the appendices.

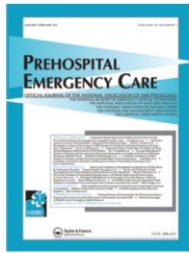
- Monash University Human Research Ethics Committee (MUHREC) ethics approval (Appendix A)
- AV participation approval (Appendix B)
- A detailed table of all final assessments prior to categorisation (which was not able to be included in the published paper due to size/practicality) (Appendix C)

The following paper, 'Paramedic attendance to older patients in Australia, and the prevalence and implications of psychosocial issues' was published in Prehospital Emergency Care in 2016.

#### Journal Metrics: Prehospital Emergency Care

Impact Factor (IF)	Scimago Journal Ranking (SJR)
2.690 (2016)	1.223 (Q1)

## 2.2 Publication



Prehospital Emergency Care



ISSN: 1090-3127 (Print) 1545-0066 (Online) Journal homepage: <http://www.tandfonline.com/loi/ipec20>

# Paramedic Attendance to Older Patients in Australia, and the Prevalence and Implications of Psychosocial Issues

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# PARAMEDIC ATTENDANCE TO OLDER PATIENTS IN AUSTRALIA, AND THE PREVALENCE AND IMPLICATIONS OF PSYCHOSOCIAL ISSUES

Linda Ross, MHLthProfEd, Paul Andrew Jennings, PhD, Karen Smith, PhD, Brett Williams, PhD

## ABSTRACT

**Objective:** This study aims to determine the number and reasons for emergency paramedic attendances to older adults in Victoria, Australia. A second aim is to investigate the prevalence of psychosocial factors that may contribute to older patients requiring emergency paramedic attendance. **Methods:** This descriptive retrospective study analyzed all emergency paramedic attendances to patients aged 65 or older between July 1, 2011 and June 30, 2014 in Victoria, Australia. Fully de-identified data were extracted from the Ambulance Victoria Data Warehouse. Data included demographic and clinical variables such as age, gender, case nature (cause), past history, management and transportation, paramedic final assessment (diagnosis), social situation, past history; as well as free text case descriptions. **Results:** A total of 596,579 patients 65 years or older were attended by emergency paramedics during the study period. This accounted for 24.1% of Ambulance Victoria workload during that period. The mean (SD) age of patients was 79.8(8.2). The majority (70.7%) of cases involved patients at private residences. The most common final assessments were pain (18.7%), cardiac problem (7.2%), infection (6.9%), trauma (6.7%), other/unknown (6.4%), and respiratory problem (5.7%). The vast majority of patients were transported to hospital (82.8%). Psychosocial issues were evident in the free text case descriptions of more than 91,000 cases. **Conclusion:** Paramedics attended almost 600,000 patients 65 years and older during the study period. Patients suffered from conditions including, pain, trauma, infections, cardiac complaints, and respiratory problems. Free text case descriptions provided more detail and insight into the reasons for emergency paramedic attendance. Psychosocial problems were far more

prevalent than indicated by the “final assessment” field. Further research is required to determine the reasons and implications of this. **Key words:** paramedic; allied health personnel; older patients; psychosocial

PREHOSPITAL EMERGENCY CARE 2017;21:32–38

## INTRODUCTION

Populations worldwide are increasing, with developed nations experiencing the most significant growth in older age groups. Projections from the US, UK, and Canada assert that one quarter of their populations will be in the 65 and over age group within the next few decades.<sup>1–3</sup> Australia is no exception to this trend with the Australian Bureau of Statistics predicting “the most profound change” in population will occur in the 65 and over age group.<sup>4</sup> The number of Australians 65 or over is set to rise from 13% in 2007 to 24% by 2056.<sup>4</sup>

This consistent worldwide trend has been attributed to numerous factors. Prosperity and medicine are the two most significant factors contributing to increased life expectancy.<sup>5,6</sup> Death is being delayed by improving health, which ensures people reach older age in better condition.<sup>7</sup> In the UK, life expectancy after reaching 65 has increased by 4–5 years over the last three decades.<sup>1</sup> Another factor cited as a contributor to this aged population growth is that baby boomers, (people born during the post-World War 2 baby boom between 1946 and 1966), are now reaching this age bracket.<sup>8</sup> Regardless of the contributors to aging populations the result is a population with greater propensity to experience health issues related to older age.

Older age is associated with declining health, functioning, mobility, and independence. As people age they are more prone to the cumulative effects of multiple chronic diseases such as hypertension, heart disease, diabetes, arthritis, dementia, and chronic obstructive pulmonary disease (COPD).<sup>9–11</sup> Other non-medical challenges associated with aging include social isolation, financial constraints, transportation issues, lack of education, and impaired access to health care services.<sup>12–14</sup> Older people also encounter reduced autonomy and control due to economic factors associated with retirement, and residential moves from separate households to combined or institutional living arrangements.<sup>15</sup> Loss of social networks and support, and significant life events, such as the death of a spouse or close friends, adversely affect mortality and morbidity.<sup>15,16</sup> Given the

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There are no competing interests.

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prevalence of multiple biopsychosocial issues among older adults, it is not surprising that there is a corresponding increase in demand on health and social services.

The aging population and associated health, social and care issues has led to an increased demand on health services, and more specifically, emergency ambulance resources and emergency departments.<sup>17</sup> While increasing demand on emergency ambulance resources due to aging populations is evident from previous research, there is limited analysis of the epidemiology of this patient cohort. This descriptive retrospective study primarily aims to determine the number, and reasons for emergency paramedic attendances to older adults in Victoria, Australia between 2011 and 2014. A second aim is to investigate the prevalence of psychosocial factors which may contribute to older patients requiring emergency paramedic attendance.

## METHODS

### Study Design

This descriptive retrospective study analyzed all emergency paramedic attendances to patients aged 65 or older between July 1, 2011 and June 30, 2014 in Victoria, Australia. Access to de-identified data was approved by Ambulance Victoria, and an ethics exemption was approved by the Monash University Human Research and Ethics Committee (CF14/2161 - 2014001166).

### Study Population and Setting

Ambulance Victoria is the sole state-wide provider of emergency ambulance services in Victoria, Australia. Victoria has a population of 5.8 million people; 4.4 million residing in metropolitan Melbourne, with 865,100 (15% of the States total), 65 years or older.<sup>17</sup> During the study period paramedics in Victoria responded to an average of 825,519 cases per year. Paramedics captured patient and operational data via an electronic patient care record (ePCR - VACIS).<sup>18</sup> All ePCR's were electronically submitted and stored in the Ambulance Victoria Data Warehouse (DW).

### Procedures

Fully de-identified data were extracted from the Ambulance Victoria DW. Data included demographic and clinical variables such as age, gender, case nature (cause), past history, management and transportation, paramedic final assessment (diagnosis), social situation, past history; as well as free text case descriptions. All attendances to patients 65 years or older between July 1, 2011 and June 30, 2014 were retrieved and assessed for inclusion using the criteria detailed in

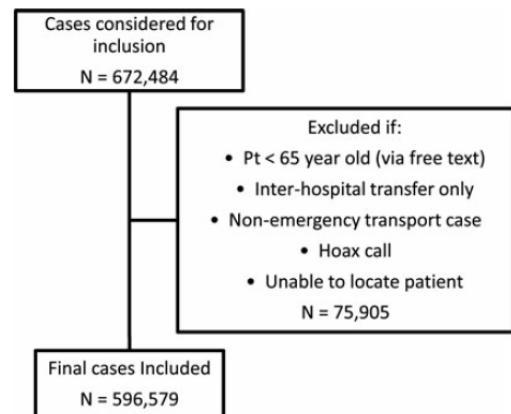


FIGURE 1. Flowchart of included/excluded cases.

Figure 1. Data was excluded if patients were attended and transported by the non-emergency arm of Ambulance Victoria as this study aimed to investigate emergency cases only.

### Data Analysis

The data was analyzed using the Stata Statistical Version 13 (StataCorp, College Station, TX), data analysis and statistical package. Cases with missing data were managed in one of three ways. Exclusion: if there was insufficient information to determine key elements such as age, case nature, and final assessment. Inclusion and modified: if the data field could be accurately determined from another field such as free text. Included: if that data fields not included in analysis were missing. Summary statistics including means, standard deviations (SD), and proportions (%) were used as appropriate to describe the patient population. Patient conditions were categorized by the "final assessment" field. This field reflects what the paramedic believes the patient's main problem is at the time the patient is discharged from their care (i.e., provisional diagnosis). The "case description" free text fields were searched for keywords, and combinations of key words which indicated psychosocial type issues. Presence of a key words, or combinations, were recorded as one incidence.

## RESULTS

### Patient Demographics

A total of 596,579 cases of emergency paramedic attendance to patients 65 years or older in a three year period for 2011–14 were included for analysis. This accounted for 24.1% of Ambulance Victoria workload during that period. The mean (SD) age of patients was



79.8 (8.2). There were 235,483 (39.5%) patients aged between 75–84, and 327,070 (54.8%) were female. The majority (70.7%) of cases involved patients at private residences. Of the 89,952 (15.1%) patients located at nursing homes or supported accommodation facilities most (59.1%) were aged 85 years or greater. Patient demographic details are described in Table 1.

### Patient Conditions

The most common final assessments were pain (18.7%), cardiac problem (7.2%), infection (6.9%), trauma (6.7%), other/unknown (6.4%), and respiratory problem (5.7%) (Table 2).

### Patient Transport

The vast majority of patients were transported to hospital (82.8%). Of those not transported the most common reasons included transport not required (51.3%), patient refused (21.3%), and referral to a doctor (11.8%) (Table 3).

### Psychosocial Factors

Patients were reported to live alone in 6.6% of cases and have past history mental illness was reported on 63,559 occasions (Table 4). Paramedics made reference in the free text “case description” to the patients living alone on 59,760 occasions, and being anxious or panicked on 26,266 occasions (Table 5).

## DISCUSSION

The results of this study provide us with a clearer understanding of the number and reasons for emergency paramedic attendances to older patients. Ambulance Victoria paramedics attended 596,579 emergency cases to patients 65 years and over, representing 24.1% of their work load over the three years from 2011–14. The majority of events occurred in private residences with numbers from nursing homes increasing with age. Patients were suffering from a wide array of ailments; the most common conditions were pain related. Many patients had psychosocial issues reported in the free text case descriptions and most patients were transported.

This study found a relatively even spread of patients across the three designated age groups (65–74, 75–84, and 85+); however, 71.2% of patients were aged 75 years or older. The mean age was 79.8, with 54.8% of the cohort being female. This data are similar to a Canadian study of patients 65 years and older, which also reported a mean age of 80, and 57% female.<sup>19</sup> These results are commensurate with what we know about aging and health. As people age they are more prone to disease, comorbidities, and functional decline.<sup>7,10,20</sup> It therefore follows that as people

move into the 75 years or greater age group, they are more likely to require and use health services. It is also consistent with other studies investigating emergency ambulance utilization rates in Australia and internationally.<sup>21–23</sup>

Regarding gender differences female patients in this cohort outnumbered males by 10% overall. This could be a reflection of life expectancy with females likely to live 4 years longer than their male counterparts.<sup>24</sup> While biological factors are at play it is also evidenced that women are more likely to seek medical assistance than men which impacts on their longevity, and use of services.<sup>25</sup> In the 85+ year’s category female patients outnumbered males by 9%. This again is a reflective of national life expectancies; males 80.1 year, females 84.3 years.<sup>24</sup>

Patients were located in numerous locations with 70.7% at private residences. This challenges the assumption that paramedics attend disproportionately high numbers of nursing home cases, with this accounting for only 15.1% of cases. Of those in nursing homes however, 59.1% were in the 85+ year’s category which corresponds with research indicating health and independence declines with age.<sup>7,9</sup>

Of the 17.2% of patients not transported, 51.3% were listed as transport not required. In excess of 52,000 patients called, or had an emergency ambulance called for them, by a carer, family member, or bystander, when it was not required. This could be due to the patient improving between the call being made and paramedic attendance, inability to access more appropriate health care, or lack of education about the use of emergency ambulance services. The percentages of patients transported across the age groups were very consistent; 82% (65–74), 83% (75–84), and 83% (84+). A study looking a predictors of transport in older fallers found age was a significant predictor of transport, i.e. the older the patient the more likely they were to be transported.<sup>20</sup> Our data however, which investigated all conditions, did not indicate age was a predictor of transport.

While it is difficult to compare findings from other emergency paramedic services, as each service uses their own specific categories and reporting measures, there are some similarities with international data. In the US, Wofford et al.<sup>22</sup> listed the top five complaints for patient 65 and older as respiratory distress (13%), pain (12%), chest pain (12%), fracture (5%), and stroke (5%),<sup>22</sup> all of which appear in our study’s top seven final assessments. Also, in the US, Svenson<sup>26</sup> listed unknown (19%), cardiac (16%), medical (16%), motor vehicle related (14%), respiratory (12%), and falls (10%) as the top six complaints of older patient. A Canadian study by Goldstein et al.<sup>19</sup> listed their top six condition for this age group as nonspecific/wellness check (21%), trauma (15%), gastrointestinal (14%), respiratory (12%), cardiovascular (12%), and neurologi-

TABLE 1. Patient demographics; age, gender, and location

AGE	65–74 n (%)	75–84 n (%)	85+ n (%)	Total n (%)
Min = 65, Max = 112, M(SD) = 79.8(8.2)	171, 863(28.8)	235, 483(39.5)	189, 233(31.7)	596,579
Rate per 100,000 people/year*	12,843	29,696	56,419	24,186
GENDER				
Male	88, 094 (32.7)	109, 543 (40.7)	71, 832 (26.7)	269, 469 (45.2)
Female	83, 755 (25.6)	125, 925 (38.5)	117, 390 (35.9)	327, 070 (54.8)
Undetermined	14 (<0.1)	15 (<0.1)	11 (<0.1)	40 (<0.1)
LOCATION TYPE				
Private Residence	130, 813 (31.0)	174, 791 (41.4)	116, 114 (27.5)	421, 718 (70.7)
Nursing Home/ Supported Accom	9, 070 (10.1)	27, 707 (30.8)	53, 175 (59.1)	89, 952 (15.1)
Public Place	8, 060 (35.5)	9, 149 (40.3)	5, 469 (24.1)	22, 678 (3.8)
General Practitioners / Clinic	8, 811 (40.2)	8, 918 (40.7)	4, 199 (19.1)	21, 928 (3.7)
Street / Car Park / Public Road	7, 748 (36.8)	7, 701 (36.6)	5, 605 (26.6)	21, 054 (3.5)

\*Based on average population statistics and attendances over the study period.

TABLE 2. Final assessment (paramedic diagnosis) (n = 596,579)

FINAL ASSESSMENT	65–74 n (%)	75–84 n (%)	85+ n (%)	n (%)
Pain	37, 231 (33.3)	43, 900 (39.3)	30, 600 (27.4)	111, 731 (18.7)
Cardiac Problem	13, 718 (31.8)	17, 529 (40.6)	11, 946 (27.7)	43, 193 (7.2)
Infection	9, 913 (24.0)	17, 061 (41.2)	14, 383 (34.8)	41, 357 (6.9)
Trauma	7, 944 (20.0)	13, 996 (35.2)	17, 770 (44.8)	39, 710 (6.7)
Other/Unknown	10, 470 (27.4)	15, 095 (39.5)	12, 649 (33.1)	38, 214 (6.4)
Respiratory Problem	10, 204 (30.0)	13, 906 (40.8)	9, 975 (29.2)	34, 085 (5.7)
No Problem	6, 203 (23.4)	10, 491 (39.5)	9, 834 (37.1)	26, 528 (4.4)
Identified				
Neurological	5, 767 (24.0)	9, 466 (39.3)	8, 846 (36.7)	24, 079 (4.0)
Problem				
Psychosocial	5, 988 (38.4)	5, 909 (37.9)	3, 693 (23.7)	15, 590 (2.7)
Problem				
Gastrointestinal	4, 141 (33.3)	5, 033 (40.5)	3, 266 (26.2)	12, 440 (2.1)
Problem				
Collapse	3, 145 (25.4)	5, 227 (42.2)	4, 019 (32.4)	12, 391 (2.1)

TABLE 3. Patient transport and not transported reasons (n = 596,579)

TRANSPORT	65–74 n (%)	75–84 n (%)	85+ n (%)	n (%)
Yes	141, 215 (28.6)	195, 262 (39.4)	157, 311 (31.9)	493, 788 (82.8)
No	30, 648 (29.8)	40, 221 (39.1)	31, 922 (31.1)	102, 791 (17.2)
NOT TRANSPORTED				
REASON				
Transport Not	14, 831 (28.1)	20, 890 (39.6)	16, 988 (32.2)	52, 709 (51.3)
Required				
Transport Required -	7, 439 (34.0)	8, 362 (38.2)	6, 086 (27.8)	21, 887 (21.3)
Patient Refused				
Referred to Doctor	3, 524 (29.1)	4, 848 (40.0)	3, 738 (30.9)	12, 110 (11.8)
Patient Dead on	1, 324 (29.6)	1, 641 (36.7)	1, 505 (33.7)	4, 470 (4.3)
Arrival				
Transported by	915 (33.1)	1, 132 (40.9)	718 (26.0)	2, 765 (2.7)
Private Vehicle				
Patient Died at Scene	871 (33.8)	926 (36.0)	777 (30.2)	2, 574 (2.5)
Transported by	445 (22.0)	781 (38.6)	796 (39.4)	2, 022 (2.0)
Non-Emergency				
Ambulance				
Other	1, 273 (30.5)	1, 618 (38.7)	1, 287 (30.8)	4, 178 (4.1)

TABLE 4. Patient living status and past history (n = 596,579)

LIVES ALONE	65–74 n (%)	75–84 n (%)	85+ n (%)	n (%)
Yes	9, 183 (23.3)	15, 404 (39.1)	14, 835 (37.6)	39, 422 (6.6%)
No	14, 255 (29.1)	20, 167 (41.3)	14, 455 (29.6)	48, 877 (8.2%)
Unknown/Not reported	148, 398 (29.2)	199, 912(39.3)	159, 943 (31.5)	508, 298 (85.2%)
Report past medical history				
Depression, anxiety, bipolar, schizophrenia, dementia, Alzheimer's, or other psychiatric illness				63,559*

\* Incidence of conditions reported, not total number of patients with conditions (i.e., Patients could report multiple conditions).

TABLE 5. Psychosocial factors indicated in case descriptions (n = 596,579)

Key Words	n	Case Description Examples	Final Assessment
Live alone or lives by self	59,760	"83 year old male who <i>lives at home alone</i> , with minimal assistance. Patient has been treated for past few weeks for a chest infection. Over the past 4 days he states he has been feeling off colour, and generally unwell. Today he states he is feeling unsteady on his feet, and is <i>afraid</i> of falling over and hurting himself, also of not being able to get up as he <i>lives alone</i> . Patient called ambulance for himself for assessment and transport to hospital."	Chest infection
		"This elderly 78yo lady <i>lives at home alone</i> in poor conditions, there are 3 cats in the house with her, she does not appear to be eating much. This lady said that she accidentally locked herself in a room this morning and that she panicked and vomited a couple of times."	Unknown problem
Afraid, scared, or worried	812	"72yo pt has SOB 'gasping' last night, unable to get to sleep and sitting up in chair most of the night. SOB has been worsening. Called ambulance this am. Pt has been <i>anxious+++</i> recently, awaiting results of sleep tests and requiring CPAP to assist with sleeping, hence pt ' <i>afraid</i> to go to sleep.'"	Chest infection
		"Pt is an 83yo male who lives independently at a retirement village. Pt last night complained of L sided numbness only in the L hand and L sided chest pain after waking from a 2 hour sleep at about 1000. Pt stated symptoms resolved after a moment. Pt was able to eat and go back to sleep following this episode. This morning pt awoke and was still concerned about the symptoms earlier in the night and was <i>afraid</i> to get out of bed due to a 'fear of dying.'"	Unknown problem
Anxious/anxiety or panic/panicked	26,266	"98yo lady states that since this afternoon she became <i>anxious</i> and <i>panicked</i> as her neighbour that stays with her would be away for 1 day. Pt also states that since this afternoon her breathing had become 'worse than normal,' concerned tonight called AV. c/o feeling scared and worried that she would be alone tonight and tomorrow. Pt also c/o moist productive cough and SOB."	Short of breath
		"90yr old female c/o SOB and CCP at approx 0830 today. Pt states she 'did not feel right' and became <i>anxious</i> , SOB and states CCP described as tight."	Pain
Depressed or depression	4,522	"78yo female, lives at home alone. Pt states she has been struggling to cope for the past couple of weeks, states she is ' <i>depressed</i> ,' 'sick of life' and wants it all to 'end' (no plan). Pt called av."	Depression
		"Pt 70 y/o female who awoke with an epistaxis this evening - pt attempted to stop bleeding by holding tissues to nose - pt states bleeding for approx 30 minutes - pt has had several nose bleeds over past week. Pt has been <i>depressed</i> since husband died and has not sought any assistance in regard to this."	Epistaxis

yo or y/o = year old; pt = patient; CCP = central chest pain; SOB = short of breath; c/o = complaining of

cal (9%), which again have similarities with our findings. Medical issues related to cardiac, respiratory and other major body systems, as well as pain, infections, falls and trauma seem to be the most common reasons for patients 65 and over to be attended to and transported by emergency medical services in the developed world. Patients 65 and over in Victoria, Australia are therefore no different to other patients from comparable cohorts around the world with respect to their reasons for using emergency paramedic services.

Also of interest, and significance in relation to the second aim of this study was the relatively low representation of psychosocial issues. Final assessment categories suggestive of psychological, emotional or social issues accounted for only 2.7% of cases. Several factors could account for this finding. Patients or care givers may be less likely to seek emergency medical assistance for issues of this nature and preference general

practitioners or other health care providers. The stigma associated with mental health may result in reluctance to seek assistance at all. Finally, paramedics may not recognize, fully report, or place as much importance on the occurrence of these issues as compared to somatic complaints.

This however should not imply that these issues were not present in more cases than indicated by the final assessment results in this study. Patient conditions are rarely one dimensional and can incorporate biopsychosocial elements. Chronic and/or multiple health conditions, decreasing mobility and independence coupled with social isolation and lack of support can lead to emotional and psychological issues and vice versa. It is reasonable to expect however, that a paramedic would prioritize a critical injury or illness requiring definitive intervention and treatment over a psychosocial issue that may require less timely, and more ongoing longer term support.



While the psychosocial problems only accounted for 2.7% of patient presentations in the final assessment field, other results indicate that these issues are far more prevalent. The social situation field, although poorly populated by paramedics (14.8% of cases), reported 6.6% of the patients attended lived alone. As this field is not mandatory, it could indicate it was more likely to be completed if the social situation was of relevance to the condition or ongoing care of the patient. In addition, psychosocial issues were evident in the free text case descriptions of more than 91,000 cases. Fear, anxiety and worry about health conditions, and an inability to help themselves or access assistance if required was prominent. In particular fear of falling, dying and being alone were common. The examples in Table 5 highlight that the final assessment did not always reflect these issues, with paramedics more likely to select a somatic final assessment rather than a psychological or emotion one as the predominant complaint. The implications of under recognition or reporting of these issues are numerous. Older patients can be utilizing emergency paramedic services in lieu of more suitable support services designed to offer more sustainable, targeted, and ongoing support. This use of emergency paramedic services results in increased demand and patients not being provided with the care and services best suited to their needs. Often, as this study found, patients are transported to emergency departments for ongoing assessment and care (82.8%). Literature suggests paramedic ability to determine which patients do not require transport to the hospital is challenging at best.<sup>27</sup> This is due to a combination of factors including education, diagnostic tools available, and concern of potential consequences of not transporting.<sup>28</sup> It is questionable whether transport results in the most appropriate care being provided, and the ongoing support systems being enacted, in instances where the main problem is psychosocial in nature. Paramedics require additional education and awareness of the psychosocial issues affecting older patients, and most importantly information and access to alternatives beyond transport to emergency departments.

### LIMITATIONS

This study was limited by the nature of the data. Data in some categories was missing or did not correlate to other fields. Data also reflects the number of attendances and not the number of unique patients. An analysis of repeat attendances was not conducted as part of this study. Another limitation of this study was the variability in categorizing of patient conditions. Paramedics use their discretion, with the limited diagnostic tools available to them in the out-of-hospital setting, to select the most appropriate category; however, there is often more than one correct option. Paramedics

also use the other final assessment category when they are unable to locate a relevant category or at times as an easy option. Finally, the paramedic e-PCRs are not linked to hospital records; therefore, it was not possible to find out any definitive diagnosis of the patients in this study.

### CONCLUSION

Emergency paramedic responses to older patients accounted for 24.1% of Ambulance Victoria workload over a three year period from 2011–14. Paramedics attended almost 600,000 patients 65 years and older during this time frame. These patients suffered from a multitude of conditions: pain, trauma, infections, cardiac complaints, and respiratory problems. The free text case descriptions provided more detail and insight into the reasons for emergency paramedic attendance. Psychosocial problems were far more prevalent than indicated by the final assessment field. This has implications for emergency paramedic recourses and patient care and outcomes, and requires targeted education and resources.

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## 2.3 Summary

This published study highlighted the prevalence of emergency paramedic services use by older patients in Victoria, Australia. It also reported the most common reasons for older people to request paramedics. Issues such as pain, trauma, infections, and cardiac and respiratory complaints were the most frequent; which was comparable to other developed nations.

Also highlighted was the nature of paramedic case data and the difficulty encountered when dealing with missing data, inconsistencies, and categorising conditions. Final assessment categories are documented at the discretion of the paramedic, with most conditions able to be listed under multiple categories. For example pain, which was the most common final assessment at 18.7%, could be categorised based on the source of the pain, i.e. trauma, cardiac, neurological etc., or just listed as pain. Without links to hospital records, and no definitive final diagnosis, these results are as accurate a representation as possible of the reasons older people use emergency paramedic services.

Psychosocial issues while only reported as the final assessment in 2.7% of cases were found to be more prevalent when exploring the free text descriptions. Of interest is the reasons why this figure is so low when personal experience and anecdotal evidence suggests the figures should be much higher. Was it due to patients under reporting, novice paramedics under recognising, paramedics prioritising the care and reporting of somatic complaints, or a combination of factors?

The Chapter 2 findings and above discussion points led to the investigations conducted in Chapter 3. The need for a deeper understand of the psychosocial issues impacting older patients, and the perceived under representation of these in final assessments categories necessitated a different perspective. Chapter 3 therefore sought to determine the psychosocial needs of older patients from the paramedic perspective.

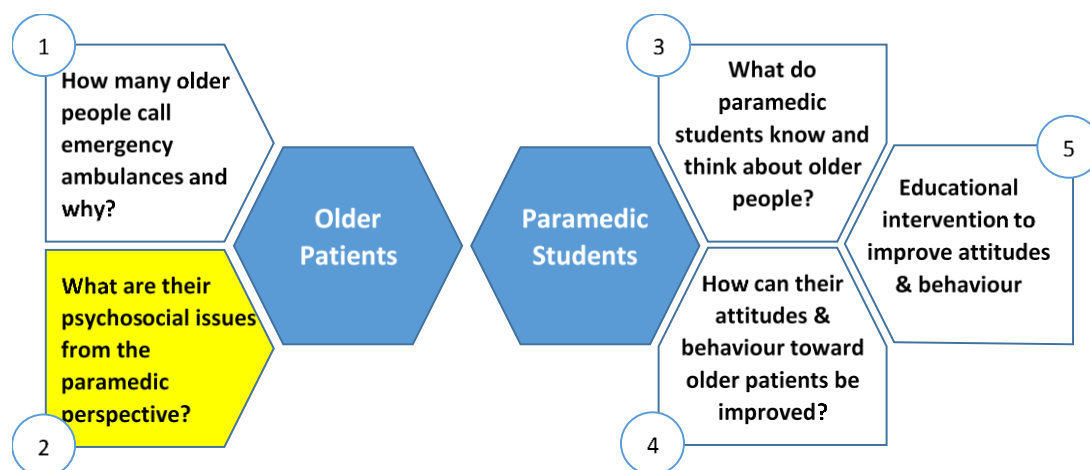
## Chapter 3: Paramedic perspectives on the psychosocial issues affecting older patients

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### 3.1 Overview

Chapter 2 highlighted that older patients require emergency paramedic services frequently and for a wide array of conditions including psychosocial issues. Free text case descriptions gave us a glimpse into the type of issues encountered by paramedics when assessing and treating older patients.

This chapter presents a published paper describing the psychosocial issues affecting older patients from a paramedic perspective. This study utilised focus groups with experienced paramedics to explore these issues in greater depth.



**Figure 4.2 Core chapter progression**

This cross-sectional study aimed to:-

1. Gain an understanding of the psychosocial needs of older patients in the out-of-hospital setting from the perspective of paramedics.
2. Investigate if, and how, paramedics are able to meet these needs, and what barriers prevent them from doing so.

Supplementary information associated with this chapter can be found in the appendices.

- MUHREC ethics approval (Appendix D)
- Participant recruitment flyer (Appendix E)
- Demographic and perspectives on older patients survey (Appendix F)
- Focus group discussion questions (Appendix G)


The following paper, 'Psychosocial support issues affecting older patients: a cross-sectional paramedic perspective' was published in INQUIRY: The Journal of Health Care Organization, Provision, and Financing in 2017.

#### Journal Metrics: INQUIRY

Impact Factor (IF)	Scimago Journal Ranking (SJR)
0.737 (5yr)	0.259 (Q3)



# Psychosocial Support Issues Affecting Older Patients: A Cross-sectional Paramedic Perspective

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### Abstract

This research aimed to gain an understanding of the psychosocial support needs of older patients in the out-of-hospital setting from the perspective of paramedics. Specifically, we investigate if and how paramedics are able to meet the needs of older adults, and the barriers preventing them from achieving this. This study was a cross-sectional study utilizing a sequential design with both quantitative and qualitative methodologies. All participants agreed or strongly agreed that older patients have needs beyond the physical and that they would like to do more for older patients. Paramedics discussed that psychosocial support issues are rarely in isolation and straightforward but were often coupled with broader, longer term physical health and social support issues. They would like to be able to do more for patients but feel hamstrung by lack of time, resources, and know-how.

### Keywords

allied health personnel, emergency medical technicians, paramedic, psychosocial support systems, aged, older patients, cross-sectional studies

### Introduction

It is well established that our population is aging and that aging is associated with declining health. Between 1996 and 2016, the proportion of Australia's population aged 65 years and above increased by 3.3% to 15.3%.<sup>1</sup> Increasing life expectancy rates have also seen the number of people aged 85 years and above increase by 141.2% in the last 20 years, doubling the overall numbers.<sup>1</sup> As people age, they are more likely to suffer from chronic conditions. By 65 years, 75% of people will have at least 1 chronic disorder, and by 85 years, this increases to 95%.<sup>2</sup> Multimorbidities are also more prevalent with 25% of 65-year-olds, and 50% of 85-year-olds having 3 chronic conditions.<sup>2</sup> The health issues associated with aging lead to an increased demand for health care services.<sup>3,4</sup> Paramedics, as out-of-hospital health care providers, are therefore likely to encounter many older patients.<sup>5</sup>

Across developed nations, emergency medical services and paramedic utilization rates are on the rise. The aging population is postulated as a contributing factor.<sup>3</sup> In North Carolina, USA, in 2007, patients 65 and above accounted for 38% of transports to emergency departments; this is projected to rise to 47% by 2030.<sup>4</sup> In Victoria, Australia, between 2011 and 2014, attendance to patients 65 and above accounted for 24% of the emergency paramedic workload.<sup>5</sup>

Patients often require paramedic support and clinical interventions for a wide variety of issues which can include emotional and social issues. Common psychological issues

affecting older patients may include, but are not limited to, anxiety, depression, delirium, dementia, personality disorders, and substance abuse.<sup>6</sup> Common social and emotional issues may involve loss of autonomy, grief, fear, loneliness, financial constraints, and lack of social networks.<sup>6,7</sup> These psychosocial issues can also have an impact on and contribute to physical health. Psychosocial factors such as stress, anxiety, depression, social isolation, and poor relationships have been associated with an increased risk of hypertension, stroke, and cardiovascular disease.<sup>8,9</sup> Conversely, chronic or debilitating somatic or physical conditions such as cancer, diabetes, arthritis, cardiovascular and/or respiratory diseases, and hearing loss are associated with increased rates of loneliness and depression.<sup>10-13</sup> Paramedics must therefore practice holistic assessment and care of older patients and pay due attention to psychosocial issues as well as somatic conditions.

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The complex and multifactorial nature of psychosocial issues can make them difficult to identify. Patients typically present to primary health care practitioners with somatic complaints.<sup>14</sup> The presence of physical ailments can then hinder the identification of psychological difficulties as they are prioritized in the time available.<sup>15</sup> Mental illness, inability to cope, or loneliness can also carry a stigma which prevents some patients from raising such concerns.<sup>14</sup> Health care professionals may not recognize, ask about, or explore these issues with patients. This could be due to time constraints, limitations in their own skills and confidence, or lack of knowledge about available resources.<sup>16</sup>

Paramedics are in a unique position to interact with and assess patients in their own environment.<sup>17</sup> Unlike other health professionals, paramedics are able to observe living conditions which create a more holistic picture of environmental and social determinants of health. Paramedics can witness older patients living with little or no food in the house, or in unkempt and unhygienic living environments due to loss of function and/or lack of support. Such observations attest to a patient's ability to maintain daily living standards unaided. A general practitioner or emergency department physician, for example, can only ask patients whether they are "coping at home," with no guarantee of an accurate answer. Patients may deny the true nature of their situation due to fear of being institutionalized, losing independence, being embarrassed, or not having insight into the severity of their situation.<sup>14</sup>

Therefore, the primary aim of this research was to gain an understanding of the psychosocial needs of older patients in the out-of-hospital setting from the perspective of paramedics. Secondary aims were to investigate if and how paramedics are able to meet these needs, and what barriers prevent them from doing so.

## Methods

### Design

This study was a cross-sectional study utilizing a sequential design with both quantitative and qualitative methodologies.

### Participants

Participants were all qualified paramedics working for an emergency ambulance service who were delegates at the Paramedics Australasia International Conference in Adelaide, Australia, 2015. This conference was attended by 400 delegates consisting of predominantly paramedic clinicians, managers, researchers, and educators.

### Instrumentation

Demographic and quantitative data were gathered via a 15-item questionnaire designed by the research team in

**Table 1.** Paramedic Participant Demographics (N = 14).

	Mean (SD)	Minimum-Maximum
Age	42.93 (8.86)	26-56
Self-rated experience level with older adults	7.93 (1.07)	6-10
n (%)		
Gender		
Female	7 (50)	
Male	7 (50)	
Ambulance service location		
Victoria	8 (57)	
Other	6 (43)	
Years of experience		
<5	1 (7)	
5-9	3 (22)	
10-14	2 (14)	
15+	8 (57)	
Geriatric education		
Nil	2 (14)	
Part of unit	10 (72)	
Whole unit	2 (14)	

consultation with aged care specialists. It was designed to investigate participants' experience with, and views on older patients and their psychosocial needs. It consisted of a combination of tick box and Likert scale questions (1 = strongly disagree to 4 strongly agree). The questions are listed in Tables 1 and 2. In addition to the questionnaire, qualitative data were collected via focus groups. The focus groups were conducted by the authors following consultation and agreement on procedures and practices to ensure consistency.

### Procedures

The project was advertised during conference presentations, via posters, and word of mouth among conference delegates. Volunteers for the project were asked to complete the short questionnaire and participate in a 50-minute focus group discussion.

### Data Analysis

The Statistical Package for the Social Sciences (SPSS), version 23.0, was used for analysis of the quantitative and demographic data. Mean and standard deviation, or median and interquartile ranges were reported as appropriate, in addition to percentages, minimums, and maximums. Qualitative focus group data were transcribed verbatim. A thematic analysis based on a 6-step approach—data familiarization, coding, identifying themes, reviewing themes, defining and naming themes, was conducted by 2 authors (LR & BW).<sup>18</sup> Consensus on the final themes and definitions was reached by discussion.

**Table 2.** Paramedic Perspective on Psychosocial Needs of Older Patients.

Question	Median (IQR)
Older patients in the out-of-hospital setting often have needs beyond the physical.	4 (4-4)
As a paramedic . . .	
I am able to recognize the psychosocial needs of older patients.	3 (3-3)
I am able to meet the psychosocial needs of older patients.	2 (2-3)
I do not have the time to meet the psychosocial needs of older patients.	3 (2-3)
I do not have the resources to meet the psychosocial needs of older patients.	3 (2-3)
I do not have the training to meet the psychosocial needs of older patients.	3 (2-4)
I would like to do more for my older patients.	4 (3-4)
I often transport older patients to hospital as there is no alternative.	3 (3-4)
I would like to receive more training in the resources available for older patients.	3 (3-4)

Note. IQR = interquartile range.

### Ethics

Ethics approval was granted by Monash University Human Ethics Research Committee (MUHREC): CF15/3293 – 2015001394.

## Results

### Participant Demographics

All 14 participants completed both the survey and participated in the focus groups. Of the participants, 7 (50%) were female and the mean (SD) age was 42.93 (8.86) years. The majority of paramedics (8 of 14; 57%) worked for Ambulance Victoria, with the remainder spread across other national and international ambulance services. They were very experienced paramedics with 10 (71%) having 10 or more years of experience, and most (12 of 14; 86%) had completed some course work related to geriatrics as part of their training. On a Likert scale of 1 (not experienced) to 10 (very experienced), paramedics rated themselves highly, mean (SD) = 7.93 (1.07) (Table 1).

### Quantitative Results

All participants (14 of 14; 100%) agreed or strongly agreed that older patients have needs beyond the physical. When asked whether they were able to meet the psychosocial needs of older patients, 10 (71%) disagreed. All paramedics (14 of 14; 100%) agreed or strongly agreed that they would like to do more for older patients (Table 2).

### Qualitative Results

The focus group discussions revealed themes which have been grouped under 4 headings. Due to the anonymous nature of the questionnaires and focus groups, where direct quotes are included, participants were identified by participant number only.

**Psychosocial care and support issues.** Older patients often require care and support in one, or a combination, of categories: physical, psychological, social, and emotional. Examples of psychosocial issues paramedics have encountered include loneliness, anxiety, fear, grief, depression, neglect, abuse, self-care issues, care of pets, loss of confidence, and lack of social and support networks. They also indicated that these issues were rarely in isolation and straightforward, but were often coupled with broader longer term physical health and social support issues.

. . . acute case of grief and loss. (P10)

. . . extreme isolation where they literally have nobody, no family, no services . . . and they call us for a reasonably minor issue . . . (P2)

. . . started as a physical condition that developed into an emotional anxiety . . . (P5)

. . . loneliness . . . just wanted to sit down and have a cup of tea. (P1)

**Addressing psychosocial issues.** Paramedics spoke about what they can do for these psychosocial issues, such as transport, referral, contact services and/or family directly, handover details to other health care professionals, and provide assistance with the current minor physical issue. They also described the importance and value of the “small stuff.” A caring demeanor, touch on the hand/shoulder, cup of tea, and taking time to listen can all have a great therapeutic effect. The consensus, however, was that they were rarely able to fully address a patient’s psychosocial issues.

. . . if they just need a bit more support, and then you change a few things, or get someone out to change the way something happens so she can manage on her own . . . (P4)

. . . being nice to people, being compassionate and holding nanna’s hand . . . (P2)

. . . they are in a vulnerable state that such little caring things . . . had much more of a therapeutic effect . . . (P11)

**Barriers to addressing psychosocial issues.** Paramedics said they would often like to do more; however, given the often complex, multifactorial, and long-term nature of these issues, they did not have the time, knowledge, or resources necessary.



They all admitted to taking patients to hospital when it was most probably not required, due to duty of care and a lack of alternatives. They also suggested that a percentage of paramedics, particularly those with less experience, may not actually recognize these issues due to their focus on somatic conditions. Another interesting finding was the issue of compassion fatigue, with some paramedics unable to invest as much emotionally of themselves anymore. Therefore, to protect themselves, they do not delve into such issues when assessing patients.

... issues are normally far bigger ... I don't have the capacity to fix that in one sitting ... (P3)

... are focused on the acute emergency and they have not recognised that there is actually more going on ... (P10)

... I am compassion fatigued, call it burn out, call it survival ... (P8)

**Solutions.** Paramedics suggested that the solutions to resolving the barriers to addressing psychosocial needs were education and resources. Paramedics need to be better educated about the psychosocial issues facing older people and the resources available to assist them. More resources and better access to them, particularly out of hours, were also highlighted. Examples discussed were extended care paramedic roles, referral services, and resource cards with relevant referral contact numbers.

... organisational support ... low acuity pathway ... protocol ... algorithm ... when and how you leave people at home ... (P6)

... knowing what options you have available ... (P10)

... a matrix ... what each hospital has in terms of services ... what's in your local area ... (P14)

... a learning package ... for the service. (P3)

... humanise so they no longer become the old person ... (P5)

## Discussion

The results suggest that paramedics recognize there is a wide array of psychosocial issues affecting older patients. They also recognize that these issues are complex and often beyond what they can achieve within the confines of their role; however, they would like to do more and feel education and greater resources are needed.

In relation to recognition of psychosocial issues among older patients, there appear to be 3 types of paramedics: those who do, those who do not, and those who do not want to. Those who do recognize psychosocial issues tend to be more experienced and pick up on environmental cues as well as ask pertinent questions of the patient. This is because they

have a greater understanding of the biopsychosocial model of care due to experience and understand the benefit of addressing broader issues beyond somatic complaints.<sup>19</sup> The focus group participants, who were all relatively experienced paramedics, felt that those with less experience are often so focused on the clinical findings and somatic conditions that they overlook the psychosocial cues and line of questioning.<sup>5</sup> As paramedics become more familiar and confident assessing and managing patients, they will be more likely to explore beyond the physical and obvious findings. There is also a suggestion that novice paramedics, who are generally in their early 20s, lack understanding, and the ability to communicate effectively with older patients.<sup>20</sup> Finally, providing care and compassion to patients in crisis on a daily basis can take an emotional and psychological toll on paramedics.<sup>21</sup> This can lead to some paramedics experiencing compassion fatigue and choosing consciously, or subconsciously, to not emotionally invest themselves into the complex psychosocial issues of patients as a self-protective mechanism.<sup>21</sup>

All participants agreed the psychosocial issues affecting older patients are complex in nature and are often intertwined with physical ailments. The biopsychosocial model of care attests to the fact that these facets are linked and impact each other and the patient as a whole.<sup>19</sup>

Social determinants of health can include socioeconomic status, physical environment, living conditions, family and social networks, lifestyle, and behavior.<sup>22</sup> Paramedics are uniquely placed to see people in their environment and recognize and investigate social determinants of health.<sup>17</sup> While it is important for paramedics to investigate and consider such social issues, they are often complex, multifactorial, and can be long term. All focus group participants agreed that they would like to do more for these problems but felt hamstrung by lack of expertise, resources, and time available on an emergency call.

Perhaps where paramedics can have greater impact in a shorter time frame is on the psychological and emotional factors affecting the patient's physical condition. Compassionate care and reassurance can reduce stress and anxiety and have a positive effect on physiological parameters such as heart rate, respiratory rate, and pain.<sup>23-26</sup> The focus group participants discussed that small things such as touch, tone of voice, posture, listening, showing empathy, and providing a confident knowledgeable approach can all greatly impact the patient's condition and overall well-being. Conversely, providing definitive treatment for physical symptoms can alleviate or lessen psychological symptoms such as fear and anxiety.<sup>27</sup> Paramedics practicing holistic care can therefore provide better quality of care than those solely focused on the biomedical model of care.<sup>28</sup>

Paramedics are aware of the barriers to addressing some psychosocial issues and have considered solutions to address such barriers. One such solution was greater education not only in the undergraduate setting but also for qualified paramedics through professional development. They were highly

supportive of initiatives that “humanize” older people, which help novice paramedics see older patients as “people” rather than ailments. You will often hear paramedics and other health care professionals handover a patient with a statement similar to this: “This is a 72yo male with chest pain” rather than “This is Mr Francis. He is 72yo and is currently suffering from chest pain. He is also very anxious and distressed due to losing his wife to cancer earlier this year.” A name, and one extra sentence, humanizes this patient leading to greater exploration and care regarding his emotional, psychological, and social needs, in addition to the physical. Participants suggested education including aged care placements, community placements and volunteering; any opportunity for students to have more interaction with older patients. The literature also supports that educational interventions involving direct contact with real, independently living older people are the most effective way to improve student attitudes and behavior toward older people.<sup>29</sup>

In addition to education of paramedics, the participants also suggested more resources need to be made available to be able to address these issues. Several Australian and international ambulance services employ extended care or community paramedics who are able to provide greater in community assessment, treatment, referral, and support.<sup>30</sup> These roles allow paramedics greater time and scope of practice to manage patients in their homes as opposed to transporting to hospital. Referral services which provide a more suitable alternative to paramedic attendance or transport are also expanding.<sup>31</sup>

A final suggestion was the development of a resource card for paramedics who are often unaware of what other services are available. Support services have been shown to help older adults remain in their own environment and maintain a higher quality of life for longer.<sup>32</sup> Resource cards could include contacts for local services that provide geriatric assessments, home help, meals on wheels, etc. Depending on the situation, paramedics could contact the services on the patient’s behalf or leave relevant details with the patient or family for them to contact. Patients with psychosocial issues not requiring transport to hospital could therefore be cared for and supported in their own environment.

### Limitations

This study was limited by the participants all being relatively experienced and sharing similar views, while less experienced paramedics could have varying views. In addition there was potential selection bias with paramedics attending the conference likely to be more professionally aware, reflective, and up to date with contemporary issues.

### Conclusion

Paramedics are in a unique position to observe and assess patients in their normal environments and gather firsthand

information about determinants of the patient’s health. Paying due attention to the biopsychosocial issues assists paramedics to assess and treat patients holistically and provide the best quality of care. More education is required to increase paramedic awareness of psychosocial issues and the impact these have on chronic health conditions and emotional well-being. Awareness of resources and support services available to older patients would also be valuable to paramedics to avoid unnecessarily transporting some patients to hospital.

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### 3.3 Summary

This study found that experienced paramedics are very aware of the psychosocial issues impacting older adults and that they encounter them frequently. They described cases where older patients were suffering from loneliness, anxiety, fear, grief, depression, neglect, abuse and lack of social and support networks. They have found that older patients sometimes call for a more physical condition that can be traced back to, or influenced by these psychosocial factors. They were all very conscious of the fact that care of older adults with complex multidimensional issues is challenging in the constraints of an emergency paramedic attendance.

They expressed frustration at not being able to do more and felt bound by time, lack of knowledge and resources. Community or extended care paramedics, geriatric professional development workshops, treat and refer algorithms and resource cards were postulated as solutions.

The experienced paramedics also discussed how psychosocial factors can be overlooked by novice paramedics whose primary focus is on somatic complaints. For example a novice assessing a patient experiencing chest pain may not recognise or investigate possible social or psychological causes and focus solely on the biomedical causes. Experienced paramedics speculated this was due to inexperience (life and clinical) and could be improved through undergraduate education. In addition to traditional teaching methods they suggested strategies included geriatric placements, community placements and any experience which humanised patients.

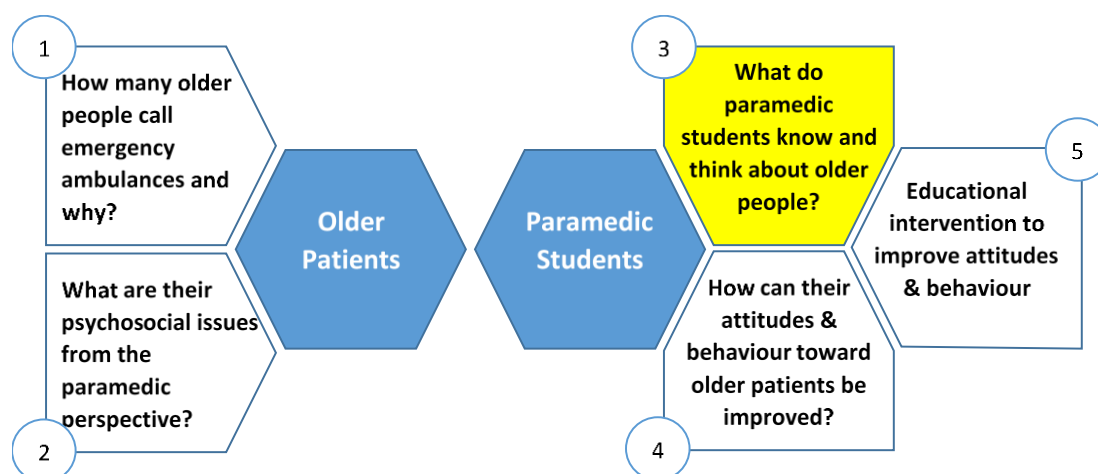
This study thus led to Chapter 4. If experienced paramedics feel graduates/novice paramedics are under recognising and managing the psychosocial issues of older patients, as educators we need to do something about this. Before designing or employing an educational strategy however, it is important to know what current undergraduate paramedic students already know and think about older people.

## Chapter 4: Experience, knowledge and attitudes of paramedic students toward older people

### 4.1 Overview

Chapter 3 revealed that experienced paramedics reported some difficulty in assessing and managing complex and long term psychosocial issues impacting older patients in the out-of-hospital environment. They also highlighted that new graduates and inexperienced paramedics are deficient in their ability to recognise and manage such issues as their focus is skewed toward somatic conditions and clinical skill mastery.

In order to address this imbalance it is first prudent to gain a baseline understanding of undergraduate paramedic experience with, knowledge of, and attitudes toward older people.



**Figure 4.3 Core chapter progression**

This cross-sectional study aimed to:-

1. Gain an understanding of the current level of paramedic student experience with, knowledge of and attitudes toward older people.
2. Investigate the relationship between experience, knowledge and attitudes.

Supplementary information associated with this chapter can be found in the appendices.

- MUHREC ethics approval (Appendix H)
- Demographic and experience survey (Appendix I)
- Attitudes towards older adults survey (ASD) (Appendix J)
- Knowledge of older adults survey (FAQ 2) (Appendix K)

The following paper, 'Experience, knowledge and attitudes: Are paramedic students prepared to care for older patients?' was published in Educational Gerontology in 2015.

#### Journal Metrics: Educational Gerontology

Impact Factor (IF)	Scimago Journal Ranking (SJR)
0.674 (2016)	0.357 (Q2)

## 4.2 Publication



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## Experience, knowledge and attitudes: Are paramedic students prepared to care for older patients?

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### ABSTRACT

As the population ages, so does the number of older patients encountered by paramedics. It is vital that paramedics are adequately prepared to meet the unique and growing needs of these patients. Experience and education play key roles in the formation of attitudes that impact behavior, and ultimately patient care. The aim of this study was to determine the level of student paramedic experience with knowledge of, and attitudes toward, older adults and to examine the relationship between these factors. This was a cross-sectional study utilizing three paper-based questionnaires; Experience with Older Adults Questionnaire, Australian Facts on Aging Quiz 2 (FAQ2), and Aging Semantic Differential (ASD). Of the 871 paramedic student participants, 79% had an oldest living grandparent 65 years old or above, and 63% had encountered older adults on clinical placement. The mean (*SD*) score for the FAQ2 was 12.7 (3.0) out of a possible 25, indicating a low level of knowledge about older people. The mean (*SD*) score for the ASD was 120.3 (17.77), indicating slightly positive attitudes toward older adults. Knowledge ( $\beta = -0.06$ ;  $p = .058$ ) and experience ( $\beta = -0.06$ ;  $p = .058$ ) had weak associations with attitudes. Student paramedics have some prior experience with older adults, relatively low knowledge and generally positive attitudes. There is some association between these factors; however, the impact on patient care requires further investigation. Paramedic educators should strive to provide students with broad quality experiences and education that increases awareness and understanding of older people.

As our population ages, so too does the demand on health care services. This is no more evident than in the out-of-hospital setting; paramedic attendances to older adults in Australia increased dramatically over the last 20 years (Clark & FitzGerald, 1999; Lowthian et al., 2011, 2011). Therefore, it is imperative that paramedics are adequately prepared to meet the unique needs of this growing patient cohort. Preparation should center on the formation of positive attitudes towards older adults because positive attitudes are associated with the provision of quality patient care (Hanson, 2014; Pope, 2012). The relationship between attitudes and behavior has been theorized by many. Ajken's *Theory of Planned Behavior* proposes that behavior is determined by attitudes, subjective norms, and perceived behavioral control (Ajken, 1991). Attitudes influence how information is interpreted, how knowledge is acquired, and it ultimately affects behavior (Evers, Ploeg, & Kaasalainen, 2011). Experience and knowledge acquisition in the undergraduate years can play a key role in the formation of these attitudes and, ultimately, lead to better patient care for older patients.

Undergraduate paramedics gain experience through their education and clinical placements; however, they also bring previous experiences with them. Prior experience can include social

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interaction with older family members or professional interaction in workplaces. Experience with older adults in a personal or professional capacity can have a bidirectional influence on knowledge and attitudes that ultimately affect behavior. For example, Brown, Nolan, Davies, Nolan, & Keady's (2008) study of 718 nursing students found that the majority of students did not enter with negative attitudes toward older adults; whereas Reuben, Fullerton, Tschann, and Croughan-Minihane's (1995) study of 554 medical students found they had already formed negative attitudes toward older people prior to commencing their studies. These findings indicate that attitudes vary between cohorts, which could be due to prior experience and/or the tool used to evaluate these attitudes. While educators cannot alter prior experiences of students, they can gather information about them to develop an understanding of their student's current level of knowledge. Educators can also identify gaps and common misconceptions held about older people that can influence attitudes.

While more frequent experience and contact with older people may lead to more positive attitudes (Caspi, 1984), the actual quality of interactions has a greater impact on attitudes than the quantity (Allan & Johnson, 2008; Bousfield & Hutchison, 2010; Schwartz & Simmons, 2001). For example, a survey of 62 undergraduate students from a variety of courses found that high-quality contact (self-reported favorable experiences) with older people predicted more positive attitudes towards older people than frequent contact (Schwartz & Simmons, 2001).

In the paramedic clinical placement setting, where undergraduate students gain experience with older adults and continue the formation of attitudes, the frequency and quality of interactions can be highly variable (O'Meara, Williams, & Hickson, 2015). The amount of time spent in contact with older adults will vary greatly between students depending on the location of their placements and the types of cases they attend. Students may attend placements in rural settings and have little patient contact at all, or they may attend urban placements and encounter many or few older patients on any given day. In addition, given that paramedic work involves attending medical emergencies, it is more likely that when students do encounter older adults they encounter people who reside in care facilities or are in poor health, rather than independently-living and well older adults. So while paramedic clinical placements offer students experience with older adults, they do pose the risk of perpetuating a biased stereotypical view that all older people are weak and frail (Fitzgerald, Wray, Halter, Williams, & Supiano, 2003). Appropriate socialization and training at multiple sites with both well and ill older adults is, therefore, critical to providing a balanced perspective and improved knowledge and attitudes (Fitzgerald et al., 2003).

While experience is intrinsically related to attitudes, the acquisition of new knowledge about a subject is one of the most effective ways of changing attitudes (Schwartz & Simmons, 2001). Knowledge has long been associated with better attitudes toward older people (Angiullo, Whitbourne, & Powers, 1996; Harris & Dollinger, 2001; Yu & Chen, 2012). Providing students with accurate information about aging and older adults allows them to form more realistic attitudes based on fact (Angiullo et al., 1996; Harris & Dollinger, 2001). Providing relevant knowledge alone, however, is not sufficient to change attitudes toward older adult care (Fitzgerald et al., 2003). Education coupled with broad experience with older adults, including ill and well older adults, in a variety of settings is the most effective method for eliciting positive attitudinal change (Lovell, 2006).

Attitudes are said to be distinct from knowledge or beliefs as they are based on an evaluation of an object with a degree of favor or disfavor (Eagly & Chaiken, 1993). Positive attitudes toward older people developed through knowledge and experiences are often associated with better patient care (Hanson, 2014; Pope, 2012). Research in the nursing discipline highlights the link between increased knowledge and education being influential components in shaping the development of desirable positive attitudes, which in turn, influence patient care and outcomes (Evers et al., 2011; Hanson, 2014). Conversely, negative or ageist attitudes have the potential to adversely affect the quality of care provided (Gonzales, Tan, & Morrow-Howell, 2010; Hanson, 2014). A 2014 systematic review examining the effect nurse attitudes

had on elder care found that student nursing staff predominantly portray a negative attitude towards older people, which negatively affects care (Hanson, 2014). This is reported to be primarily due to a lack of knowledge of gerontology and the ageing process (Hanson, 2014).

Armed with a better understanding of the level and relationships between student knowledge, attitudes, and experience, educators are better placed to tailor programs to fill the gaps, rectify inaccurate assumptions, and provide the foundations for the provision of quality care to older adults. The aim of this study was therefore, to determine the level of student paramedic experience with, knowledge of, and attitudes toward older adults. Further, it will examine the relationship between these factors and determine if knowledge and experience are associated with positive attitudes.

## Methods

### Design

This was a cross-sectional study utilizing paper-based questionnaires.

### Participants

The participants were students enrolled in any year level of an undergraduate paramedic course from one of four universities in Victoria, Australia: Monash University (Monash), Victoria University (VU), La Trobe University (La Trobe) and Australian Catholic University (ACU). To be eligible, students were required to be in attendance at designated lectures at each respective university campus.

### Instrumentation

Three questionnaires were utilized to gather data on the participants' experience with, knowledge of, and attitudes toward older adults, and to explore the relationships between these elements.

#### *Experience—Experience with older adults questionnaire*

This questionnaire was developed by the investigators to ascertain the amount of experience students had with older adults at the time of completing the questionnaire. It was based on other questionnaires aimed at eliciting similar information (Gellis, Sherman, & Lawrance, 2003; Gonçalves et al., 2011). Experience was grouped into three categories: personal (such as experience with family members); professional (employment and/or volunteer related experience); and educational (courses about older adults and placements). For the majority of the 12 questions, students were asked to select a response and tick the appropriate box. The final question asked students to self-rate their experience level with older adults on a scale of 1 (*not experienced*) –10 (*very experienced*).

#### *Knowledge—The Australian Facts on Aging Quiz 2*

The Facts on Aging Quiz (FAQ) is a brief, reliable, and easily administered test of factual knowledge on aging (Palmore, 1977). Over the past three decades, it has become the most widely used tool for assessing knowledge of aging and the aged across cultures (Allan & Johnson, 2008; Harris & Changas, 1994; Luszcz, 1982). It was originally developed and validated by Palmore in 1977, but since then has undergone several revisions, including three true/false versions, two multiple choice versions, and a mental health version (Harris & Changas, 1994). The revisions are due in part to the fact that as time passes facts become outdated and new research findings are produced (Miller & Dodder, 1980). The FAQ also requires population specific adaptations, which have occurred for the Chinese, New Zealand, Canadian, and Australian contexts (Matthews, Tindale, & Norris, 1984; Pachana, Helmes, & Gudgeon, 2013; Pennington, Pachana, & Coyle, 2001; Wang et al., 2010). The Australian version of the Facts on Aging Quiz 2 (FAQ2) consists of 25 multiple choice questions based on current facts in the Australian context; therefore, FAQ2 was used in this study (Pachana et al., 2013). Participants are awarded a point per correct answer with higher scores indicating greater knowledge.



### **Attitudes—Aging Semantic Differential**

The Aging Semantic Differential (ASD) designed by Rosencranz and McNevin (1969) is the most widely used instrument to assess stereotypical attitudes towards older people (Gonzales et al., 2010). It utilizes a 7 point semantic differential scale questionnaire consisting of 32 polar adjectives across three dimensions. A total score range of 32–224 is possible with lower scores indicating better attitudes. The ASD can also be divided into three subscales. The first dimension, *Instrument—Ineffective* (range 9–63), is the potency factor, e.g., strong-weak, busy-idle, productive-unproductive, etc. The second dimension, *Autonomous—Dependent* (range 9–63), is the activity factor, e.g., independent-dependent, organized-disorganized, decisive-indecisive, etc. The third dimension, *Personal Acceptability—Unacceptability* (range 14–98), is the evaluative factor, e.g., pleasant-unpleasant, friendly-unfriendly and cooperative-uncooperative (Rosencranz & McNevin, 1969). The ASD is regarded as a reliable tool for its purpose (Finnerty-Fried, 1982). A reliability coefficient above the 0.95 level and a split-half Spearman Brown of  $r = .89$  to  $.95$ , attests to the tool's internal consistency (Ettinger, Beck, Kerber, & Scandrett, 1982).

### **Questionnaire piloting**

The three questionnaires were combined into one document and piloted with four academic staff members who had expertise in questionnaire design and analysis; two graduate students undertaking honors study also participated. The average total time for completion was 15 minutes. Minor issues such as repeated words, sequencing errors, and inconsistencies between intervals on some options were noted and amended.

### **Procedures**

The questionnaires were distributed in March 2015 to eligible paramedic students who were in attendance during timetabled lectures across the four universities. Students were given a brief overview of the project and informed that participation was voluntary and anonymous. Completed questionnaires were collected by an independent member of staff and delivered to the research team.

### **Data analysis**

The Statistical Package for the Social Sciences (SPSS Version 20, IBM Corp, Armonk, NY) was used for storage, tabulation, and analysis of the quantitative and demographic data. Mean and standard deviation or median and interquartile ranges were used to report data as appropriate. Parametric tests (One-way ANOVA and  $t$  tests) were conducted to compare means of the FAQ2, ASD and ASD subscales between groups. Effect size was calculated using eta squared, and post hoc comparisons were conducted using the Least Significant Difference (LSD) test. A Pearson correlation test was conducted to determine strength and direction of the relationship between FAQ2, ASD, and level of experience. Multiple regression analyses were performed to identify associations between self-rated level of experience, knowledge (FAQ2), and attitudes (ASD).

### **Ethics**

Monash University Human Research Ethics Committee (MUHREC) granted ethics approval for this project. Ethics was also sought and granted from the other participating universities' (ACU, La Trobe, and VU) ethics committees.

## Results

### *Participant demographics*

Of the 1547 students enrolled in undergraduate paramedic courses across the four universities, 895 attended the designated lectures (58%). Of those students, 12 did not complete the questionnaires. Another 12 questionnaires exhibited evidence of large portions of nonrandom missing data and were, therefore, excluded. The demographics of those excluded were no different than those of the included participants. A total of 871 (97%) participants were included in this study.

The median age was 21 (IQR 18, 25) years, with 44% (384/871) being 20 years or less. Of the participants, 56% (488/871) were female, 41% (354/871) were from VU, and 47% (409/871) were in first year. See Table 1 for a complete summary of participant demographics.

**Table 1.** Demographics and experience with older adults ( $N = 871$ ).

Characteristic	<i>N</i>	%
Age		
≤20	384	44
21–23	231	27
≥24	256	29
Gender		
Female	488	56
Male	383	44
University		
Monash	209	24
La Trobe	96	11
VU	354	41
ACU	212	24
Year level		
First	409	47
Second	268	31
Third	194	22
Oldest living parent		
< 65	742	85
≥ 65	120	14
N/A or don't know	9	1
Oldest living grandparent		
< 65	19	2
≥ 65	684	79
N/A or don't know	168	19
≥ 65 Lived/S WITH YOU		
Yes	170	20
No	701	80
Geriatric coursework		
No	455	52
Part of unit	330	38
Entire unit	73	8
Entire course	13	2
Geriatric placements		
Yes	212	24
No	659	76
Contact with 65 on clinical placement		
Yes	551	63
No	320	37
Work experience ≥ 65 (paid/voluntary)		
Yes	396	46
No	475	54
Experience (Self-rated level)		
(Low) 1–4	216	25
(Moderate) 5–6	260	30
(High) 7–10	395	45

### Experience and education

Only 14% (120/871) of the participants had an oldest living parent 65 years old or above; 79% (684/871) had an oldest living grandparent 65 years old or above, and 20% (170/871) had an adult 65 years old or above live with them full-time at some stage. In regard to education, 52% (455/871) had no specific geriatric coursework, while 38% (330/871) had participated in part of a unit of study including aging-related education. About one quarter, 24% (212/871), had participated in specific geriatric clinical placements, while 63% (551/871) had encountered older adults on placement. Paid or voluntary work experience with older adults had been undertaken by 46% (396/871) of the participants. The overall median for self-rated level of experience interacting with older adults, on a scale of 1 (*Low*) to 10 (*High*), was 6 (IQR 5, 8), with 45% (395/871) rating themselves as having a high (7–10) level of experience (Table 1).

### Knowledge of older adults

The overall mean (*SD*) score for the FAQ2 was 12.7 (3.0), with scores ranging from 3 to 22. A one-way ANOVA showed there was a statistically significant difference between universities [ $F(3, 867) = 34.15, p < .001, \eta^2 = 0.11$ ]. Post hoc comparisons indicated that both ACU ( $M = 11.2, SD = 2.9$ ) and La Trobe's ( $M = 14.3, SD = 3.0$ ) mean scores were significantly different from the other universities.

There was also a statistically significant difference between the age groups [ $F(2, 868) = 4.47, p = .012, \eta^2 = 0.01$ ]. Post hoc comparisons indicated that the 21–23 year old age group mean scores ( $M = 13.2, SD = 2.9$ ) were significantly different from the other two age groups;  $\leq 20$  ( $M = 12.5, SD = 3.0$ ) and  $\geq 24$  ( $M = 12.5, SD = 3.0$ ).

There was no statistically significant difference between year levels; [ $F(2, 686) = 2.04, p = .130, \eta^2 = 0.01$ ], or gender;  $F(1, 869) = 0.25, p = .619, \eta^2 = 0.01$ . The FAQ2 achieved a Cronbach alpha of .52, indicating poor internal consistency (DeVellis, 2012). See Table 2 for the full distribution.

### Attitudes toward older adults

The overall mean (*SD*) score for the ASD was 120.3 (17.77), with scores ranging from 50 to 180. A one-way ANOVA examining the differences between universities approached statistical significance [ $F(3, 867) = 2.57, p = .053, d = 0.01$ ]. Post hoc comparisons indicated that VU ( $M = 118.8, SD = 18.0$ )

Table 2. Australian Facts on Aging Quiz results (max. 25).

University & Year level	<i>M</i>	<i>SD</i>	Range	Sig. ( <i>p</i> )	$\eta^2$
Overall ( <i>N</i> = 871)	12.7	3.0	3–22		
University				<.001	0.11
Monash	12.9	2.0	5–18		
La Trobe	14.3	3.0	4–22		
VU	13.1	3.1	3–20		
ACU	11.2	2.9	5–17		
Year level				.130	0.01
First	12.8	3.4	4–22		
Second	12.4	2.7	5–20		
Third	12.8	2.4	3–18		
Gender				.619	0.00
Female	12.7	2.9	3–20		
Male	12.8	3.1	4–22		
AGE				.012	0.01
$\leq 20$	12.5	3.0	4–20		
21–23	13.2	2.9	4–20		
$\geq 24$	12.5	3.0	3–22		

Statistically significant,  $p < .05$ ; Effect size ( $\eta^2$ ), 0.01 = small, 0.06 = medium, 0.14 = large.

had significantly different mean score than Monash ( $M = 122.0$ ,  $SD = 16.4$ ); ( $p = .038$ , 95% CI =  $-6.24$ ,  $-0.17$ ) and ACU ( $M = 122.0$ ,  $SD = 18.0$ ); ( $p = .041$ , 95% CI =  $-6.17$ ,  $-0.13$ ). Mean score comparisons between year level, age, and gender revealed no statistically significant differences between groups.

An independent  $t$  test showed a statistically significant difference between genders in the Autonomous-Dependent subscale ( $p = .030$ ). There was also a statistically significant difference in the Personal Acceptability-Unacceptability subscale between universities [ $F(3, 867) = 4.03$ ,  $p = .007$ ]. Post hoc comparisons indicated that VU ( $M = 47.5$ ,  $SD = 9.7$ ) had significantly different mean scores than Monash ( $M = 50.0$ ,  $SD = 8.5$ ); ( $p = .002$ , 95% CI =  $-4.13$ ,  $-0.9$ ) and ACU ( $M = 49.6$ ,  $SD = 9.9$ ); ( $p = .010$ , 95% CI =  $-3.73$ ,  $-0.5$ ). All other comparisons of mean scores within the subscales were not statistically significant. See Table 3 for a complete summary.

The ASD had good overall internal consistency, with a Cronbach alpha coefficient of .88. The subscales also had acceptable or good internal consistency, with Cronbach alphas of .70, .71 and .82.

### Correlation between experience, knowledge, and attitudes

The relationship between self-rated level of experience with older adults, knowledge of older adults (FAQ2), and attitudes toward older adults (ASD) was investigated using Pearson product-moment correlation coefficient. While correlations were negligible (between .05 and .07) they were in a positive direction with ASD scores decreasing indicating more positive attitudes, as knowledge and experience increased.

### Regression analysis

Three multiple regression models were performed. The first and second were to investigate the predictors of self-rated level of experience and knowledge (FAQ2), respectively. Five factors;  $\geq 65$  lived/s with you, geriatric course work, geriatric placements, contact on placement and work experience with  $\geq 65$  were included in these models. In model 1, contact with  $\geq 65$  on placement

**Table 3.** ASD total and subscale results (lower scores represent more positive attitudes).

	ASD Subscales							
	ASD total (Score range 32–224) (Neutral = 128)		Instrument- ineffective (Score range 9–63) (Neutral = 36)		Autonomous- dependent (Score range 9–63) (Neutral = 36)		Personal acceptability-unacceptability (Score range 14–98) (Neutral = 56)	
	M (SD)	$p$	M (SD)	$p$	M (SD)	$p$	M (SD)	$p$
Overall (N = 871)	120.3 (17.8)		38.1 (5.7)		33.5 (6.0)		46.7 (9.5)	
University								
Monash	122.0 (16.4)	.053	38.3 (5.4)	.462	33.7 (6.2)	.221	50.0 (8.5)	0.007
La Trobe	118.2 (18.7)		37.7 (5.9)		32.4 (6.3)		48.1 (9.4)	
VU	118.8 (18.0)		37.8 (5.9)		33.5 (5.8)		47.5 (9.7)	
ACU	122.0 (18.0)		38.5 (5.5)		33.9 (5.9)		49.6 (9.9)	
Year level								
First	121.3 (17.4)	.187	38.1 (5.7)	.973	33.8 (5.9)	.084	49.5 (9.5)	0.054
Second	118.8 (19.3)		38.1 (5.9)		32.8 (6.6)		47.9 (9.7)	
Third	120.1 (16.2)		38.2 (5.4)		33.9 (4.9)		48.1 (9.1)	
Gender								
Female	120.4 (17.2)	.832	37.9 (5.5)	.377	33.9 (5.7)	.030	48.6 (9.3)	0.664
Male	120.1 (18.5)		38.3 (5.9)		33.0 (6.3)		48.8 (9.7)	
Age								
$\leq 20$	120.5 (18.0)	.935	38.1 (5.6)	.860	33.6 (6.2)	.798	48.9 (9.7)	0.787
21–23	120.1 (17.2)		38.3 (5.8)		33.6 (5.8)		48.3 (9.0)	
$\geq 24$	120.0 (18.1)		38.0 (5.7)		33.3 (5.8)		48.8 (9.7)	

Statistically significant,  $p < 0.05$ .



**Table 4.** Summary of multiple regression analysis predicting experience & knowledge ( $N = 871$ ).

Predictors	Model 1: Experience (Self-rated level)		Model 2: Knowledge (FAQ)	
	F (5, 870) = 62.48; $R^2 = .27$		F (5, 870) = 1.52; $R^2 = .01$	
	Beta	<i>p</i>	Beta	<i>p</i>
≥ 65 Lived/s with you	-.08	.009	-.03	.450
Geriatric coursework	.15	<.001	0.10	.019
Geriatric placements	.08	.013	-.002	.949
Contact w/≥ 65 on clinical placement	.22	<.001	0.02	.599
Work experience ≥ 65 (paid/voluntary)	.32	<.001	0.01	.730

**Table 5.** Summary of multiple regression analysis predicting attitudes toward older people ( $N = 871$ ).

Predictors	Model 3: Attitudes (ASD)	
	F(2, 870) = 3.78; $R^2 = .01$	
	Beta	<i>p</i>
Experience (Self-rated level)	-.06	.058
Knowledge (FAQ)	-.06	.058

( $\beta = 0.22$ ;  $p < .001$ ) and work experience ( $\beta = 0.32$ ;  $p < .001$ ) were the most predictive factors of self-rated level of experience. The model explained 27% of variance (Table 4). In model 2, geriatric course work was the highest and only statistically significant predictor ( $\beta = 0.10$ ;  $p < .019$ ) of knowledge (FAQ2). This model explained only 1% of variance (Table 4). The third model investigated if the previous two independent variables (experience & knowledge) were predictive of attitudes (ASD). Knowledge ( $\beta = -0.06$ ;  $p = .058$ ) and experience ( $\beta = -0.06$ ;  $p = .058$ ) were only weakly associated with the model accounting for 1% of variance (Table 5).

## Discussion

The findings of this study highlight that paramedic students bring with them some prior experience with older adults. Prior experience is built upon and developed during the students' formative undergraduate education. In addition, paramedic students have poor knowledge about older adults and only marginally positive attitudes. A regression analysis also revealed an association between experience, knowledge, and attitudes.

In regard to experience, the year level was notable, with 47% being in first year. As the questionnaires were conducted at the beginning of the year, this influenced the fact that 52% had not participated in any specific geriatric education. Also, while 63% indicated they had encountered older patients on placement, any first year placements would have been minimal. In addition the quality of contact with older patients was not captured via this questionnaire, which is very important in the formation of attitudes (Allan & Johnson, 2008; Bousfield & Hutchison, 2010; Schwartz & Simmons, 2001). This also applies to the work experience with older adults, which almost half the participants reported.

Interestingly, only 20% of participants had an older adult live with them. In this instance, it is also not known if this experience is a positive or negative one. Having to care for a declining frail older relative and assist with daily living could lead to negative attitudes for some. Others may live with a vibrant, highly functioning relative, which could foster more positive attitudes (Caspi, 1984; Schwartz & Simmons, 2001; Reuben et al., 1995). So while this research captured levels of experience in various areas, it did not capture the quality of the experience that has a significant influence on the formation of attitudes toward older people.

The paramedic students had a mean of 12.7 (51%) correct answers on the FAQ2, indicating low levels of knowledge about the aged and aging. This is consistent with a study of 96 social work students who completed a similar version of the FAQ2 and achieved a mean score of 12.2 (49%

correct) (Gellis et al., 2003). Similarly, a Canadian study of 113 undergraduate students from various courses achieved a mean of 11.7 (47%) (Allan & Johnson, 2008). The only other known testing of the Australian FAQ with 151 first year psychology students resulted in a mean of 12.9 (52%) (Pachana et al., 2013). These results suggest that regardless of the FAQ version or type of undergraduate course, students do not do well on this test; therefore, they have low levels of knowledge about older people and aging.

There was little variation found in mean FAQ2 scores between gender, age group, and year level; however, one university (La Trobe) had a notably higher mean than the other universities. The fact that this university delivers a specific gerontology unit/subject and incorporates geriatric placements could account for this. Also worth discussing is the content of the FAQ2 items and whether they are measuring what we would like health care students to know about the aged and aging. Some general knowledge type questions about Medicare and Social Security (e.g., What percent of medical expenses for older people does Medicare pay?) have questionable relevance to paramedic practitioners, and such knowledge would not likely be learned in undergraduate education. So while the FAQ2 gave us an indication of what undergraduate paramedics know or do not know about older people, questions have been raised about the relevance of some of the items. Therefore, there are questions about the overall score as a valid way of measuring knowledge about aging.

With regard to attitudes, our results suggest paramedic students have slightly positive attitudes toward older adults with a mean of 120.3, which is just below the neutral point (128) on the overall scale. They also had slightly positive attitudes on the Autonomous-Dependent (independent, organized, decisive) and the Personal Acceptability-Unacceptability (pleasant, friendly, cooperative) subscales. On the Instrument-Ineffective subscale (strong, busy, productive) the attitudes were slightly negative, indicating students regard older people as slightly weak, idle, and unproductive. Regardless of age, gender, year level or university, however, the overall results and subscales results were very similar. Other studies have also reported comparable findings.

A study with 186 psychology students found them to have slightly positive attitudes on the Autonomous-Dependent and the Personal Acceptability-Unacceptability subscales and slightly negative attitudes on the Instrument-Ineffective sub-scale (Angiullo et al., 1996). A study of 81 nursing students also found they had slightly positive attitudes overall (Williams & Day, 2007), as did a study of a different cohort of 56 paramedic students (Ross, Duigan, Boyle, & Williams, 2014). A study of 96 social work students who completed a modified version of the ASD (with only 26 items as opposed to 32, and four subscales) found, however, that students had negative attitudes toward older adults overall and on three of the four subscales (Gellis et al., 2003). Similar to paramedic students though, the social work students were slightly positive on the Personal Acceptability-Unacceptability subscale (Gellis et al., 2003). So while there is some variation in the attitudes of undergraduate student attitudes toward older adults, generally speaking the results are all very similar. And even when opposing attitudes are found, the deviations from the neutral are very minor.

The ASD results raise uncertainty about the labelling of particular attitudes as negative and if such attitudes adversely affect patient care. Previous research suggests that better attitudes equate to better patient care; however, this may not always be the case based on the ASD adjectives. Take, for example, two of the polar adjectives: weak vs. strong and progressive vs. old-fashioned. Students scored highest on these items indicating poor attitudes. As people age their bone density and muscle mass decrease. This renders them not as strong as younger people and more prone to diseases, such as osteoporosis, and at risk of falls and fractures (Lovell, 2006). It, therefore, makes sense and is advantageous for health care students caring for older adults to be aware of this. Such awareness would encourage students to modify their practice and adequately support and assist older people when moving them from a stretcher to a bed, for example. Similarly, some older people are old-fashioned. This is understandably so because they were brought up and lived through different generations. A paramedic student who is aware and understanding of this may be better able to modify their interpersonal communication techniques to offer comfort and reassurance—thus



gaining trust and cooperation. So attitudes deemed negative based on the ASD results may not necessarily have a negative impact on patient care.

The final aim of this study was to examine the relationship between experience, knowledge, and attitudes, and determine if knowledge and experience are associated with positive attitudes. We found negligible linear correlation between any of the factors. However, the association that was present was in a positive direction: that better knowledge and self-rated level of experience was associated with more positive attitudes.

The regression analyses found that experience factors accounted for 27% of variance in self-rated experience level and only 1% in knowledge. This indicates that in this study experience with older adults at work, through placement, or living circumstances was predictive of higher self-rated experience levels. It appears that these experiences, regardless of the quality, increase confidence in interacting with older people, which was reflected in self-rated experience scores. The same was not true however for the FAQ2 scores, indicating that experience was not predictive of increase knowledge.

Finally the regression analysis to test experience and knowledge as predictors of attitudes accounted for only 1% of variance. This indicates that in this study at least more experience and knowledge does not equate to more positive attitudes. Other studies found support these findings. For example, Gellis et al.'s (2003) study of social work students found that the only predictor of positive attitudes toward older adults was a desire to work in gerontology. This predictor was not tested for in this study—given that paramedics do not specialize with particular cohorts of patients as other disciplines do. The Angiullo et al. (1996) study of psychology students, however, found that education had a more positive impact on attitudes than did experience. This was because the experience offered was with low functioning nursing home patients, which only perpetuated the negative stereotypes of older patients (Angiullo et al., 1996). These results in combination support the theory that education and experience alone are not sufficient to improve attitudes, but that education in combination with quality experience that is broad and balanced is the best method to improve attitudes toward older people (Gonçalves et al., 2011).

### **Implications**

The results of this project are not dissimilar to those investigating the knowledge and attitudes of other health care students. This suggests that the issues surrounding the acquisition of attitudes through education and experience are not unique to the paramedic discipline. Perhaps low levels of knowledge and neutral attitudes are influenced by age (high percentages of undergraduates are young); societal changes (young people interact less with older people than in previous generations); and/or the types of education and experiences provided to students. Whatever the reason, the common results warrant common action. All health care disciplines need to provide education and experiences that foster knowledge and positive attitudes toward older adults, which will improve patient care.

### **Limitations**

Limitations of this study include selection bias, as more motivated students could have been in attendance at lectures and completed the surveys. Additional limitations include self-report data and an inability to account for all previous experiences. This study was also limited by issues surrounding the tools used to measure knowledge and attitudes. While the FAQ is the most widely used tool to measure knowledge about aging, questions remain about its validity and reliability—and the Australian FAQ used in this study is yet to be fully evaluated. It is unclear whether this tool is the best measure of the type of knowledge health care students should have about older people. Similarly, the ASD is widely used. However, it has been criticized for being out of date with very old-fashioned adjectives used to describe people (Stewart, Eleazer, Boland, & Wieland, 2007).

Questions were also raised about the nature of attitudes being labelled negative or positive in the context of health care. Finally, while this study gathered information from students regarding their experience with older people, it did not gather or evaluate the quality of that experience, which would have strengthened the study.

## Conclusion

This study found that paramedic students bring prior experience with older people with them, both personal and professional. Students also gain new experiences through education and clinical placements. The variety and quality of these experiences is, however, unknown and require further investigating. Students' knowledge about older adults and aging is relatively low. However, almost half the participants were in their first month of their course. Therefore, they had not had placements or classes on aging, which may have impacted these results. Attitudes were generally positive, and further investigation is required to determine the impact that negative attitudes in some domains would have on patient care. Finally, this study found weak associations between experience, knowledge, and attitudes toward the elderly. For paramedic educators, the answers are unclear. But they should continue to strive to provide their students with quality experiences that are broad, and education that is balanced and increases awareness and understanding of older people. The optimal combination of these factors can only have a positive impact on attitudes and the provision of quality patient care to older adults.

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### 4.3 Summary

This study found that undergraduate paramedics had low levels of knowledge about older people, slightly positive attitudes toward them, and mixed levels of experience with them. There was also a slight association between experience, knowledge and attitudes. What was not investigated in this study however, was behaviour toward older patients and if and how experience, knowledge and attitudes impact behaviour. If the ultimate goal is patient care and satisfaction then behaviour toward patients is a key element. High levels of knowledge and positive attitudes are futile if they do not translate to behaviour and patient outcomes. It is important therefore to look beyond these baseline results and consider how these things translate to behaviour toward older people.

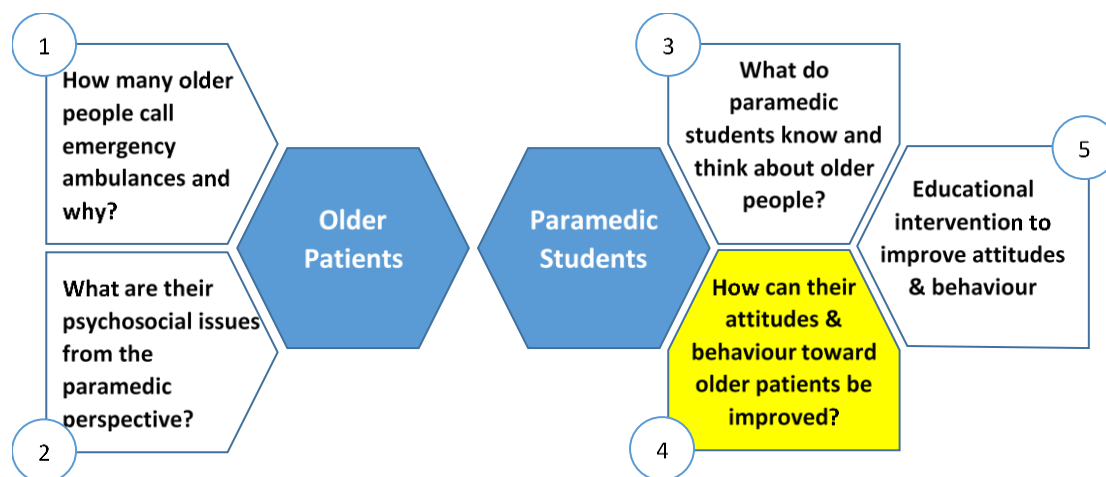
This study also highlights that while educators cannot change past experiences and influences in relation to older patients they can carefully consider the impact of experiences they offer in undergraduate programs. The discussion, which considered similar research, centred on the need for quality experiences over quantity. A balanced view of older people which includes experience with well independently living older adults in addition to institutionalised older people has optimal impact on knowledge and attitudes.

The next logical step was therefore to look beyond knowledge and attitudes to investigate behaviour toward older patients, and the type of experiences or education that fosters the development of desirable behaviour. Before investigating an educational intervention it was pertinent to examine the evidence available from previous studies by conducting a systematic literature review. Chapter 5 investigates educational interventions designed to improve health care student attitudes and behaviour toward older people. It presents the results of a systematic review evaluating the current evidence on this topic.

## Chapter 5: Systematic review of educational interventions to improve student attitudes and behaviour

### 5.1 Overview

The previous chapter has provided much insight into the experience, knowledge, attitudes of paramedic students toward older people. This coupled with Chapter 3, which highlighted some perceived deficiencies in novice paramedics' ability to recognise the needs of older patients and communicate effectively with them, suggests the need for targeted educational interventions at the undergraduate education level. Prior to implementing an intervention it is critical to investigate the current research to determine the most effective methods of developing and improving attitudes and behaviour toward older patients. Given the lack of research specific to paramedic education, and the similarities with other health care providers, this systematic review looked at health care students in general. It also sought to look beyond attitudes alone to include behaviour, as this is an end point where patient care can be observed.



**Figure 4.4 Core chapter progression**

This systematic review aimed to:-

1. Determine the effectiveness of educational interventions designed to improve health care student behaviours and/or attitudes toward older people.

Supplementary information associated with this chapter can be found in the appendices.

- Systematic review protocol paper (Appendix L)

NB. Slight variations to the protocol occurred prior to the full systematic review, most notably the data extrication and quality assessment tools. This was therefore included as an appendix only.

The following paper, 'Improving health care student attitudes toward older adults through educational interventions: a systematic review' was published in Gerontology & Geriatrics Education in 2016.

#### Journal Metrics: Gerontology & Geriatrics Education

Impact Factor (IF)	Scimago Journal Ranking (SJR)
N/A	0.496 (Q2)

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## Improving health care student attitudes toward older adults through educational interventions: A systematic review

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### ABSTRACT

Educational institutions should aim to positively influence the attitudes of future health care practitioners toward older patients to ensure the provision of quality patient care. This systematic review of the literature aims to determine the effectiveness of educational interventions designed to improve health care student behaviors and/or attitudes toward older people. The 29 studies included in this review utilized a variety of interventions, methods, and measurement tools. The most common type of educational intervention incorporated interaction with real patients. Few studies evaluated the impact of interventions on behavior; therefore, more observational studies are required. Overall interventions incorporating interactions with real patients who are independently living had a positive impact on student attitudes toward older adults. Clinically focused placements with patients who are ill may still have a place in the development of the patient-centered interview and assessment skills, along with improving confidence and competence, despite not having a favorable impact on attitudes.

### KEYWORDS

Attitudes; education; health care student; older adults; older patients

## Introduction

Quality and compassionate care should be the aim of all health care practitioners. To achieve this they must have not only an understanding of patient conditions and needs, but also have the attitude and willingness to provide such care. This is important with all patients, particularly older patients. Not only are older adult populations increasing around the globe, this group is more susceptible to declining health and independence (Oeppen & Vaupel, 2002). Excluding practitioners specializing in younger population groups, it is evident that current health care students will encounter large numbers of older patients, and that these patients will have varied and often multiple biopsychosocial conditions (Denton & Spencer, 2010; Vaupel, 2010). As attitudes are associated with quality of patient care (Chambers & Ryder, 2009; Cornwell & Goodrich, 2009; Courtney, Tong, & Walsh, 2000; Haidet et al., 2002; Hanson, 2014; Holroyd, Dahlke, Fehr, Jung, & Hunter, 2009) it is important to investigate how we are preparing our future practitioners to care for patients in this important and unique group.

Attitudes have long been associated with behavior. Ajzen's (1991) theory of planned behavior (TPB) suggests a causal relationship between attitudes, intentions, and behavior.



According to this theory, attitudes toward an object or group, such as older adults, will influence intentions and ultimately behaviour toward them. Positive attitudes toward older adults translates to favorable behavior toward them, whereas the opposite is true for negative attitudes. A meta-analysis of 185 independent empirical tests investigating the efficacy of the TPB provided support for the theory as a predictor of intentions and behaviour (Armitage & Conner, 2001). Although measuring behavior directly would provide the best evidence of behavior, this is challenging due the difficulties associated with measuring behavior. As an alternative, attitudes, which ultimately influence behavior, and have been shown as a predictor of intention, are a much more practical alternative for researchers to measure.

As attitudes influence intentions and behavior this then translates to patient care and outcomes. Negative or stereotypical attitudes toward older patients are associated with behaviors that negatively affect their care (Chambers & Ryder, 2009; Cornwell & Goodrich, 2009; Courtney et al., 2000; Haidet et al., 2002; Hanson, 2014; Holroyd et al., 2009). Stereotypical attitudes can reduce the likelihood of individualized care with all older adults regarded as being the same and therefore treated the same (Victor, 2010). Holding such views can also impair the health care providers' ability to accurately and impartially assess patients and their needs (Taylor, 2005). Views regarding older adults as weak, forgetful, or lacking independence can lead to behavior that perpetuates such traits and can also lead to undignified care (Baillie, 2007; Courtney et al., 2000). Examples of such behavior include speaking in a patronizing manner, using loud and childish speech, and making derogatory comments (Bond, Peace, Dittmann-Kohli, & Westerhof, 2007). Unfortunately poor patient care often borders on and can progress to neglect, mistreatment, and abuse. A recent systematic review of elder mistreatment in nursing homes found widespread issues ranging from psychological mistreatment such as failure to provide adequate social stimulation, violations of rights, inappropriate restraint, all the way through to physical neglect and abuse (Lindbloom, Brandt, Hough, & Meadows, 2007). Although elder abuse is a much broader issue and can result from a combination of numerous factors including role modeling, workloads, and staffing shortages, attitudes toward older patients can also play a role.

Educational institutions should aim to positively influence the attitudes of future health care practitioners toward older patients to ensure the provision of quality patient care. Attitudes toward older adults can be best affected by increasing knowledge, awareness, and understanding (Hanson, 2014; Mellor, Chew, & Greenhill, 2007). Although foundation concepts can be taught using traditional didactic means, attitudes require an alternate approach. Kolb's (2014) experiential learning theory (ELT) is often used as a basis for how students learn and develop attitudes. The ELT asserts that learning occurs from the learner being in touch with the realities of what they are studying. It involves direct sense experience and in-context action like fieldwork, service learning, or problem-based learning, where learners are able to contextualize and reflect on what they have previously learnt (Kolb, 2014). A more personalized learning journey allows students to develop their own beliefs, values, and attitudes based on their own experiences and reflections.

Driven by the need to deliver quality health care to an increasing population of older adults, numerous studies have evaluated health care professional attitudes and the impact of education and experience on these. This systematic review of the literature aims to

determine the effectiveness of educational interventions designed to improve health care student behaviors and/or attitudes toward older people.

## Method

A systematic review was conducted in March 2016 in accordance with the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) Statement (Moher, Liberati, Tetzlaff, & Altman, 2009). An electronic search of EMBASE, CINAHL, MEDLINE, PsychINFO, ERIC, Google Scholar, and ProQuest was conducted. The search strategy was developed by the authors in conjunction with a library database specialist. Medical subject headings, key words, phrases, and synonyms describing health care students, educational interventions, and attitudes/behavior toward older people were combined and searched. A full list of search terms is available in Figure 1. Following duplicate removal studies were screened and excluded based on title and abstract. The full texts of remaining studies were reviewed against the inclusion/exclusion criteria independently by two authors. Disagreements were discussed and final inclusion was decided by mutual agreement. A search of references and citations of identified papers was also conducted to source any additional studies from the identified articles.

Healthcare student	Educational intervention	Behaviour &/or attitudes
1 Students, Health Occupations (MeSH)	26 Education (MeSH)	45 Attitude of Health Personnel (MeSH)
2 Emergency medical technicians (MeSH)	27 Education, Medical, Undergraduate (MeSH)	46 Health Knowledge, Attitudes, Practice (MeSH)
3 Nutritionists (MeSH)	28 Education, Nursing, Baccalaureate (MeSH)	47 Behavior*
4 Nurses (MeSH)	29 Teaching (MeSH)	48 Attitud*
5 Physicians (MeSH)	30 Educat*	49 Aged (MeSH) (49-54 limited to Title & Abstract)
6 Social Workers (MeSH)	31 Teach*	50 Age*
7 Physical Therapists (MeSH)	32 Instruct*	51 Elder*
8 healthcare	33 Pedago*	52 Older adult*
9 health adj1 care	34 Method*	53 Older patient*
10 paramedic*	35 Approach*	54 Older people
11 emergency medical technician	36 Technique*	55 45 or 46 - 48
12 nurs*	37 Strateg*	56 49 or 50 - 54
13 Physician*	38 Innovat*	57 55 & 56
14 Doctor*	39 Intervention*	
15 social adj1 work*	40 Program*	58 25 & 44 & 57
16 speech adj1 therap*	41 Design*	59 Limit 2000 – current & English
17 physiotherap*	42 26 or 27 - 33	
18 physical adj1 therap*	43 34 or 35 - 41	
19 occupational adj1 therap*	44 42 & 43	*Truncation
20 Student*		
21 Undergrad*		
22 20 or 21		
23 20 or 3 - 19		
24 22 and 23		
25 1 or 24		

**Figure 1.** MEDLINE search strategy. MeSH = Medical Subject Heading.

### ***Inclusion criteria***

Studies that described the effectiveness of educational interventions designed to improve health care student attitudes and/or behavior toward older adults were included. Undergraduate health care students from medicine, nursing, social work, paramedicine, speech therapy, physiotherapy, occupational therapy, or nutrition and dietetics were included. Although this is not an all-encompassing list of health care students, agreement was reached among the authors that the selected professions shared common traits and would encounter large numbers of older patients in their practice. Educational interventions or combinations of strategies that were single sessions or over multiple sessions and time frames were eligible. They may have included, but were not limited to, didactic methods, simulation, clinical placements, case studies, service learning, workshops, and /or gamification. Peer-reviewed quantitative, qualitative, or mixed-methods studies utilizing either validated tools or alternative approaches to evaluate student attitudes and/or behavior were also eligible. Only studies available in English and published after the year 2000 were included. It was considered studies beyond this date would include the most contemporary educational interventions.

### ***Exclusion criteria***

Studies involving health care students from disciplines beyond those detailed above, or from postgraduate courses were not eligible. It was considered postgraduate students would introduce too much heterogeneity due to potential experience in the workforce. Studies evaluating an entire curriculum/course were ineligible as it would be difficult to ascertain discrete components or interventions that were responsible for results. Also ineligible were studies not evaluating and reporting student attitudes/behavior toward older adults at all, or where this was not the predominant aim of the study.

### ***Data extraction***

Data including authors, year, location, study design, population, intervention, attitude/behavior measures and psychometric properties, and results was extracted from eligible articles and tabulated. Two authors discussed and reached agreement on the final content. Statistical significance of results was indicated where available, with effect size and power calculations reported or calculated from available statistics where possible.

### ***Quality assessment and impact***

The Medical Education Research Study Quality Instrument (MERSQI) was utilized to assess the selected studies for quality. MERSQI is designed to measure the methodological quality of education research studies and has been tested for reliability and validity (Reed et al., 2007). Studies were scored for quality out of 18 with the exception of two solely qualitative studies that were scored out of 15 (points relating to measure validity were not applicable). Kirkpatrick's levels were (Yardley & Dornan, 2012) applied to assess the educational impact of interventions used in the selected studies. This tool comprises four levels of evidence that are tangible, easily measured outcomes of education (1 = participation, 2a = attitudes, 2b = knowledge/skills, 3 = behavior, 4a = organizational benefit,



4b = benefit to patients) (Yardley & Dornan, 2012). Studies were assessed independently by the authors. Differences in interpretation were discussed until consensus was reached.

### ***Data synthesis and analysis***

A narrative synthesis was used due to the heterogeneity of study methods and measures. Results were synthesised according to study methodology and intervention type. Randomised control, nonrandomized control, and quasiexperimental studies were grouped and results between intervention and control groups were analyzed. Pre- and poststudy designs were also grouped and results pre- and postintervention were analyzed. Studies were also grouped by intervention type for further analysis. A thematic approach was utilized to synthesize and analyze the qualitative results. Two authors reviewed the qualitative data independently and reach agreement on the final themes for inclusion.

## **Results**

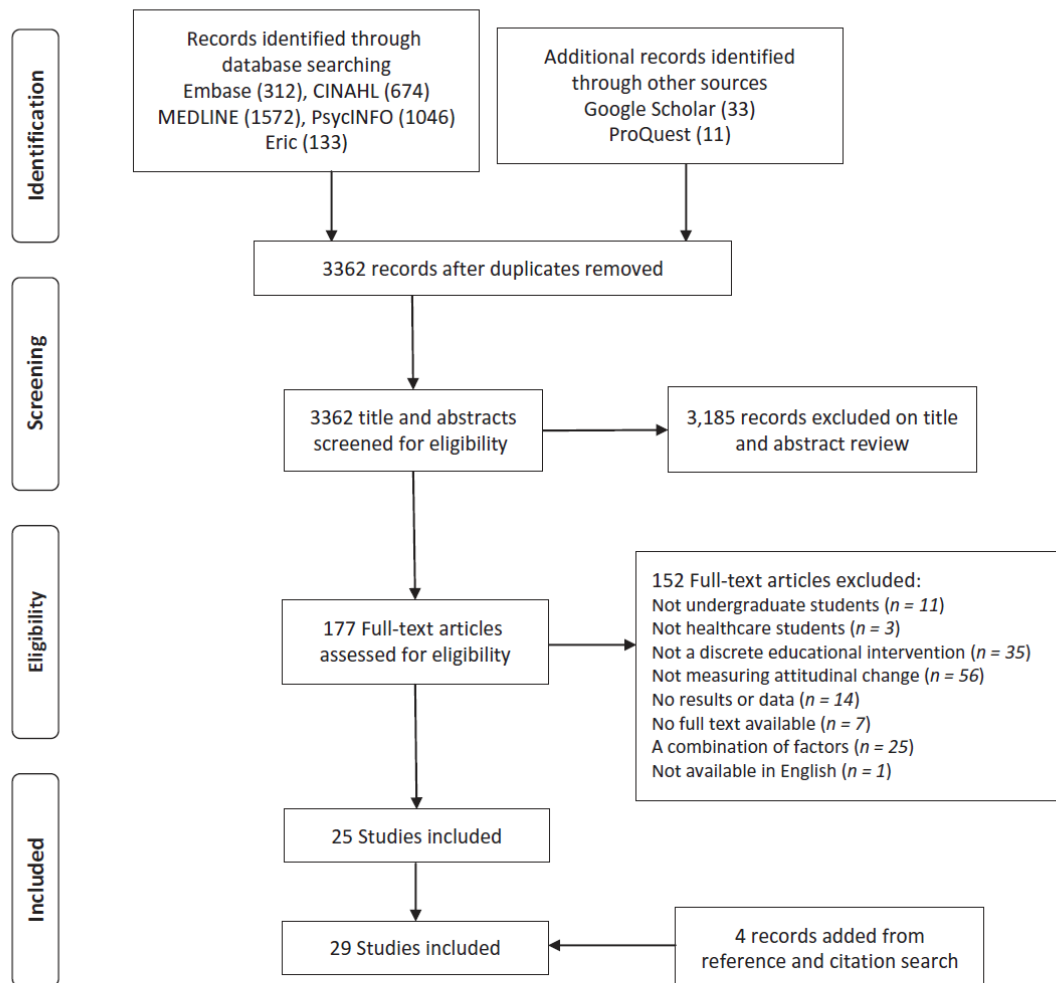
### ***Included studies***

An initial search of seven databases resulted in 3,781 studies. Following the removal of duplicates, 3,362 studies remained. A review of title and abstracts left 177 studies. A full-text review of these against the inclusion/exclusion criteria left 25 studies for inclusion. Four more articles were identified through a search of citations and references. The final number of studies included for data extraction and analysis was 29. A study selection overview is shown in Figure 2 (Moher et al., 2009).

### ***Data extraction***

The 29 included studies are summarized in Table 1. The majority of studies were conducted in the United States (19), followed by Canada (3), China (2), and one each from Australia, Ireland, Netherlands, Switzerland, and New Zealand. Most studies employed quantitative (16) or mixed methods (11); only two were solely qualitative. Health care professions studied included medicine (18), nursing (9), social work (4), physiotherapy and nutrition (3 each), and occupational therapy and paramedics (one each). Study designs varied as follows: randomized controlled pre-post (3), randomized controlled post only (1), controlled pre-post (12), pre-post (11) and post only (2).

A number of quantitative measurement tools were used to assess attitudes, these included the Aging Semantic Differential (ASD; Rosencranz & McNevin, 1969) (11), Kogan's Attitudes Towards Old People Scale (KAOP; Kogan, 1961) [4], University California at Los Angeles Geriatric Attitudes Scale (UCLA-GAS; Reuben et al., 1998) [4], Maxwell-Sullivan's Attitudes Scale (MSAS; Maxwell & Sullivan, 1980) [3], and various other newly developed and yet-to-be-validated surveys were used on single occasions. Behavior was measured on only two occasions with the use of a patient-centered interview objective structure clinical examination (OSCE; Harden & Gleeson, 1979), and the Students' Caring Behaviour Scale (SCBS; Hwang et al., 2013). Attitudes were also assessed via the following qualitative means: written reflections (6), focus groups (4) and free text questions (2).



**Figure 2.** Search results.

Interventions were grouped into four distinct themes. The most common intervention utilized was interaction with real patients (18). These included interventions such as senior mentor programs, service learning, home visits, community interaction activities, and interviews. The second most common intervention type was using sensory activities, such as the Aging Game and Geriatrix (6). A variety of workshop or module activities were used in three studies. Two interventions had a clinical focus.

### **Quality assessment and impact**

MERSQI scores ranged from 8 to 14.5/18 with an average score of 10.5/18. The qualitative studies each scored 7/15. The majority of the quantitative/mixed studies scored 10 or greater (78%). The randomized controlled studies averaged a MERSQI of 12/18, the nonrandomized controlled 11/18, and the pre-post 10/18. The six studies utilizing sensory activities averaged a MERSQI of 10.5/18, the two clinical focus interventions 13/18, whereas the three workshop interventions and the 18 interaction with real patient's interventions averaged 10/18.

Table 1. Included studies.

Study (Author & year)	Location	Study design	Population (n) & participation requirements	Intervention	Attitude measure & psychometric properties (if report for study cohort)	Method	Kirkpatrick	MERSQI
1 Basran et al. (2012)	Canada	Pre-post (T3–1 year)	PT, Med, Nurs, Nut, Pharm, SW (141) Voluntary -elective	Senior Mentor Program Teams of 3/4 IPE students partnered with IL (4 visits)	ASD (Polizzi), FG	Mixed	2a	10.5
2 Beauvais et al. (2015)	United States	Controlled, Pre-post	Nurs (134) Mandatory	Service Learning IG—2 x 6-hr guided sessions (n = 66) CG—2 x 6-hr clinical placements (n=68)	KAOP	Quant	2b	11.5
3 Bernard et al. (2003)	United States	Controlled, pre-post	Med (225) Mandatory	Senior Mentor Program IG—Partnered with IL (4 x visits) (n = 117) CG—not reported (n = 108)	ASD	Quant	2a	11
4 Cohen et al. (2004)	United States	Post only	SW (45) Mandatory	Focus Groups (60–90 minute) With IL (n = 15) With service providers (n = 30)	Written reflection	Qual	2a	7 <sup>a</sup>
5 Corwin et al. (2006)	United States	Post only	Med (36) Mandatory	Senior Mentor Program Partnered with IL (4–6 x visits)	FG	Qual	2a	7 <sup>a</sup>
6 Denton et al. (2009)	United States	Controlled, pre-post	Med (33) Voluntary	Home visits IG—home visits, online materials, discussion (n = 16) CG—online materials only (n = 17)	Attitudinal survey, Written reflection	Mixed	2b	10.5
7 Diachun et al. (2006)	Canada	RCT, post x 2 (T2–1 year)	Med (42) Mandatory	Sensory Activity IG—3-hr sensory experiential activity (n = 25) CG—3-hr didactic (n = 17)	FAQ (Bias score), Free text	Mixed	2b	10.5
8 Diachun et al. (2010)	Canada	RCT, pre-post	Med (191) Mandatory	Geriatric Placement IG—elder care rotation (n = 108) CG—standard placement (n = 74)	UCLA-GAS, PCI OSCE	Quant	3	14.5
9 Dorfman et al. (2002)	United States	Controlled, pre-post	SW (47) Mandatory	Service Learning IG—Partnered with AL (4 x visits) (n = 13) CG—not reported (n = 34)	Attitudinal scales, (α = .54—.67 & .60—72), Free text Q's, Written reflections	Mixed	2a	7.5
10 Duke et al. (2009)	United States	Pre-post	Med (55) Mandatory	Senior Mentor Program 2-hr lecture SMP (4 x 45 min visits with AL)	UCLA-GAS, Written reflection	Mixed	2a	10
11 Eskildsen & Flacker (2009)	United States	Pre-post	Med (129) Mandatory	5 Day module—interactive, small group format + interview with an older adult advancing in age each day	UCLA-GAS, FAQ (Bias score)	Quant	2a	10.5
12 Fitzgerald et al. (2006)	United States	Controlled, pre-post	Med, Nurs, Pharm, SW (50) Mandatory	4-day program IG—Interdisciplinary geriatric care (n = 32) CG—(n = 18)	UCLA-GAS, (α = .61), MSAS, (α = .54)	Quant	2a	10.5
13 Furze et al. (2008)	United States	Pre-post	Nurs, OT, PT, Pharm (64), Voluntary	Community-based learning IP teams of 4 partnered with AL	SAAS, FG, Written reflective	Mixed	2a	8
14 Goeldlin et al. (2014)	Switzerland	Controlled, pre or post	Med (147) Mandatory	Geriatric clinical skills training—4 x 2.5 hr (real patients) IG—posttest (n = 76) CG—pretest (n = 71)	UCLA-GAS	Quant	2b	11.5

(Continued)

Table 1. (Continued).

Study (Author & year)	Location	Study design	Population (n) & participation requirements	Intervention	Attitude measure & psychometric properties (if report for study cohort)	Method	Kirkpatrick	MERSQI
15 Henry et al. (2007)	United States	Pre-post	Nut, PT, CA (N = 156) Voluntary	Aging game (shortened)	ASD (Polizzi), ( $\alpha = .94$ & .96)	Quant	2a	10.5
16 Henry et al. (2011)	United States	RCT, pre-post	Nurs, Nut (124) Mandatory	Aging game IG—90 min aging game (n = 51) CG—75 min tutorial (n = 47)	ASD (Polizzi), ( $\alpha = .91$ ), Written reflections	Mixed	2a	12
17 Hwang et al. (2013)	China	Pre-post, longitudinal (T3—16 months)	Nurs (126) Mandatory	Service learning 6 hrs preservice training 6 x visits with AL or nursing homes or veteran homes	SCBS, ( $\alpha = .93$ ), R-KAOP, ( $\alpha = .81$ )	Quant	2b	11.5
18 Lee et al. (2008)	United States	Controlled, pre or post	Nut (100) Mandatory	Interviews IG—3 x visits with IL (n = 52) CG—3 x visits with young adult (n = 48)	WOAI, ( $\alpha = .75$ & .82), Written reflection	Mixed	2a	12
19 Leung et al. (2012)	China	RCT, pre-post (T3—1 month)	Med, Nurs (103) Voluntary	Service learning IG—Half-day workshop Met OA 1–2 hrs/week x 10 weeks Intergenerational sharing session (n = 48) CG—aging online SDL (n = 55)	KAOP	Quant	2a	12
20 Lu et al. (2010)	United States	Controlled, Pre-post	Med (137) Voluntary	Senior Teacher Education Partnership IG—Home visits with IL (n = 46) CG—(n = 91)	ASD, ( $\alpha = .92$ ), FG	Mixed	2a	11
21 Robinson & Roshier (2001)	United States	Pre-post	Med (49) Not stated	Half-full Aging Simulation Experience—presentation and simulation experience	ASD	Quant	2a	8.5
22 Ross & Williams (2015)	Australia	Pre-post	Para (11) Voluntary	Community-Interaction Activity with IL	ASD, FG	Mixed	2a	9.5
23 Ryan et al. (2007)	Ireland	Pre-post T2—1 year	Nurs (94) Mandatory	Home visits with IL (10 in year) Theory sessions	KAOP, ( $\alpha = .80$ & .81)	Quant	2a	10.5
24 Shue et al. (2005)	United States	Controlled, pre-post	Med (161) Mandatory	Senior Mentor Program	ASD, ( $\alpha = .95$ & .93), MSAS, ( $\alpha = .84$ & .87)	Quant	2a	11
25 van de Pol et al. (2014)	Netherlands	Controlled, pre-post	Med (53) Voluntary	Geriatric game IG—4 weeks in combination with didactic (n = 29) CG—4-week, not geriatric specific—didactic only (n = 24)	ASD	Quant	2b	11
26 Varkey et al. (2006)	United States	Pre-post	Med (84) Mandatory	Aging game	ASD, MSAS	Quant	2a	10.5
27 Walsh et al. (2008)	United States	Controlled, pre-post	Nurs (28) Voluntary	Home visits IG—Creative-Bonding Intervention (n = 11) CG—Friendly Visit (n = 11)	R-KAOP, ( $\alpha = .80$ & .85)	Mixed	2a	10





28	Westmoreland et al. (2009)	United States	Pre-post (Half students pre/half past)	Med (247)	Mandatory	Workshop—Prereflection, introduction, council of elders (75 min dialogue with IL, postreflection)	GAS	Mixed	2a	9.5
29	Wilkinson et al. (2002)	New Zealand	Controlled Pre-post	Med (186)	Mandatory	Home visits IG—Interview in pairs IL (n = 41) & AL (n = 40) CG—visits young adults (n = 105)	ASD (Polizzi)	Quant	2a	10

**Note.** FG = focus group; AL = assisted living older adults; IL = independent living older adults; IG = intervention group; CG = control group; IP = interprofessional; PCI = patient centered interview; OSCE = objective structured clinical examination; ASD = Aging Semantic Differential (Modified—Polizzi, 2003); KAOP = Kogan's Attitudes Towards Older People Scale; FAQ Bias Score = Facts on Aging Quiz; UCLA-GAS = University of California at Los Angeles Geriatric Attitudes Scale; MSAS = Maxwell-Sullivan's Attitude Scale SCBS = Students' Caring Behavior Scale; WOAI = Wall-Oyer Aging Inventory; GAS = Geriatrics Attitudes Scale; SAAS = Survey of Attitudes on Aging Scale; PT = physical therapy; Med = medicine; Nut = nutrition & dietetics; Pharm = pharmacy; SW = social work; IPE = interprofessional education; Para = paramedic; RCT = Randomized Control Trial; SMP = Senior Mentor Program; OT = occupational therapy; CA = care administration; SDL = self-directed learning.

$\alpha$  = Cronbach alpha ( $\geq .70$  acceptable), Wash out stated in study design if not immediately after intervention.

a. Qualitative studies scored out of 15 only.

Kirkpatrick's levels of education outcomes ranged for 2a to 3. The majority ( $n = 22$ , 76%) were level 2a (attitudes). One study (3%) achieve a level 3 (behavior) whereas the remaining ( $n = 6$ , 21%) were level 2b (knowledge and/or skills). Although knowledge acquisition was not included in the aims of this review, several studies incorporated measures of this domain in addition to attitudes and/or behavior, and this was therefore accounted for in the quality assessments.

### **Quantitative data synthesis**

An analysis of the results of 13 studies comparing intervention and control groups are presented in Table 2. Four studies employing these methods were excluded from this table due to insufficient data to compare groups postintervention.

Of the four randomized studies, only one reported improved attitudes in the intervention group in comparison to the control group, however the effect was small and not statistically significant (Henry, Ozier, & Johnson, 2011). Two studies showed declining attitudes in the intervention groups (Diachun, Dumbrell, Byrne, & Esbaugh, 2006; Diachun, van Bussel, Hansen, Charise, & Rieder, 2010), whereas another found improved attitudes in the control group were greater than that of the intervention group (Leung et al., 2012).

Of the nine controlled/quasiexperimental studies three reported statistically significant improvement in the intervention group in comparison to the control group (Bernard, McAuley, Belzer, & Neal, 2003; Denton et al., 2009; Lee & Waites, 2006). In Bernard et al. (2003) insufficient data was provided to determine the effect size and power, Denton et al. (2009) had a large effect size (0.78) but was underpowered at 0.54, Lee, Hoerr, Weatherspoon, and Schiffman (2008) had a medium effect size (0.30) and was also underpowered at 0.32.

An analysis of the results of 14 studies comparing pre- and postintervention results are presented in Table 3. Eleven of the studies showed some improvement in attitudes postintervention. Only five however had statistically significant results, with three having a large effect size. Basran et al. (2012) reported the most favorable results between Time 1 and Time 2, but these were not sustained at Time 3 (12 months). Several studies included subscale analysis for the ASD rather than totals. These studies reported statistically significant improvements in attitudes in at least two out of three subscales (Ross & Williams, 2015; Varkey, Chutka, & Lesnick, 2006; Wilkinson, Gower, & Sainsbury, 2002).

Two studies, though designed to improve and measure attitudes, had predominantly clinically focused interventions. Goeldlin et al. (2014) achieved a MERSQI of 11.5 and found attitudes improved postintervention ( $p = .06$ ). Diachun et al. (2010) achieved a MERQI of 14.5 (the highest score of all studies) and found the control and intervention groups attitudes worsened; slightly less in the intervention group ( $p = .09$ ). Diachun et al. was also one of only two studies to measure behavior. The intervention group had statistically significant higher results ( $p < .001$ ), and a pass rate of 95% versus 78% ( $p < .001$ ) on a patient-centered interview OSCE with a geriatric focus (Diachun et al., 2010).

Three studies used workshop type interventions. Eskildsen and Flacker (2009) had a MERSQI of 10.5 and found improvement in attitudes postintervention ( $p < .001$ ). Westmoreland et al. (2009) had a MESQI of 9.5 and also found improvement in attitudes

**Table 2.** Attitude results (between groups—intervention vs control).

Author	Tool	Intervention or control	Type of intervention	N	Pre M (SD)	Post	Post 2	Attitude direction	d	p	Power
<b>Randomized control studies</b>											
Diachun et al. (2010)	UCLA-GAS	Intervention	Geriatric placement	108	3.72 (0.42)	3.58 (0.44)		↓	0.24	0.09	46%
Henry et al. (2011)	ASD (Polizzi)	Control	Standard placement	74	3.69 (0.43)	3.46 (0.55)		↓			
		Intervention	Aging Game	51	74.08 (19.58)	68.59 (15.16)		↑	0.07	0.21	23%
		Control	Tutorial	47	75.68 (17.70)	69.62 (15.59)		↑			
Leung et al. (2012)	KOAP	Intervention	Service learning	48	45.04 (6.48)	57.26 (5.21)	45.83 (20.88) (1 month)	↑	0.12	0.44	52%
		Control	Online SDL	55	43.72 (5.84)	57.28 (6.34)	47.18 (8.97) (1 month)	↑			
<b>Randomised (post only)</b>											
Diachun et al. (2006)	FAQ (Bias)	Intervention	Sensory activity	25	Not measured	−3.50 (2.54)	−4.58 (1.74) (12mths)	↓	0.46	0.65	87%
		Control	Didactic	17	Not measured	−4.06 (2.16)	−3.94 (2.22) (12 months)	↑			
<b>Controlled/quasi-experimental studies</b>											
Beauvais et al. (2015)	KOAP	Intervention	Service learning	66	130.76 (10.5)	137.33 (11.1)		↑	0.05	NA	NA
		Control	Clinical placement	68	136.47 (10.6)	136.69 (13.4)		↑			
Bernard et al. (2003)	ASD	Intervention	Senior mentoring program	117	3.45	3.05		↑	NA	0.002	NA
		Control	Not reported	108	3.42	3.25		↑			
Denton et al. (2009)	Attitudinal survey	Intervention	Home visits	16	81.8 (0.16)	Reported 9.8% increase		↑	0.78	0.04	54%
		Control	Online material	17	84.6 (0.16)	Reported 0.5% increase		↑			
Dorfman et al. (2002)	Attitudinal scales	Intervention	Service learning	13	2.88 (0.29)	3.32 (0.29)		↑	0.62	0.07	52%
		Control	Not reported	34	2.91 (0.36)	3.11 (0.38)		↑			
Fitzgerald et al. (2006)	UCLA-GAS	Intervention	Interdisciplinary program (4 day)	32	4.0 (0.4)	4.1 (0.4)		↓	0.0	0.72	72%
		Control	Not reported	18	Not reported	4.1 (0.4)		NA			
Goeldin et al. (2014)	UCLA-GAS	Intervention	Geriatric clinical skills training	76		51		↑	NA	0.06	NA
		Control	Not reported	71	49						
Lee et al. (2008)	WOAI	Intervention	Interviews with IL	52	3.45 (0.35)	3.58 (0.42)		↑	0.30	< 0.05	32%
		Control	Visits with young adults	48	3.49 (0.39)	3.45 (0.44)		↓			
Lu et al. (2010)	ASD	Intervention	Home visits	46	116.17 (18.01)	107.93 (23.26)		↑	0.34	0.12	62%
		Control	Not reported	91	118.70 (19.26)	115.07 (18.18)		↑			
Shue et al. (2005)	MSAS	Intervention	Senior mentoring program	72	62.02 (8.19) MSAS	66.50 (5.67) MSAS		↑	0.43	0.19	92%
		Control	Standard program	89	Not measured	64.03 (5.71)		NA			

**Note.** UCLA-GAS = University California at Los Angeles Geriatric Attitudes Scale; ASD = Aging Semantic Differential; KOAP = Kogan's Attitudes Towards Older People Scale; SDL = Self-directed Learning; FAQ = Facts on Aging Quiz; WOAI = Walloer Aging Inventory; MSAS = Maxwell-Sullivan's Attitude Scale. Statistically Significant:  $p < .05$ ; Effect size:  $d = \text{Cohen's } d - 0.2$  (small), 0.3 (medium), 0.5 (large); Power  $\geq 80\%$ .

Studies providing insufficient postintervention results to compare groups were excluded from this table.

**Table 3.** Attitude results (within groups).

Author	Tool	Type of intervention	N	Pre M (SD)	Post	Post 2	Attitudinal direction	d	p	Power
Basran et al. (2012)	ASD (Polizzi) 80 year old man	Senior mentoring program	111	78.71 (16.76)	66.54 (19.27)	~73 (from bar graph) (12 months)	↑	0.67	<0.001	100%
	ASD (Polizzi) 80 year old woman		113	69.47 (15.47)	56.61 (18.87)	~63 (from bar graph) (12 months)	↑	0.74	< 0.001	100%
Duke et al. (2009)	UCLA-GAS	Senior mentoring program	55	16.11 (3.98)	14.24 (5.17)		↑	0.40	0.004	49%
Eskildsen & Flacker (2009)	UCLA-GAS	5-day module	129	3.7	3.8		↑	NA	< 0.001	NA
Furze et al. (2008)	SAAS	Community based learning	64	Not reported	Not reported		↑	NA	NA	NA
Henry et al. (2007)	ASD (Polizzi)	Aging game	156	78.84 (18.2)	82.61 (20.7)		↓	0.19	< 0.001	18%
Hwang et al. (2013)	KOAP	Service Learning AL	43	107.25 (1.73)	109.60 (1.71)	113.58 (1.69) (16 months)	↑	3.7	<0.01	100%
		Service Learning NH	40	102.67 (1.63)	104.8 (1.35)	100.95 (1.70) (16 months)	↓	1.0	<0.05	100%
		Service Learning VH	43	101.39 (1.81)	103.90 (1.68)	98.97 (1.40) (16 months)	↓	1.6	<0.001	100%
Robinson & Rosher (2001)	ASD	Aging simulation experience	49	123.35	116.14		↑	NA	NA	NA
Ross & Williams (2015)	ASD	Community interaction activity	11	NA	NA	NA	↑	NA	NA	NA
Ryan et al. (2007)	KAOP	Home visits	94	126.4 (9.99)	128.0 (9.54)		↑	0.16	0.33	87%
van de Pol et al. (2014)	ASD	Geriatric game	29	84 (11)	77 (15)		↑	0.52	0.02	74%
Varkey et al. (2006)	ASD	Aging game	84	NA	NA	NA	↑	NA	NA	NA
Walsh et al. (2008)	KAOP	Friendly visits	11	80.73	67.37		↑	NA	0.03	NA
Westmoreland et al. (2009)	GAS	Workshop	247	NA	NA	NA	↑	NA	NA	NA
Wilkinson et al. (2002)	ASD (Polizzi)	Interviews with IL & AL	41	NA	NA	NA	↑	NA	NA	NA

however did not provide a statistical analysis. Fitzgerald et al. (2006) found no difference between the control and intervention group ( $p = .72$ ).

Six studies used sensory activities as their intervention. Henry, Douglass, and Kostiwa (2007) and Diachun et al. (2006), both with a MERSQI of 10.5, showed a decline in attitudes postintervention ( $p < .001$ ,  $p = .65$ , respectively); (Diachun et al., 2006; Henry, Douglass, & Kostiwa, 2007) The other four studies showed improved attitudes with only Henry et al. (2011) and van de Pol et al. (2014) providing data ( $p = .21$ ,  $p = .02$ , respectively) (Henry et al., 2011; Robinson & Rosher, 2001; van de Pol et al., 2014; Varkey et al., 2006).



Eighteen studies used interactions with real patient as the intervention. Of the 16 employing quantitative methods all reported improved attitudes, eight of which were statistically significant with MERSQI scores ranging from 10 to 12. Three of these, Basran et al. (2012), Denton et al. (2009), and Hwang, Wang, and Lin (2013) also had large effect sizes ( $p < .001$ ,  $d = .67$ ;  $p = .04$ ,  $d = 0.78$ ;  $p < .01$ ,  $d = 3.7$ , respectively). Duke, Cohen, and Novack (2009) and Lee et al. (2008) had medium effect sizes ( $p = .004$ ,  $d = .40$ ;  $p = .05$ ,  $d = .30$ , respectively). Beauvais, Foito, Pearlin, and Yost (2015), Bernard et al. (2003), and Walsh, Chen, Hacker, and Broschard (2008) did not report or provide adequate data to calculate effect size ( $p = .05$ ,  $p = .002$ , and  $p = .03$ , respectively).

Behaviour was measured and reported in only two studies. Hwang et al. (2013) used a self-report Students Caring Behaviour Scale and found statistically significant increases in caring scores at postintervention and follow-up. Diachun et al. (2010) observed behavior via a patient-centered interview with an older patient. They found the intervention group scored significantly higher and had significantly higher pass rates than the control group.

### **Qualitative data synthesis**

The studies incorporating qualitative analysis overwhelmingly reported positive findings. The most commonly reported themes were, students were able to learn about older adults' lives, their capabilities, challenges, and needs. Students also gained an increased awareness of and reduced their own beliefs about myths and stereotypes associated with older people. Other themes including negative attitudes are displayed in Table 4.

## **Discussion**

Twenty-nine studies were identified and analyzed to determine the effectiveness of educational interventions designed to improve health care student behaviors and/or attitudes toward older people. These studies incorporated a variety of study designs and interventions.

### **Interaction with real patients**

The 18 studies incorporating interactions with real patients included service learning, senior mentor programs, and home visits. These interventions were essentially experiential in nature but also had numerous other factors in common that differentiate them from traditional clinical placements. Each involved interaction with older patients who were independently living and high functioning. This is in contrast to the ill, frail and dependent nursing home or hospital patients students can come into contact with during traditional clinical placements. Although a balanced interaction with a variety of patients is preferable to provide realistic expectations of older adults, encounters with predominantly patients who are ill and older has been shown to instill negative stereotypes and beliefs (Fitzgerald, Wray, Halter, Williams, & Supiano, 2003). In addition, in each of these studies, the aim of the interaction was to develop an understanding and awareness of older patients and to practice interpersonal communication skills.



Table 4. Qualitative results summary.

Attitudinal themes	Basran et al. (2012)	Cohen et al. (2004)	Corwin et al. (2006)	Denton et al. (2009)	Diachun et al. (2006)	Dorfman et al. (2002)	Duke et al. (2009)	Furze et al. (2008)	Henry et al. (2011)	Lee et al. (2008)	Lu et al. (2010)	Ross & Williams (2015)	Walsh et al. (2008)	Westmoreland et al. (2009)
Learned about older adults lives—capabilities, challenges, needs	x	x	x	x	x		x	x	x	x	x	x		11
Increased awareness and reduced myths & stereotypes	x	x	x	x	x	x		x	x	x	x	x	x	12
Wise and experienced; can learn from them		x				x		x		x	x		x	6
Individuals—physical, mental, attitude			x			x	x	x	x	x			x	7
Ability to see things from patients perspective									x					1
Like to talk and often lack this interaction													x	1
Demanding on others														1
Set in their ways												x		1
Poor hearing, poor memory, frustrating							x	x						2

All 18 studies cited improved attitudes postintervention in comparison to control groups. Basran et al. (2012), one of the most promising studies, saw 111 students from various disciplines showing improved attitudes postparticipating in a senior mentoring program ( $p < .001$ ,  $d = .67$ ). Students in this program met with a senior mentor on four occasions and followed discussion guidelines for each visit as follows: “general history”; “living situation and changing world”; “medication, nutrition, and physical activity”; and “unstructured social event.” Students were also required to complete a structure reflection during the program to complete the cycle and increase knowledge, develop skills, clarify values, analyze and apply what they have learnt as per Kolb’s learning cycle (Kolb, 2014).

Other studies within this group with positive results were Hwang et al. (2013) who found nursing students interacting with well or assisted living older adults improved their attitudes ( $p < .001$ ), however groups interacting with nursing/veteran home patients declined. This reinforces what previous research has taught us about the impact the type interaction (with ill vs. well older adults) has on attitudes (Fitzgerald et al., 2003). Duke et al. (2009) and Lee et al. (2008) found improved attitudes from a senior mentoring program and interviews with older patients and achieved a statistically significant medium effects ( $p = .004$ ,  $d = .40$ ;  $p < .05$ ,  $d = .30$ , respectively). Denton et al. (2009) and Dorfman et al. (2002) also had positive results, however both studies used instruments not yet psychometrically appraised. Walsh et al. (2008) and Beauvais et al. (2015) had statistically significant results, however insufficient data to calculate effect size and power. Overall interventions incorporating interactions with independently living real patients had a positive impact on student attitudes towards older adults.

### **Sensory activities**

Six studies used sensory-type activities to help students gain an understanding of what it feels like to be an older person. Three studies utilized the Aging Game, where participants experience a variety of different sensory deficits, for example, hearing and vision loss. Overall the results were not conclusive either way. Henry et al. (2007) conducted a pre-post study using a shortened version of the Aging Game in 2007 and found results worsened ( $p < .001$ ,  $d = .19$ ). In 2011 Henry then conducted a randomized control study using the full Aging Game and found attitudes improved in the intervention and control groups (who participated in a tutorial) ( $p = .21$ ,  $d = .07$ ) (Henry et al., 2011b). The third study (Varkey et al., 2006) utilizing the Aging Game cited improved attitudes postintervention but provided no statistical analyses or findings.

Two of the other studies using other sensory activities had major flaws in study design. Diachun et al. (2006) found the control groups’ attitudes improved but the intervention group worsened. This was based on two posttests, one directly after the intervention and one at 12 months. No pretest was conducted and the measure of attitudes was the Facts on Aging Quiz bias score that has been discredited as a measure of attitudes (Holtzman & Beck, 1979). Robinson and Rosher (2001) cited improved attitudes but did not provide enough data to evaluate. A third study (van de Pol et al., 2014) utilized the Geriatrix Game and found improved attitudes ( $p = .02$ ,  $d = .52$ ), this was however a very small study with only 29 participants.

Despite the fact that four out of the six studies utilizing sensory activities had some improvement in attitudes the study design, quality, lack of reported data makes it



impossible to form a conclusion about the effect of this type of intervention. As these sensory interventions that could actually perpetuate the myths and stereotypes associated with older people questions need to be raised about their ultimate impact on attitudes. They may in fact improve understanding, knowledge, and empathy while reinforcing negative stereotypes. The full impact these types of interventions have on behavior is not actually known as this was not measure in these studies.

### **Workshops**

Three studies used workshops or modules as the intervention to improve attitudes and/or behaviour. Eskildsen and Flacker (2009) and Westmoreland et al. (2009), pre–post studies, showed improved attitudes. Eskildsen and Flacker incorporated an interview with a progressively aging simulated patient over the 5-day largely didactic program. They reported improvement in attitudes postintervention ( $p < .001$ ), however the change appeared to be very small (effect size and power was unable to be calculated due to insufficient data) (Eskildsen & Flacker, 2009). Westmoreland et al. (2009) incorporated a discussion with elders into a 90-minute workshop on aging. Although they cited improved attitudes they presented item analysis only and no overall data was presented to support this (Westmoreland et al., 2009).

The Fitzgerald et al. (2006) study intervention incorporated four interdisciplinary workshops focusing on geriatric assessment and care. This study had small numbers and found no difference between the control and intervention groups.

Although there is some support for this type of intervention the reported studies do not warrant a favorable conclusion that this type of intervention improves attitudes or behavior. Of interest, however, is that though presenting traditional workshop/module learning interventions they all also incorporated the use of real or simulated patients into their programs.

### **Clinical focus**

The two studies in this category use interventions involving interacting with real patients, however the focus was on clinical assessment and treatment. Diachun et al. (2010) used geriatric clinical clerkships for medicine students as the intervention and measured knowledge and skills, as well as attitudes. Goeldlin et al. (2014) used geriatric skills training with medical students and measured attitudes only. Although Goeldlin et al. found attitudes improved postintervention ( $p = .06$ ), there were numerous flaws in the study design and reporting of results. The investigators used different cohorts for the pre- and postmeasures and reported insufficient data to calculate power and effect size.

Diachun et al. (2010), a well-designed randomized control study (MERSQI = 14.5) found the control and intervention groups attitudes worsened, slightly less in the intervention group ( $p = .09$ ). Importantly, the intervention was conducted in geriatric medical and psychiatric units exposing participants to predominantly older people who were “ill.” Diachun et al. was, however, one of only two studies to measure behavior via a patient-centered interview OSCE with a geriatric focus. The intervention group had higher results, and pass rate ( $p < .001$ ). Even though the attitudes results were not statistically significant, in combination with the behavior results they raise some interesting discussion points. It

appears that this intervention (geriatric clinical placements) decreased attitudes while improving behavior. This goes against Ajzen's (1991) TPB supposing that improved attitudes leads to improved behavior. Perhaps the answer lies in the effect exposure to patients who are older, lower functioning, and ill has on attitudes. Most research suggests this has a negative influence on the attitudes of health care students (Allan & Johnson, 2008; Bousfield & Hutchison, 2010; Fitzgerald et al., 2003; Schwartz et al., 2001). This intervention did however give students experience and confidence in conducting a patient-centered interview and assessment of older adults which was reflected in the development of improved skills and behavior.

### **Limitations**

The lack of objective measures of attitudes and behavior was a limitation. Most studies evaluated attitudes using self-report measures. These measures are subject to social desirability bias and not as reliable subjective observational measures (van de Mortel, 2008). Only one study used a subjective observational measure to evaluate behavior. Finally the analysis and synthesis of heterogeneous studies is extremely challenging. This required a narrative approach to result in synthesis and subjective decisions about the grouping of studies for analysis.

### **Recommendations for future research**

The findings of this review, in combination with previous research, highlight the importance of the type of older patients students are interacting with and the impact this has on attitudes. More studies similar to Hwang et al. (2013) that evaluated the attitudes of student placements with older patients of differing health and independence levels are necessary to better understand the ramifications of this. More research is also needed to evaluate to effectiveness of sensory activities such as the Aging Game. There were insufficient quality studies in this review to form any conclusions about the effectiveness. Finally more observational studies are required to evaluate the effect interventions have on behaviour and patient care.

### **Conclusion**

Educational interventions designed to improve health care student attitudes and/or behavior toward older adults varied in their effectiveness. The evaluated studies varied greatly in study design, quality, and intervention type. The most common and successful intervention type was those utilizing interaction with real patients. When these interactions were with real patients who were living independently the impact on student attitudes was positive. Clinically focused placements with patients who are ill may still have a place in the development of patient-centered interview and assessment skills, along with improving confidence and competence, despite not having a favorable impact on attitudes. Sensory activities also have value in raising awareness and empathy for patients who are older, yet further investigation is required to better understand the impact on attitudes and behavior.

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### 5.3 Summary

This review found 29 studies which met the inclusion criteria. The educational interventions included a variety of methods including workshops, clinical placements, sensory activities and interactions with real patients. Each study had varying methodology, quality and results.

Sensory activities including 'the aging game' and similar, where students taken on characteristics associated with aging such as vision and hearing impairment were found to decrease attitudes as they perpetuated the stereotype of older people being weak and feeble. These type of activities did however generally increase empathy toward older patients. Unfortunately none of these studies actually measured behaviour so it is unknown how sensory type interventions translate to patient care.

Interactions with real patients were however shown to increase attitudes in all studies. These studies were all experiential in nature and focused on gaining awareness, understanding and interpersonal skills with high function older adults as opposed to clinical skills. Behaviour was measured in only one of these studies and yielded positive results. It was not possible however to draw any definitive conclusions about the effect on behaviour or its association with attitudes from one study.

Taking into account study quality and results it was concluded from this systematic review that interactions with real patients had the most positive influence on health care student attitudes and behaviour toward older patients.

The following chapter presents a controlled trial of an educational intervention designed to improve paramedic student attitudes and behaviour toward older patients.

## Chapter 6: Educational intervention to enhance paramedic student attitudes and behaviour

### 6.1 Overview

The thesis thus far demonstrates that the attendance of paramedics to older patients with complex multidimensional issues is high, and that there is a need for greater education with regard to older patients at an undergraduate level. Such education should aim to increase student awareness, understanding and ability to assess and manage older patients holistically. Their assessments, and decisions to treat and transport or refer should take into consideration the biopsychosocial issues involved. In addition they should be aiming to develop interpersonal skills such as understanding the patient's perspective, empathy, compassion and consideration which are vital in order to establish a meaningful and respectful paramedic-patient relationship conducive to quality patient care.

The systematic review of the current research in Chapter 5 recommended the use of experiential educational interventions with real independently living older patients as the best was to improve attitudes and behaviour toward older patients.

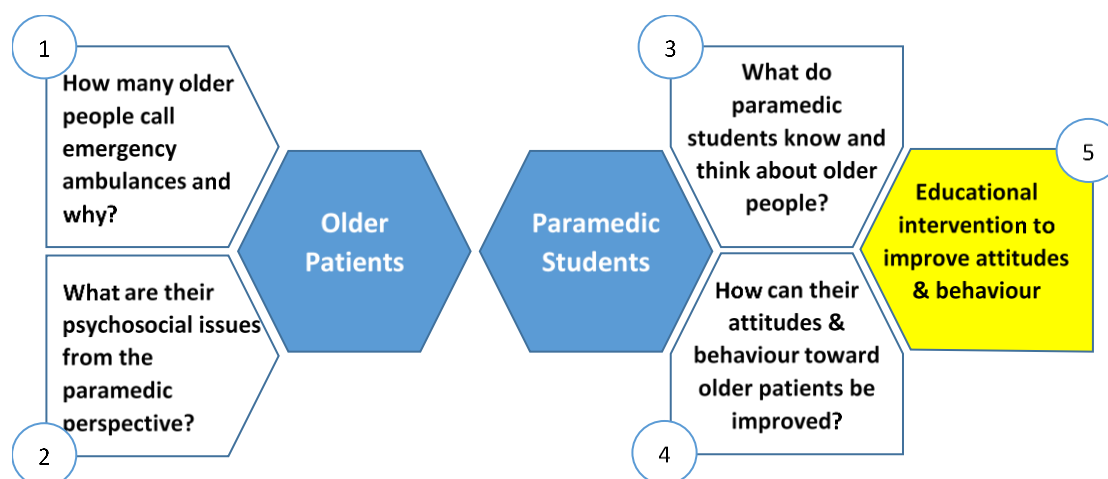


Figure 4.5 Core chapter progression

This controlled trial aimed to:-

1. Determine the effects of an educational intervention with older patients on student paramedics' knowledge, attitudes and behaviour (interpersonal communication) toward older patients.
2. Determine which factors or combination of factors best predict better interpersonal communication skills.

Supplementary information associated with this chapter can be found in the appendices.

- MUHREC ethics approval (Appendix M)
- Patient centred interview images (Appendix N)
- Attitudes towards older adults survey (ASD) (Appendix J)
- Knowledge of older adults survey (FAQ2) – short version (Appendix O)
- Kalamazoo Communication Skills Assessment Forms (KCSA) (Appendix P)

The following paper, 'Experiential education enhancing paramedic perspective and interpersonal communication with older patients: A controlled study' was submitted to BMC Medical Education in 2017.

#### **Journal Metrics: BMC Medical Education**

<b>Impact Factor (IF)</b>	<b>Scimago Journal Ranking (SJR)</b>
1.572 (2016)	0.747 (Q1)

NB. Not currently accepted or published in the journal

## 6.2 Publication (Submitted Manuscript)

**Title: Experiential education enhancing paramedic perspective and interpersonal communication with older patients: A controlled study**

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# **Abstract**

## **Background**

Paramedics are required to provide care to an aging population with multidimensional and complex issues. As such, educators need to prepare undergraduate paramedics to recognise, assess and manage a broad range of psychosocial care and support issues beyond somatic conditions. Experiential educational interventions with older people provide realistic and contextualised experience which can improve the provision of holistic patient focused care.

## **Methods**

This was a single institution controlled before-after study with parallel groups, conducted in Australia in 2017. It was designed to compare the effectiveness of an educational program related to older people (intervention), verses no intervention (control) on paramedic student attitudes, knowledge and behavior with older patients.

## **Results**

A total of 124 2<sup>nd</sup> year paramedic students were included in this study, 60 in the intervention and 64 in the control group. Their demographics and Time 1 baseline results were homogeneous. Both groups showed improvement in communication skills with real older patients ( $p < 0.001$ ,  $\eta^2 = 0.41$ ) and ( $p < 0.001$ ,  $\eta^2 = 0.35$ ). The intervention group showed greater improvements in the ‘understands the patient’s perspective’ element for both the self-assessment ( $p < 0.001$ ) and the clinician assessment ( $p = 0.01$ ). Multiple linear regression Model 1 found gender ( $\beta = -0.25$ ;  $p = 0.01$ ) was the best predictor of clinician-assessed communication, with females having higher scores. Knowledge and attitudes remained relatively unchanged for both groups.

## **Conclusions**

As the first study to observe, measure and report on the interpersonal communication skills of paramedic student's with 'real' older patients we can report that these skills were fair to good at baseline and improved to good to very good post the intervention. Overall improvement was notably better in the 'understanding the patients perspective element' for the intervention group who had conducted one-one visits with an older person.

**Keywords:** allied health personnel, emergency medical technicians, paramedic, psychosocial support systems, aged, older patients, older people, communication, controlled before-after studies



## Introduction

Undergraduate paramedic education aims to equip students with the knowledge, behaviours and skills required to provide competent and compassionate patient care. Current paramedic programs in Australia are gradually progressing toward teaching a biopsychosocial approach to patient care which recognises the importance of treating patients holistically (1-3). This has never been more important than with older patients ( $\geq 65$ ) who are more likely to suffer from multiple conditions across the biopsychosocial spectrum (4, 5). It is imperative therefore that paramedic graduates have awareness and understanding of issues that impact older people beyond physical problems in order to develop appropriate recognition, assessment and management skills.

It has been suggested that younger adults lack life experience, awareness of diverse communities in which they will work, and interpersonal skills (6, 7). The median age of paramedics students in Victoria, Australia was 21 years in 2015 (8). In addition they are drawn to a career often misrepresented in the media as action packed with dramatic rescues, life and death events and emergency driving (9). For example, a single institution study of 168 paramedic students found the top three motivating factors for wanting to become a paramedic were 'wanting to help people', 'saving lives' and 'an exciting career' (10). They are thus highly motivated when it comes to learning and practising clinical concepts and advanced life support skills, with these aspects prioritised and seen too be more important than constructs such as interpersonal communication (11).

Exceptional interpersonal communication skills are essential as they allow for the development of clinician-patient rapport, which facilitates the sharing of information, compliance with treatment and overall patient satisfaction (12-14). While educators

endeavour to teach the value of interpersonal communication and the associated skills, the links between this and patient outcomes is poorly established upon graduation (6, 7, 15).

An individual's behaviour toward others can be influenced by experience, knowledge, awareness, prejudice, attitudes, and confidence (16). The interpersonal communication skills of paramedics and other health care professionals are no exception. For example, Ajzen's Theory of Planned Behaviour (TPB) asserts that attitudes are formed through knowledge and experience, and that there is a causal relationship between attitudes, intentions, and behaviour (16). The ability of paramedic students to communicate compassionately and effectively with older patients is therefore influenced by their past experience, knowledge and ultimately attitudes toward them.

Teaching interpersonal communication skills is challenging with tradition didactic methods having limited success (17). If, as the TPB attests, the key to changing behaviour is through improving attitudes, it is necessary to implement educational strategies that target knowledge and experience (18). Attitudes toward older adults improve best by enhancing awareness, knowledge and understanding (19). A systematic review of educational interventions designed to improve health care student attitudes toward older adults found that interventions incorporating interactions with independently living real patients had the most positive impact (20). This is supported by Kolb's Experiential Learning Theory (ELT) whereby students learn and develop attitudes best when they are in touch with reality and gain contextualised experience (21). Such experiential interventions should, in theory and practice, translate to better attitudes and behaviour.

Previous research has highlighted paramedic students have varied experience, limited knowledge and slightly positive attitudes toward older patients (8). It is unknown however, if and how knowledge and attitudes translate to behaviour. This current study is one of few to report on observed behaviour of health care students toward older adults, and the first to observed and analyse paramedicine. The aim of this study was to determine the effects of an educational intervention with older people on student paramedics' knowledge, attitudes and behaviour toward older patients.

## **Methods**

### **Study Design**

This was a single institution controlled, before-and-after trial with parallel groups conducted in Australia between Feb – May 2017 (Semester 1). It was designed to compare the effectiveness of an educational program related to older people (intervention), verses no intervention (control) on paramedic student attitudes, knowledge and behavior with older patients. As the educational intervention was embedded within the undergraduate paramedic curriculum it was repeated between July – October 2017 (Semester 2) to ensure the control group received the same program. The study was approved by the Monash University Human Research Ethics Committee (MUHREC - 2016-1370).

### **Participants and Setting**

The participants were 2<sup>nd</sup> year Bachelor of Emergency Health and Paramedic Practice students from Monash University in Melbourne, Australia. All students had to be concurrently enrolled in two units of study; EPP2011 'Clinical concepts of paramedic practice 2' and HSC2200 'Health and the human lifespan' to be eligible to participate in the study. The interventions were embedded components of these units therefore active

recruitment was not required. Prior to the Time 1 data collection students were given an explanatory statement about the study and completed and signed a consent to participate form.

### **Sample Size**

A power calculation using G\*Power (Version 3.1.9.2, F.Faul, Germany) determined 64 participants per group would be required to detect a difference between groups, with a two-tailed  $\alpha$  of 0.05, an effect size (d) of 0.5 and a (1- $\beta$ ) of 0.80.

## **Intervention Procedures**

### **Group allocation**

Students were allocated based on their tutorial group for HSC2200. Three tutorial groups were assigned to the intervention arm and three to the control arm. Students were allocated by the university timetabling software to a tutorial group based on their preferences and other timetabled classes.

### **Blinding**

The research team were blinded to the group allocation throughout the process. The group allocation was done by the university timetabling system and the intervention was delivered and administered by teaching staff not involved in the study. Students were aware of their allocation once they began the intervention and were asked not to share intervention details with those in the other group.

### **Intervention**

#### **Part 1. Geriatric Respect, Awareness, Care and Compassion (GRACC) workshop.**

This two-hour workshop included a small group activity to discuss and answer 10-multiple choice questions on demographic and biopsychosocial factors pertinent to older people. It also included viewing footage of older people telling their stories, followed by discussion

about physical and emotional needs and the impact of listening and ‘being heard’. It concluded with some small group role playing exercises simulating paramedics attending older patients. This workshop was designed by the research team to equip the students with greater knowledge and awareness of older people, and some tools to communicate effectively with them prior to part 2 of the intervention.

### Part 2. Geriatric home visits

Following the GRACC workshop participants were asked to seek out an older adult from the community for 4 x 1 hour visits. The older adult needed to be able to communicate, and not be related to the participant. Participants were instructed to keep these visits relatively unstructured, while aiming to get to know the person, gain awareness of what makes them ‘tick’, what is important to them, and what communication strategies work best with them. A series of potential questions or conversation starters were made available.

### **Control**

The control group participated in a similar workshop about paediatric patients and conducted home visits with children.

### **Instrumentation**

Three instruments were used to collect data from the participants at Time 1 (pre-intervention Feb 2017), and Time 2 (post-intervention May 2017).

1. Aging Semantic Differential (ASD) is a widely used validated instrument to assess stereotypical attitudes towards older people (22-24).
2. Facts on Aging Quiz 2 (FAQ2) is a brief, reliable, easily administered test of factual knowledge on aging (25). The Australian version of the Facts on Aging Quiz 2 (FAQ2) was used in this study (26).



3. Kalamazoo Communication Skills Assessment (KCSA) is a modified version of the original Kalamazoo Essential Elements Communication Checklist (27). It is a communication skills assessment tool with good internal consistency (28). Originally designed for physicians it was modified from 9 to 6 communication elements pertinent to paramedic-patient communication (i.e. 3 elements relevant only to physician practice were removed).

### **Data collection procedures**

Students were randomly drawn from their EPP2011 practical class and asked to complete demographic details, the ASD and FAQ2. They were then dispatched to a fictitious case involving an older person and asked to conduct a patient-centred interview within 10 minutes. After this the student participant and patient both completed the KCSA. These encounters were videoed allowing a clinician to view and complete a KCSA at a later time.

### **Older people recruitment and training**

Five independently living older people with a mean age of 73 were recruited from the community via email and word of mouth. Prior to the Time 1 data collection the older people underwent a one-hour training session covering what to expect, and what was required of them. For the encounters they were given a brief script with the reason for calling the paramedics. Aside from the reason for the paramedic call all other answers regarding past medical history, allergies etc. were their own. This assisted the older people to be themselves without the need to act, remember detailed information, or take on an unfamiliar role. They were also required to complete a KCSA post the encounter on the students' performance. They watched two exemplar videos, one of poor and one of good communication and were given specific instructions on how to do complete the assessment form. They were blinded to the group allocations.

### **Clinical rater recruitment and training**

Clinical raters were recruited from paramedic educators teaching into the Bachelor of Emergency Health and Paramedic Practice. Three different raters with an average of 10 years clinical experience were used. They were given a summary of the project, instructions on how to use the KCSA tool, and asked to rate the encounter based on what they would expect of a qualified paramedic. They were also blinded to group allocation.

### **Piloting**

Utilising a staff member in place of a real older patient, three staff and three post-graduate students completed the patient-centred interview and surveys. The process was timed and feedback sought. It was determined that in addition to the 10 minute patient-centred interview the surveys would take between 10-15 minutes. Feedback lead to the FAQ2 questions being reduced from 25 to 20 due to relevance to the Australian paramedic context.

### **Outcomes – primary and secondary**

The primary outcome for this study was paramedic student behaviour toward older adults manifest in interpersonal communication. This was assessed by the KCSA which was completed by 3 raters; the student, the patient and a clinician following a 10 minute patient-centred interview with an older adult at both Time 1 and Time 2.

Secondary outcomes included attitudes towards older adults (assessed via the ASD) and knowledge about older adults (assessed via the FAQ2). Both these self-report measures were completed by the participant prior to the interview with the older patient at both Time 1 and 2.

### **Data Analysis**

Data was stored and analysed using the Statistical Package for the Social Sciences (SPSS Version 23). Mean and standard deviation or median and interquartile ranges were used to

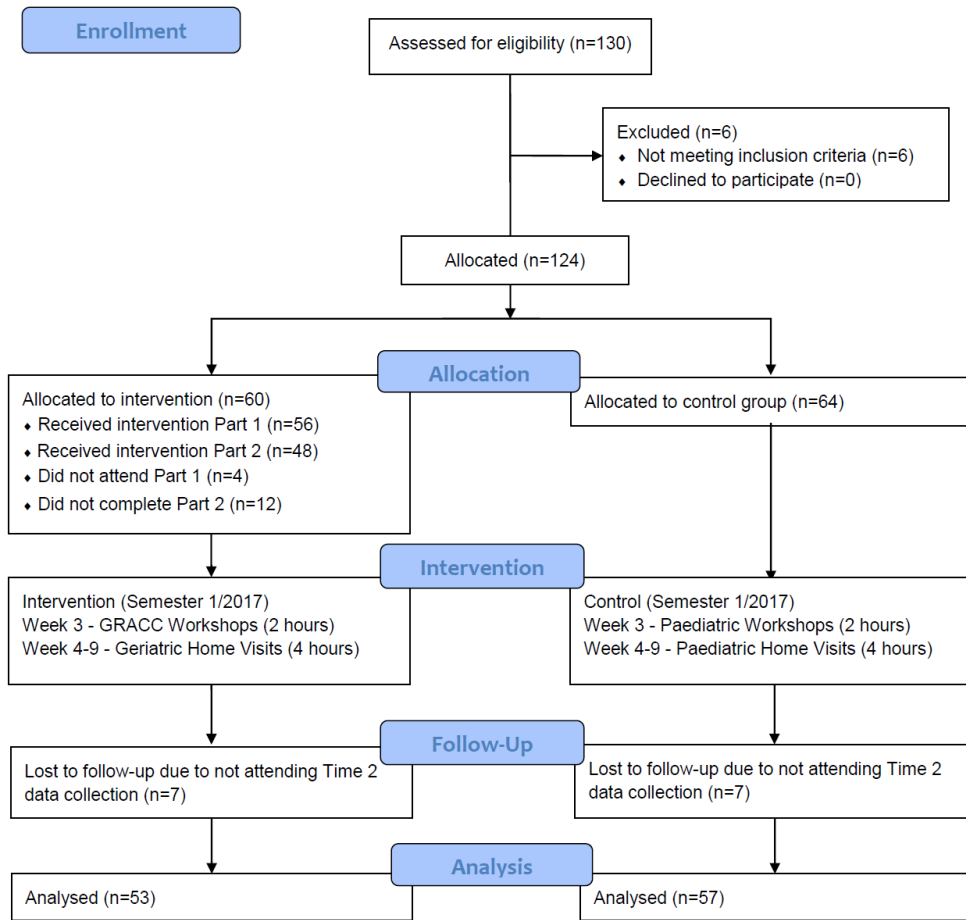
report data as appropriate. Independent sample t-tests were used to compare the intervention and control groups. Paired sample t-tests were used to compare the results of both groups' pre and post the intervention. KCSA scores for all 6 elements were treated individually, and totaled out of 30 as the outcome variable to determine factors that predict the total score. Linear regression models were used to analyse the relationship between independent variables and total KCSA scores. Internal consistency of each scale was measured with Cronbach  $\alpha$ . All tests were 2-tailed and results were considered statistically significant at  $p < 0.05$ . Eta squared ( $\eta^2$ ) = 0.01, 0.06, 0.14 represented small, medium and large effect size respectively.

## **Results**

### **Participant demographics**

Of the 130 2<sup>nd</sup> year paramedic students, 124 were eligible to participate in this study. Their flow through the allocation and intervention is shown in Fig. 1 (29). The demographics of both groups were homogenous. Of the intervention group the median (interquartile range) age of students was 20 (19-24) years, 62% (37/60) female. Students in the intervention and control groups encountered a similar number of geriatric patients on placements, (mean  $\pm$  SD:  $6.62 \pm 2.67$  and  $6.75 \pm 2.59$ ) respectively. Full demographic details are reported in Table 1.

**Figure 1. Flow diagram of progress through the study**



**Table 1. Student Demographics & Participation (N=124)**

	<b>Intervention (n=60)</b>	<b>Control (n=64)</b>
<b>AGE</b>		
Md (IQR)	20.0 (19-24)	19.5 (18-30)
Min - Max	18-34	18-30
<b>GENDER</b>		
Male	23 (38%)	29 (45%)
Female	37 (62%)	35 (55%)
<b>GERIATRIC WORKSHOP</b>		
Yes	56 (93%)	0 (0%)
No	4 (7%)	64 (100%)
<b>GERIATRIC VISITS</b>		
Yes	48 (80%)	0 (0%)
No	12 (20%)	64 (100%)
<b>GERIATRIC PATIENTS ON PLACEMENT</b>	<b>Intervention (n=50)</b>	<b>Control (n=53)</b>
M (SD)	6.62 (2.67)	6.75 (2.59)
Min - Max	1-16	2-11

## Primary Outcome

The total KCSA mean score for the intervention group clinician rating improved by 2.8 from Time 1, (mean  $\pm$  SD: 15.4  $\pm$  3.09) to Time 2, (mean  $\pm$  SD: 18.2  $\pm$  3.20). This was statistically significant ( $p < 0.001$ ), with a large effect size ( $\eta^2 = 0.41$ ). Similarly the control group clinical rating improved by 2.9 from Time 1, (mean  $\pm$  SD: 16.2  $\pm$  2.01) to Time 2, (mean  $\pm$  SD: 19.1  $\pm$  3.60). This was also statistically significant ( $p < 0.001$ ), with a large effect size ( $\eta^2 = 0.35$ ). The complete KCSA results are reported in Table 2. An analysis of mean scores across all 6 communication domains for both groups found statistically significant improvement and medium to large effects sizes for all raters. A graphical comparison between groups and raters can be found in Fig 2. Multiple linear regression Model 1 found gender ( $\beta = -0.25$ ;  $p = 0.01$ ) was the best predictor of clinician-assessed communication (KCSA), with females having higher scores. In Model 2 gender in combination with the number of geriatric patients seen on placement ( $\beta = -0.6$ ;  $p = 0.04$ ) was the best predictor of self-assessed communication (KCSA), i.e. the more patients males saw the lower they rated their communication, while still rating themselves much higher than their female counterparts. The regression model results are reported Table 3.

## Secondary Outcomes

There was little difference found between the intervention and control groups in FAQ2 scores prior to the intervention. The intervention group scores improved from Time 1, (mean  $\pm$  SD: 10.1  $\pm$  1.94) to Time 2, (mean  $\pm$  SD: 10.5  $\pm$  2.06), however this was not statistically significant ( $p = 0.51$ ), with a small effect size ( $\eta^2 = 0.01$ ). The FAQ2 was found to have poor internal consistency with a Cronbach alpha of .38. The full FAQ2 results are reported in Table 2.



Table 2. FAQ2 (Knowledge), ASD (Attitudes) &amp; KCSA (Communication) Results

	INTERVENTION GROUP		CONTROL GROUP		
<b>KCSA TOTAL SCORES*</b>					
<i>Self-Assessment</i>	<b>M(SD)</b>	<b>Min-Max</b>	<b>M(SD)</b>	<b>Min-Max</b>	<b>p</b>
<b>Time 1</b>	<b>(n=57)</b>		<b>(n=64)</b>		
	18.5 (4.26)	7 - 30	19.4 (4.64)	9 - 28	0.26
<b>Time 2</b>	<b>(n=52)</b>		<b>(n=57)</b>		
	21.1 (4.47)	14 - 30	22.2 (4.45)	13 - 30	0.19
<b>p</b>	<0.001		<0.001		
<b><math>\eta^2</math></b>	0.31		0.33		
<b>95% Confidence Interval</b>	-3.67 - -1.38		-3.49 - -1.56		
<b>df</b>	t(50) = -4.79		t(56) = -5.25		
<i>Clinician-Assessment</i>	<b>M(SD)</b>	<b>Min-Max</b>	<b>M(SD)</b>	<b>Min-Max</b>	<b>p</b>
<b>Time 1</b>	<b>(n=59)</b>		<b>(n=64)</b>		
	15.4 (3.09)	7 - 22	16.2 (2.01)	9 - 22	0.11
<b>Time 2</b>	<b>(n=52)</b>		<b>(n=57)</b>		
	18.2 (3.20)	13 - 26	19.1 (3.60)	11 - 25	0.14
<b>p</b>	<0.001		<0.001		
<b><math>\eta^2</math></b>	0.41		0.35		
<b>95% Confidence Interval</b>	-3.96 - -1.96		-3.98 - -1.85		
<b>df</b>	t(51) = -5.96		t(56) = -5.47		
<b>FAQ2**</b>	<b>M(SD)</b>	<b>Min-Max</b>	<b>M(SD)</b>	<b>Min-Max</b>	<b>p</b>
	<b>(n=60)</b>		<b>(n=64)</b>		
<b>Time 1</b>	10.1 (1.94)	7 - 14	9.9 (1.85)	4 - 14	0.57
	<b>(n=53)</b>		<b>(n=57)</b>		
<b>Time 2</b>	10.5 (2.06)	5 - 15	9.8 (1.99)	5 - 14	0.10
<b>p</b>	0.51		0.87		
<b><math>\eta^2</math></b>	0.01		0.00		
<b>95% Confidence Interval</b>	-0.92 - 0.46		-0.57 - 0.63		
<b>df</b>	t(52) = -0.66		t(56) = 0.17		
<b>ASD ***</b>	<b>M(SD)</b>	<b>Min-Max</b>	<b>M(SD)</b>	<b>Min-Max</b>	<b>p</b>
	<b>(n=58)</b>		<b>(n=58)</b>		
<b>Time 1</b>	116.9 (17.09)	74 - 147	117.7 (15.06)	74 - 149	0.77
	<b>(n=48)</b>		<b>(n=51)</b>		
<b>Time 2</b>	119.7 (16.45)	82 - 156	118.4 (16.87)	71 - 155	0.79
<b>p</b>	0.12		0.58		
<b><math>\eta^2</math></b>	0.05		0.01		
<b>95% Confidence Interval</b>	-7.00 - 0.83		-4.18 - 2.37		
<b>df</b>	t(47) = -1.58		t(50) = -0.55		

\*KCSA Total scores can range from 6 (poor) – 30 (excellent)

\*\*FAQ2 scored out of 20

\*\*\*ASD neutral attitude 128, lower scores represent more positive attitudes

Both groups displayed slightly positive attitudes toward older adults at Time 1 prior to the intervention. At Time 2 both groups had a slight decrease in attitudes, while they still remained on the positive side of neutral. Neither change was statistically significant;  $p = 0.12$  and  $p = 0.58$  respectively. The ASD was found to have excellent internal consistency with a Cronbach alpha of 0.92. The full ASD results are reported in Table 2.

Figure 2. Kalamazoo Communication Skills Assessment Mean Results

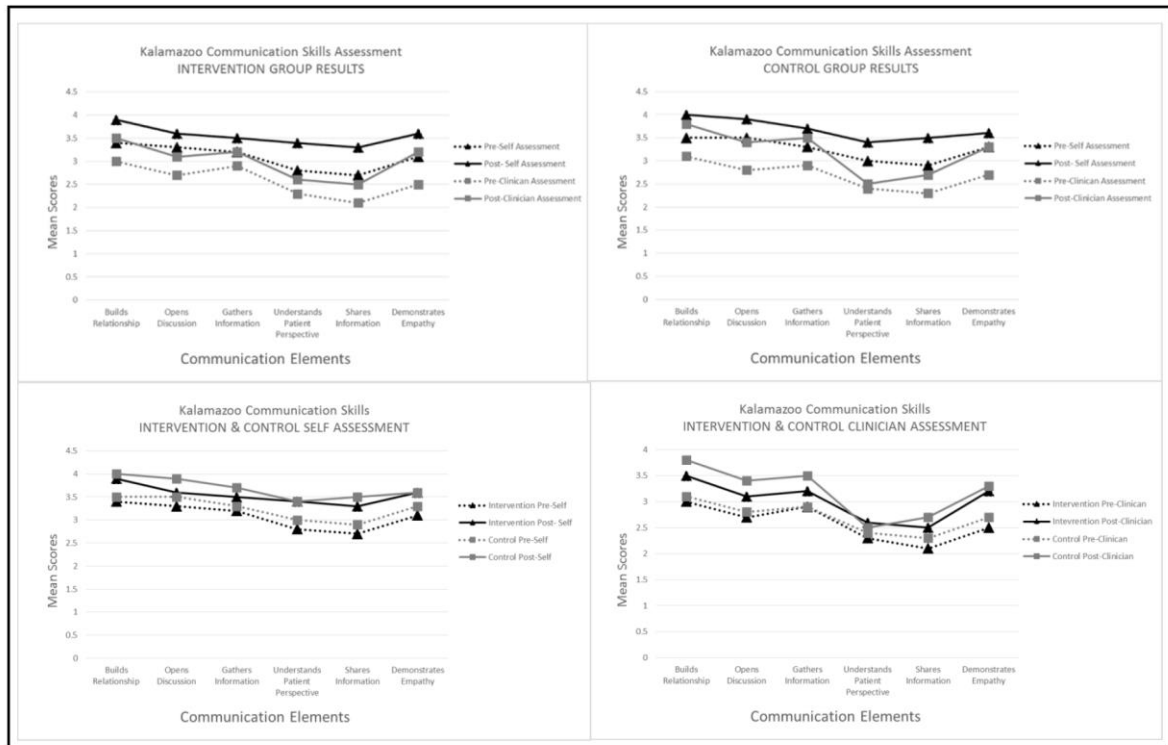


Table 3. Summary of multiple regression analysis predicting KCSA Scores

MODEL 1		KCSA Both Groups <u>Clinician-Assessment</u> $F(3, 106) = 3.04; R^2 = 0.08$		
Predictors		Coefficient (95% CI)	Beta	p
GROUP				
Intervention (Reference)		1.00		
Control		1.12 (-0.15, 2.4)	0.16	0.83
AGE		0.08 (-0.12, 0.27)	0.07	0.46
GENDER				
Female (Reference)		1.00		
Male		-1.74 (-3.06, -0.42)	-0.25	0.01
MODEL 2		KCSA Both Groups <u>Self-Assessment</u> $F(3, 87) = 2.4; R^2 = 0.08$		
Predictors			Beta	p
PLACEMENT		-0.01 (-0.46, 0.44)	-0.01	0.95
GENDER				
Female (Reference)		1.00		
Male		4.3 (-0.8, 9.4)	0.5	0.1
PLACEMENT*GENDER		-0.77 (-1.5, -0.03)	-0.6	0.04

## Discussion

The educational program designed to increase knowledge, attitudes and behaviour toward older people in this study had little discernible impact on the intervention group when compared to the control group. Both groups had negligible change to their already poor knowledge scores and similarly little change to their already slightly positive attitudes. The area with the most notable improvement was in behaviour. Interpersonal communications scores improved by a significant margin, however this was consistent across both groups.

The primary outcome of this study looked at interpersonal communication with older patients. As indicated in Table 2 there were statistically significant improvements in KCSA score for both the intervention and control groups with both self and clinician rated assessments. These results indicate that regardless of the intervention student interpersonal communication skills with older adults improved. While the results do not support an impactful intervention they do suggest that the pre-intervention Time 1 data collection, where students conducted a patient-centred interview with an older adult, could have influenced the results. All students completed this exercise which was an interaction with real independent older adults. In an effort to provide, observe and measure realistic interactions between students and older adults, and a baseline for non-randomised groups, the results were potentially adversely influenced. A 2010 controlled study of 262 UK medical students utilising post measures only found a two-week geriatric clerkship increased observed geriatric assessment Objective Structured Clinical Examinations (OSCE) significantly in comparison to the control group (30). A post-test only design, while not allowing for pre and post comparison, would have alleviated this issue (31), and will be strongly considered for future studies.

A closer evaluation of the individual communication elements in the KCSA (Fig. 2) indicated relatively uniform improvement across both groups and assessors with the exception of 'understands the patient's perspective'. The intervention group showed greater improvements in this element for both the self-assessment ( $p < 0.001$ ) and the clinician assessment ( $p = 0.01$ ). This indicates that part 2 of the intervention; visits with older adults could have influenced the intervention group's perspective of older people. Understanding a patient's perspective is said to increase empathy, rapport development and ultimately patient clinical competence and patient satisfaction (12, 32). This aspect of the intervention would therefore seem to be of value.

Also worthy of discussion are the regression models and the impact of gender on communication. Model 1 indicates that being female is predictive of better communication skills for the clinician assessment (Table 3). This is consistent with other research which describes the communication, empathy and caring skills of females to be generally superior to that of males (32, 33). Also of interest in Model 2 was the finding that males self-assessed their communication skills much higher than that of female participants (Table 3). This is also consistent with the literature that young males tend to be more confident and overestimate their abilities particularly in communication skills (34). These factors should therefore be taken into consideration when teaching communication to undergraduate paramedics.

In order to equate these findings to the TBP we need to also look at the secondary outcomes, as knowledge and attitudes are said to influence behaviour. The intervention groups already low mean FAQ2 scores improved by a small margin of 0.4 and the control group scores decreased by 0.1. Neither result was statistically significant nor had a notable effect size.

Given the intervention, in particular the GRACC workshop, was designed to improve knowledge about older adult the results were underwhelming. Are these results indicative of the tool itself; the student's lack of interest in learning important demographic and biopsychosocial factors pertinent to older people, the intervention, or a combination of these factors? The FAQ2 has been historically criticised for poor reliability (35) which was evidenced again in this study with a Cronbach  $\alpha$  of 0.38. This has been explained however by the suggestions that such statistical methods may not be appropriate to evaluate internal consistency for instruments such as this with broad areas of content (26). As for the students, their knowledge development could have been impacted by their propensity to prioritise clinical knowledge and skills over other areas. Other studies using MCQ versions of the FAQ have similarly reported low knowledge scores with minor improvements following educational interventions. A study of 62 US medicine, pharmacy, social work and nursing students reported only a 3% increase in mean scores from 46% to 49% ( $p = 0.04$ ) post a 4-day geriatric care program (36). Another US study of 100 US nutrition students who participated in 3 structured interviews with older people reported a 6% increase in knowledge score from 50% -56% ( $p = 0.15$ ) (37). This is consistent with our findings where students had low baseline knowledge and only a small increase of 2% (51% - 53%) post the intervention ( $p = 0.51$ ). Much more research is therefore required in this area before any conclusions can be drawn about the effectiveness of interventions to improve knowledge about older people.

Previous studies with paramedic students have consistently produced similar baseline results for the ASD with attitudes being slightly positive (8, 38). A 2016 survey of 871 student paramedics across four universities in Victoria, Australia found that they had only marginally positive attitudes (8). In this study the attitudes of both the intervention and control groups remaining positive while decreasing by a very small yet non-significant margin. Other studies

report similar minor nonsignificant bidirectional variations in attitudes post interventions (39, 40). The quality of interaction with older adults who are well and independent is suggested to influence attitudes in a positive direction, (41-43) however this is not conclusively supported by our results.

The TPB assertion that increased knowledge and attitudes lead to improved behaviour was not supported in this study. Nor do the results definitively disprove this theory as factors such as the testing instruments, student motivation and participation, placements variations, and study methodology could account for the results. A comparable study of UK medical students, while using different measurements, reported slight improvements in knowledge between groups ( $p = 0.04$ ), decreasing attitudes ( $p = 0.09$ ) and improved geriatric assessment OSCE scores ( $p < 0.001$ ) (30). The notable difference was that the study conducted the geriatric assessment OSCE's post the intervention only. The ELT on the other hand was supported by these findings with the communication of all students improving following the patient-centred interview with an older person at Time 1. These results however could also have been impacted by the practice effect, clinical placement experiences and performing clinical scenarios throughout the semester.

Future research needs to focus on the development of educational strategies that not only enhance undergraduate paramedic student interpersonal communication skills but raise their awareness of the importance of these skills to patient care and outcomes. The influence of knowledge and attitudes on behaviour warrants further investigation however this study indicates that experience plays a vital role also and should be explored more thoroughly. Future studies should seek to refine experiential interventions to provide engaging, meaningful and impactful interactions between paramedic students and older people.



## Limitations

The study was limited by inability to fully randomise the groups due to university timetabling constraints. Despite this, we were reassured to see the group demographics and results at baseline were homogeneous. The study was also unable to control for numerous variables outside of the study e.g. the number of older patients seen on placement, the type of cases and individual student's involvement in each case, attitudes of clinical supervisors, past experience, work experience etc. Non-blinding of students while unavoidable once the intervention began could also have influence the participants in the intervention groups performance. While asked not to discuss details the intervention group could have discussed what they were doing with participants in the control group thus influencing the results.

## Conclusion

Conducting rigorous controlled educational studies provides numerous complexities and challenges, however despite this we are able to report some important finding which add to what is already know about paramedic students and older patients. This study affirms that paramedic students have poor knowledge and slightly positive attitudes toward older patients. As the first study to observe, measure and report on the interpersonal communication skills of paramedic student's with 'real' older patients we can report that these skills were fair - good at baseline and improved to good - very good post the intervention. All participants in this study conducted a patient centred interview with a real, independently living older person at the Time 1 data collection which resulted in all students improving. Overall improvement was notably better in the 'understanding the patients perspective element' for the intervention group who had conducted one-one visits with an older person.

## **Competing Interests**

The authors have no competing interests to declare.

## **Availability of data and materials**

The datasets generated and/or analysed during the current study are not publicly available but are available from the corresponding author on reasonable request.

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### 6.3 Summary

This final chapter presented the findings of an educational intervention designed to improve student paramedic knowledge, attitudes and behaviour toward older people.

This study proved to be as challenging as controlled educational studies are renowned to be. The limitations, challenges and learnings from this are discussed in the published paper.

Despite the challenges with methodology, timetabling and student participation some new and important findings about paramedic students and older patients were presented. The study supports previous findings that paramedic students have poor knowledge and slightly positive attitudes toward older patients which remained relatively unchanged by the intervention.

In regard to interpersonal communication skills this was the first study to observe, measure and report on paramedic student interactions with 'real' older patients. All students, regardless of the intervention, improved in this area which could be attributed to the time 1 data collection where all participants conducted a patient-centred interview with a real independently living older person. The only notable difference between groups was in the 'understanding the patients perspective element' for the intervention group which could be attributed to part 2 of the intervention - one-one visits with an older person.

Chapter 7 will draw together the findings from the five core chapters and draw some conclusions about what has been discovered about the psychosocial issues impacting older patients in the out-of-hospital environment, and how to build the awareness and capacity of paramedic graduates to recognise and address these issues.

## Chapter 7: Discussion

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This research aimed to investigate the psychosocial issues impacting older people in the out-of-hospital environment, and how to build the awareness and capacity of paramedic graduates to recognise and address these issues. This chapter will summarise and discuss the key findings presented in this thesis.

### 7.1 Older People in the Out-of-Hospital Context

Previous research has provided us with evidence of an aging population who are prone to multifactorial complex biopsychosocial issues which are contributing to rising emergency ambulance utilisation rates. This research adds depth to this knowledge by providing a more detailed analysis of the current utilisation rate and reasons for the utilisation from ambulance service data and the perspective of paramedics.

The first of two studies investigating older patient's use of emergency paramedic services was a descriptive study looking at three years of AV data. This study reported a high utilisation rate by patients 65 and over, making up 24% of the AV work load (approximately 200,000 patients per year) (34). The mean age of patients was 80 years, 55% were female and 71% were over 75 years old (34). The most frequent reasons for requiring an emergency ambulance were pain, infection, trauma, cardiac and respiratory problems (34) which are very similar reasons to those reported in other high-income economies (35-37). These findings are also commensurate with what we know about aging and the propensity to encounter more health issues as the process continues (5, 9). Finally this study took a closer look at the free text case descriptions, given that psychosocial issues accounted for only 2.7% of final assessments (34). The free text case descriptions told a different story with psychosocial issues evident in more than 91,000 cases (34). Anxiety, depression, loneliness and worry about health conditions, fear of falling or dying and an inability to help themselves or access assistance if required were prominent (34). This could be attributed to paramedics not recognising, reporting, or prioritising these issues as highly as physical complaints. This is an area we know little

about, therefore it requires further investigation to determine the actual contributing factors which will inform strategies to redress this imbalance.

The second study then sought the perspective of the paramedics themselves about older patient's use of emergency paramedic services. This was a cross-sectional study including focus group discussions with 14 experienced paramedics with an average age of 43 years (38). They all agreed or strongly agreed that older patients have needs beyond the physical, and they identified some of those issues as loneliness, anxiety, fear, grief, depression, neglect, abuse, self-care issues, care of pets, loss of confidence, and lack of social and support networks (38). All said they were often times unable to address all of these issues but would like to be able to do more (38). They felt barriers to addressing psychosocial needs included the complex, multifactorial, and long-term nature of some of these issues, and a lack of time, knowledge, and resources necessary (38). They all admitted to transporting patients to hospital when it was not necessarily the best option due to lack of options and out of duty of care. They also suggested that less experienced paramedics may not actually recognise these issues due to their focus on physical conditions (38). This is consistent with what we already know about young paramedics who can lack understanding, and the ability to communicate effectively with older patients (20). It also suggests that novice paramedics, like other novice practitioners, are more focused on physical and obvious findings and are more likely to explore beyond that once they become familiar and confident in their role (39). Solutions postulated by the paramedics included better education about the psychosocial issues facing older people, and more resources such as extended care paramedic roles, referral services, and paramedic resource cards with relevant referral contact numbers (38). This leads us to the second cohort of people discussed within this thesis; paramedic students, and how to build their awareness and capacity to recognise and address psychosocial issues in older people.

### Summary of findings related to older people....

- Older people comprised one quarter of the AV emergency workload, with almost three quarters of those patients aged 75 years or older
- The most commonly reported final assessments by paramedics are similar to that of older patients in other high-income economies; pain, infection, trauma, cardiac and respiratory problems
- Psychosocial complaints appear to be more prevalent than paramedic final assessments indicate and are described more often in free text case descriptions
- Anxiety, depression, loneliness, fear of falling or dying and being alone are common
- The barriers to addressing psychosocial issue of older people according to paramedics are knowledge, resources and time
- Experienced paramedics suggest more education for undergraduate paramedics about the psychosocial issues facing older people, and resources such as extended care paramedics, referral services, and paramedic resource cards

## 7.2 Student Paramedics and Education

Previous research has led us to believe that student paramedics have slightly positive attitudes toward older people, however we had no knowledge of their level of experience with, knowledge of, or behaviour toward older people. This thesis adds new knowledge in this area.

The first paper, a multi-institutional study of 871 student paramedics investigated their experience, knowledge and attitudes toward older adults. The participants who had a median age of 21 were found to have a variety of prior experiences with older people (40). The discussion of these results centred on the effect of quality experiences over quantity. Experiences with the institutionalised, frail and ill can perpetuate the stereotypes associated with older people while positive experiences with active independently living older people as well as or in place of these provide a more balanced

and realistic perspective to students (41-43). While educators are not able to influence past student experiences with older people they can and should endeavour to provide this balance.

Knowledge of older people was found to be low, and while almost half the participants were at the beginning of first year the mean results were consistent across the year levels (40). This was also consistent with health care students from other disciplines (41, 44, 45). This raised yet to be answered questions about either the pedagogical approaches being used to teach this topic, the relevance of the survey evaluating knowledge, or a combination of both.

Attitudes were found to be slightly positive (40). Discussion centred on the polar adjectives in the survey itself and the labelling of some traits as positive or negative and the impact that may have on care. It is important that paramedic understand that some older people are weak and fail, but that is okay, and they should be managed with care and assistance. Alternatively, others are strong and capable and do not need as much assistance. The fact that the paramedic students' results were just on the positive side of neutral should be regarded as a good result as they do not think 'all' older people fall to the extremes on the semantic scale.

The relationship between experience, knowledge and attitudes was weak in this instance.

Experience regardless of the quality was a predictor of higher self-rated level of experience, indicating increased confidence interacting with older people. Better knowledge and self-rated level of experience was associated with more positive attitudes. Experience was not however a predictor of greater knowledge, nor were knowledge and experience predictive of positive attitudes (40). The take home message from this study is that experience, knowledge and attitudes have some relationship, and that quality meaningful experiences seem more likely to ultimately influence future attitudes and patient care.

The next paper was a systematic review investigating the effectiveness of educational interventions designed to improve health care student's attitudes and behaviour toward older people. This was



done preceding an educational intervention to ascertain the most effective intervention available based on previous empirical work. This systematic review found 29 studies testing interventions including the following pedagogical approaches either as standalone interventions or in combination with traditional didactic methods: - workshops, geriatric clinical placements, sensory activities such as 'the aging game', service learning and interactions with real older people (46). While sensory activities had a positive impact on gaining the patients perspective and empathy they were found to actually decrease attitudes as they were experiencing the worst of sensory deficits associated with age (46).

Interactions with real older patients which were largely experiential were found to be the most effective way to improve attitudes in 18 studies (46). These 18 interventions involving real patients all focused on developing an understanding and awareness of older patients and the practicing of interpersonal communication skills (46). Only one study observed behaviour following an intervention with real older patients, most likely due to the complexities involved. While it was therefore not possible to draw any definitive conclusions about the impact on behaviour from one study the quality was high and results favourable (46). This systematic review concluded that interactions with real older people was the most effective way to improve student attitudes and behaviour toward older people, and that more observational studies were needed to assess the effectiveness of these interventions on behaviour.

The final paper in this thesis was a controlled study of an educational intervention designed to improve student paramedic knowledge, attitudes and behaviour toward older people. Based on the recommendations of the systematic review it involved interactions with real older people and an examination of behaviour through observation. The intervention included a workshop designed to increase knowledge and awareness of older people and their needs, followed by an interaction activity with real older people (four x one-on-one visits with an independently living older person). A total of 60 2<sup>nd</sup> year paramedic students made up the intervention group with 64 in the control group.

Both groups achieved statistically significant improvements in observed communication skills with a real older person. This was attributed to the practice effect and the fact that pre-intervention or time 1 testing involved a patient-centred interview with a real older patient. A similar UK study employing a post intervention only design reported a significant improvement in Objective Structured Clinical Examinations for the intervention group in comparison to the control (47). Subsequent research indicates that post-test only designs are more suitable for education interventions particularly if the testing can influence the outcomes as in this case (48).

The only notable difference between the two groups was in the 'understanding the patient's perspective' element with the intervention group improving more than the control group. This indicates that the one-on-one visits with older people allowed students to gain a greater understanding of older people from their perspective which is said to increase empathy, rapport development and patient satisfaction (49). There was little change in attitudes (slightly positive) or knowledge (poor) for both groups. These results do not support the TPB which attests that improved attitudes lead to improved behaviour. In this instance behaviour improved while attitudes remained unchanged. It cannot definitively disprove this theory however, as factors such as the testing instruments, student motivation and participation, placements variations, and study methodology could account for the results. This study therefore tells us that education can influence student paramedic behaviour toward older patients by using experiential interactions with real patients.

#### **Summary of findings related to student paramedics and education....**

- Student paramedics have various degrees of experience with older people, low levels of knowledge and slightly positive attitudes
- There was only a weak association between experience, knowledge and attitudes
- Greater experience and knowledge were not found to be predictive of improved attitudes in this instance

- Educational interventions involving interactions with real older people had the greatest impact on attitudes toward them
- Interaction with real older people can help paramedic students understand the patients perspective and improve interpersonal communication skills with them
- The link between knowledge, attitudes and behaviour has not been established in this instance

## Chapter 8: Implications and recommendations for practice

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This thesis has provided new findings about older people and paramedic student/graduates and their relationship which were discussed in the previous chapters. These findings have implications for ambulance services, paramedics and educators, and have informed recommendations for future practice in these areas.

### 8.1 Ambulance Services

Ambulance services nationwide need to be aware not only of the growing utilisation rates driven by the aging population but the nature of the needs of this population. As longevity increases so too does the likelihood of individuals in this population experiencing more complex biopsychosocial issues. The days of the stretcher-bearer whose role was to merely attend emergencies and transport patients to hospital (load and go) are now long gone. Paramedics are now highly trained clinicians with a large suite of assessment, diagnostic and treatment regimens at their disposal. It is essential that ambulance services support paramedics with ongoing education in non-technical areas in addition to the clinical, and resources to equip them to meet the expanding diverse needs of this growing population. Examples of how this can be achieved are as follows:-

- Education
  - professional development training for operational staff on the complex psychosocial issues facing older people and how to recognise, assess and manage these issues
  - professional development in this area could include online learning packages, face-to-face workshops, simulation, and virtual reality
  - resources to help paramedics inform and educate patients and families about community and health care resources available to assist them in addition to, or as an alternative to calling 000
  - resource cards with community and health care services; what they can offer and contact details

- Referral services
  - expanded referral services for patients and paramedics to provide alternatives and the most appropriate resource for low acuity problems
- Expanded roles
  - extended care or community paramedics who can spend longer assessing and managing, or referring patients in the community with low acuity issues

## 8.2 Paramedics

Students, new graduates and more experienced paramedics alike need to be responsible for their ongoing learning and development. Universities, employers and governing bodies can and will regulate and enforce participation in education and development. Individuals however must be willing to take this on board and continually develop their own knowledge and expertise related to the care of older people through inquisition, education and experience. The onus is also on more experienced paramedics to share their knowledge and skills with novice paramedics to build their awareness of the psychosocial issues impacting older people and their capacity to address these issues. Paramedics can do this by the following means:-

- Professional development
  - compulsory training days, online training resources provided by services and industry associations, attending conferences, reading current research, further study

NB. Paramedic registration (2018) will mandate professional development of some kind

- Professional networks
  - discussions with patients, other paramedics and other health care providers about services available, what they offer and how to contact them
- Experience and reflection
  - reflect and draw on past experiences to determine what works best when assessing and managing psychosocial issues in older people

### 8.3 Educators

Educators need to not only be aware of the biopsychosocial model but ensure they communicate the importance of caring for patients holistically with students. While traditional didactic means may be used to convey the types of psychosocial issues older patients face and the implications these have on overall wellbeing they have not been effective. Educators must therefore look at providing experiential opportunities for students to understand these issues first hand and in the real world context. The key to the success of such learning opportunities is that they provide students with a balance view of older people and their capabilities, and that they offer ample opportunity to interact and communicate beyond a clinical assessment thus humanising patients.

- Curriculum
  - course advisory meetings to ensure undergraduate curricula is meeting needs of industry expectations in preparing work-ready graduates
  - integration of more non-technical skill development throughout courses
  - inclusion of geriatric specific units of study
- Knowledge of psychosocial issues
  - what are they, how do you recognise, assess and manage them
  - how they impact the physical and vice versa
  - what alternatives are there to transport, what other resources are more appropriate
- Experience with real older people
  - Volunteering, service learning
  - Home visits
  - Real simulated patients
  - Aged care or community placements
- Research (addressed in Chapter 9)



## Chapter 9: Further Research

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The research and findings presented in this thesis have added to the existing body of knowledge related to older people and paramedics, and their relationship as health care user and provider. It has also highlighted several areas that need further exploration and revealed possible new directions this research could take.

### Knowledge, attitudes and behaviour

Further exploration of student paramedic knowledge and attitudes toward older people, the tools used to measure these, and the relationship between them and behaviour is warranted.

- Is the FAQ a good measure of the knowledge we want paramedic students have about older people?
- Is the ASD a good measure of the attitudes we want paramedic students to have toward older people?
- Do positive attitudes actually translate to better behaviour toward older people?
- What role does the quality of experience with older people play in the development of desirable behaviour toward older people?
- What behaviour do qualified paramedics exhibit toward older patients and how does that impact on care?

Given the questions surrounding the knowledge and attitudes tools and the outcomes translating to behaviour perhaps future research may be best to focus on behaviour itself which is the final link in the TPB (Figure 2) and ultimately the outcome impacting patient care.

### Paramedic students and education

The development of knowledge, skills, attitudes and behaviours is paramount in the formation of work-ready paramedic graduates equipped in all facets of patient assessment and care.

- Why do paramedics/novice paramedics under recognise/report psychosocial issues and prioritise somatic complaints?
- How can educators use experiential means to humanise patient care?
- What do paramedics really need to know about older people? What is the best way to teach them to recognise and address psychosocial issues? (Undergraduates and qualified paramedics)

### Older people

The concept of interpersonal communication and small acts and gestures of kindness and compassion impacting patient outcomes was discussed in Chapter 3 looking at the paramedic perspective. This warrants further investigation.

- What impact does addressing psychosocial complaints have on somatic complaints?
- How does interpersonal communication with older people impact patient care?
- What is the perspective of older patients on the care they require/receive?

### Ambulance services

As discussed in the recommendations ambulance services have a large role to play in ensuring paramedics are equipped to assess and address the psychosocial needs of older people. They are already doing great work in this area but in can be supported and enhanced through further research and evidence.

- What resources can assist paramedics to address the psychosocial need of older patients? (algorithm, resources cards, extended care, referral services, alternatives to transport)
- How have extended referral services impacted the care and transport rates of older patients?
- Are older patients being linked to the most appropriate ongoing services via the referral service? Is this decreasing the need to contact 000 for psychosocial issues?

## Chapter 10: Conclusion

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This thesis has presented a body of work including four published research papers and one manuscript investigating the psychosocial issues impacting older people in the out-of-hospital environment, and how to build the awareness and capacity of paramedic graduates to recognise and address these issues. It has added new knowledge to what is already known about older people and paramedic students and offered recommendations for future practice and research.

Older people experience complex psychosocial issues in addition to physical ailments which require them to use emergency ambulance services at a growing rate. These issues are often complex, multifactorial and intertwined with their physical health and therefore can result in the attendance of paramedics.

Paramedic graduates need to be equipped to recognise, assess and manage these psychosocial issues in order to provide the best possible care to older patients. They can be supported to do this by targeted education in their undergraduate years and ongoing education and professional development post-qualification. Ambulance services can support paramedics in the provision of quality care to older patients by supporting such education and providing resources directed at more appropriate care alternatives.

A combined effort and undertaking by educators, paramedics and ambulance services will ensure older patients are provided with the best quality holistic care possible into the future.

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## Appendices

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### Appendix A: Chapter 2 ethics approval (MUHREC)



**Monash University Human Research Ethics Committee (MUHREC)**  
Research Office

25 July 2014

Dear Researchers

**Project Number:** CF14/2161 - 2014001166

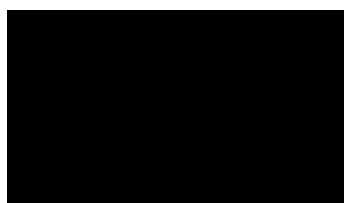
**Project Title:** An investigation of the nature of ambulance attendance to older adults: a retrospective cohort study

**Chief Investigator:** Assoc Prof Brett Williams

The above application has been reviewed by the Chairs of the Monash University Human Research Ethics Committee (MUHREC) who determined that the proposal satisfies section 5.1.22 of the National Statement on Ethical Conduct in Human Research.

Therefore, the Committee has granted an exemption from ethical review for the research as described in your proposal.

Thank you for your assistance.



Professor Nip Thomson  
Chair, MUHREC

## Appendix B: Chapter 2 participation approval (AV)



**Ambulance Victoria**

7<sup>th</sup> August 2014

To A/Prof Brett Williams  
Monash University  
Building H  
[REDACTED]

File Ref: REC14-011

Dear Brett

**Re: Research Proposal "R14-011: An investigation of the nature of ambulance attendance to older adults: a retrospective cohort study" dated 18/07/2014.**

I am pleased to inform you that Ambulance Victoria (AV) has approved participation in the above study, subject to:

- Return of Confidentiality Deed

The researchers will need to sign a confidentiality agreement (attached) and return via email to the AV Research Governance Manager, Emily Andrew at [REDACTED] prior to receiving any data.

Note, that any changes to the original application will require submission of a protocol amendment to the AV Research Committee for consideration. Please ensure that AV is informed of any protocol changes as soon as possible.

As a component of the ongoing communication processes, AV requires annual progress reports and a final report on completion of the study. You will be emailed the progress report approximately four weeks prior to the due date. Progress reports are required to be submitted by email.

We look forward to working with you on this project.

Yours sincerely

[REDACTED]

**SUE CUNNINGHAM**  
General Manager Strategy, Research and Innovation  
Ambulance Victoria

## Appendix C: Final assessments prior to categorisation

Final Primary Assessment	Age Years			
	65-74	75-84	85+	Total
Abdominal Aortic Aneurysm	94	160	100	354
Abdominal Distension	323	420	346	1089
Abrasion / Graze	940	1554	1693	4187
Acute Coronary Syndrome	5210	5528	2876	13614
Acute Myocardial Infarction	770	655	355	1780
Acute Pulmonary Oedema	1112	2487	2505	6104
Airway Obstruction	157	208	179	544
Alcohol Intoxication	795	226	62	1083
Alcohol Requesting Assistance	16	2	0	18
Alcohol Withdrawal	38	9	1	48
Allergic Reaction	644	487	228	1359
Altered Conscious State	1812	3045	3477	8334
Amputation	52	31	14	97
Anaphylaxis	167	70	27	264
Angina	2413	3044	1946	7403
Anxiety	2938	3106	1784	7828
Aortic Dissection	9	17	5	31
Arrhythmia	4983	6470	4619	16072
Asthma	936	947	541	2424
Asymptomatic	25	54	42	121
Avulsion	21	37	70	128
Blister(s)	13	24	11	48
Bowel Obstruction	568	787	706	2061
Bronchiolitis	6	5	8	19
Bronchitis	52	62	52	166
Bruising / Haematoma	1313	2678	3444	7435
Burn/s	146	104	62	312
Cardiac Arrest	1134	1178	721	3033
Cardiac Failure	579 1	1254	1512	3345
Cellulitis	333	568	258	1429
Chest Infection	5509	9464	8481	23454
Childbirth	1	4	0	5
Chronic Obstructive Airway Disease	3225	3304	1372	7901
Collapse	3145	5227	4019	12391
Compartment Syndrome	8	5	4	17
Confusion	1071	1828	2033	4902
Constipation	882 1	1591	1160	3633
Cough	659	955	806	2420
Cramps	162	151	62	375
Croup	5	3	3	11
Deceased	1558	1871	1757	5186
Deep Vein Thrombosis	143	186	143	472
Dehydration	1021	1452	1356	3829
Depression	465	375	172	1012
Diarrhoea	917	1373	1414	3431
Diplopia	0	4	1	5
Dislocation	1002	1127	867	3005
Dizzy	2739	3822	2450	9011
Drug Intoxication	38	33	19	90
Drug Requesting Detox	2	1	0	3
Drug Withdrawal	24	18	6	48
Dysuria	20	40	24	84
Ear Problem	135	129	91	355

Eating Disorder	5	11	7	23
Emotional Distress	575	488	262	1325
Epiglottitis	9	4	3	16
Epistaxis	1362	2292	1808	5462
Eye Injury / Problem	131	201	126	458
Face Injury / Problem	154	329	324	807
Faint	2574	3921	2804	9299
Febrile	2639	3719	2464	8822
Feed Tube Problem	4	15	8	27
Flail Chest	13	6	3	22
Fracture/s	3658	6045	7312	17015
Gastrointestinal Problem	4141	5033	3266	12440
Haematemesis	398	678	752	1828
Haematuria	450	1029	833	2312
Head Injury	793	1136	1344	3273
Headache	1615	1693	980	4288
Hearing Loss	4	3	4	11
Heat Stress	124	258	200	582
Heat Stroke	28	51	39	118
Hyperglycaemia	819	935	594	2348
Hypertension	1560	2518	1987	6065
Hyperventilation	156	130	95	381
Hypoglycaemia	2086	2133	1067	5286
Hypotension	2095	3401	2673	8169
Hypothermia	112	260	426	798
Implantable Defibrillator	75	62	7	144
Incontinence - Faecal	12	54	44	110
Incontinence - Urine	35	92	92	219
Infection - Other	1357	1766	1159	4282
Intracranial Haemorrhage	59	55	46	160
Joint Effusion	4	8	3	15
Laceration	2973	5273	7014	15260
Melaena	270	477	449	1196
Meningococcal Septic	4	2	4	10
Migraine/s	178	123	40	341
Mobility Problem	1213	2524	2511	6248
Nausea	1434	1996	1266	4696
No Problem Identified	6203	10491	9834	26528
Open Wound	112	154	159	425
Other - Specify	7767	10868	9227	27562
Overdose	366	219	132	717
PR Bleeding	969	1611	1452	4032
PV Bleeding	104	203	196	503
Pacemaker Problem	103	174	161	438
Pain	37231	43900	30600	111731
Palpitations	1149	1216	583	2948
Panic Attack	241	184	87	512
Pneumonia	498	846	886	2230
Pneumothorax	41	44	26	111
Post Ictal	884	677	290	1851
Post Immersion	2	3	2	7
Post Loss of Consciousness	716	1015	931	2662
Psychiatric Episode	1370	859	506	2735
Pulmonary Aspiration	98	211	252	561
Pulmonary Embolism	165	142	61	368
Rash	115	166	136	417
Renal Calculi / Colic	636	346	88	1070
Renal Failure	80	129	113	322

Respiratory Arrest	30	27	15	72
Respiratory Failure	69	59	48	176
Respiratory Tract Infection	377	520	444	1341
Seizure/s / Convulsion	698	615	315	1628
Sepsis	1075	1622	1198	3895
Short of Breath	6979	10602	8603	26184
Sleep Disorder	15	24	18	57
Social Problem	640	1081	969	2690
Soft Tissue Injury	1051	1418	1349	3818
Spasm/s	140	127	67	334
Spinal Cord Injury	136	154	106	396
Strain / Sprain	256	252	141	649
Stroke	3230	5076	44777	12783
Subarachnoid Haemorrhage	30	21	21	72
Sunburn	2	1	1	4
Surgical Emphysema	4	4	1	9
Suspected Internal Haemorrhage	28	27	19	74
Swollen Joint	202	277	222	701
Swollen Limb	195	307	269	771
Tension Pneumothorax	5	2	1	8
Throat Infection	70	69	67	206
Throat Problem	179	219	154	552
Toothache	17	18	10	45
Transient Ischaemic Attack	1466	2562	2366	6394
Unconscious	311	469	496	1276
Unknown Problem	3003	4227	3422	10652
Urinary Catheter Problem	298	565	587	1450
Urinary Tract Infection	1765	3878	3438	9081
Urine Retention	485	836	629	1950
Vertigo	1871	1873	951	4695
Visual Disturbance	167	218	160	545
Vomiting	1319	1934	1607	4860
Weakness	1918	3368	3005	8291
Wound / Puncture	376	549	564	1489
Wound Inflammation	249	344	259	852

## Appendix D: Chapter 3 ethics approval (MUHREC)



### Human Ethics Certificate of Approval

This is to certify that the project below was considered by the Monash University Human Research Ethics Committee. The Committee was satisfied that the proposal meets the requirements of the *National Statement on Ethical Conduct in Human Research* and has granted approval.

**Project Number:** CF15/3293 - 2015001394

**Project Title:** Paramedic perspectives on the needs of older patients out-of-hospital care

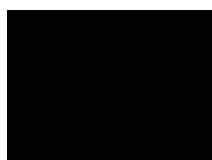
**Chief Investigator:** Assoc Prof Brett Williams

**Approved:** From: 08 September 2015 To: 08 September 2020

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**Terms of approval - Failure to comply with the terms below is in breach of your approval and the Australian Code for the Responsible Conduct of Research.**

1. The Chief investigator is responsible for ensuring that permission letters are obtained, if relevant, before any data collection can occur at the specified organisation.
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 include your project number.
6. **Amendments to the approved project (including changes in personnel):** Require 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 Nip Thomson  
Chair, MUHREC



**MONASH University**

Department of Community Emergency Health and Paramedic Practice  
Faculty of Medicine, Nursing and Health Sciences

## **QUALIFIED PARAMEDICS NEEDED**

**Join the Discussion!**

**Qualified Paramedics are needed to participate in this important discussion forum on the needs of older patients in the pre-hospital environment.**

*This forum is part of a PhD project investigating the psychosocial needs of older patients in the pre-hospital environment and building the capacity of paramedics to meet those needs.*

**Time: 5–6pm**

**Date: Friday 2nd October**

**Where: Room TBA**

*Light refreshments provided*



**Sign up at the Monash University booth or  
contact Linda Ross [REDACTED]**



## Appendix F: Demographic and perspectives on older patients survey

MONASH University



### Paramedics Perspectives on Older Patients

1. What is your current age?

2. What is your gender? (please tick)

1. Female ☐

2. Male ☐

3. Which Ambulance Service are you employed with? (please tick)

1. Ambulance Victoria ☐

2. NSW Ambulance Service ☐

3. SA Ambulance Service ☐

4. WA Ambulance Service ☐

5. Other ☐

Please indicate \_\_\_\_\_

4. How many years have you been working as a paramedic? (please tick)

1. < 5 years ☐

2. 5 – 10 years ☐

3. 10 - 15 years ☐

4. > 15 years ☐

5. Have you completed any specific coursework on older adults/geriatrics?

1. Not at all ☐

2. Part of a unit/subject ☐

3. An entire unit/subject ☐

4. An entire course ☐

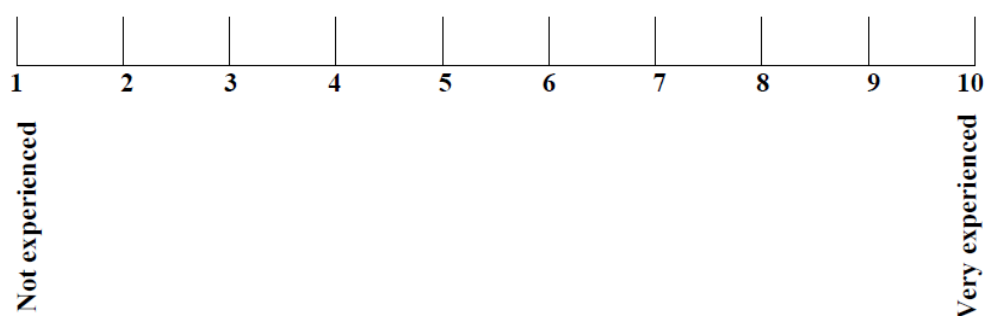
**Please answer the following questions by marking the most appropriate box on the scale.**

	1 Strongly Disagree	2 Disagree	3 Agree	4 Strongly Agree
6. Older patients in the out-of-hospital setting often have needs beyond the physical.				
As a paramedic.....				
7. I am able to recognise the psychosocial needs of older patients.				
8. I am able to meet the psychosocial needs of older patients.				
9. I do not have the time to meet the psychosocial need of older patients.				
10. I do not have the resources to meet the psychosocial need of older patients.				
11. I do not have the training to meet the psychosocial need of older patients.				
12. I would like to do more for my older patients.				
13. I often transport older patients to hospital as there is no alternative.				
14. I would like to receive more training in the resources available for older patients.				

**15. Please rate your *current level of experience interacting* with older adults ( $\geq 65$ )**

from 1 (not experienced) to 10 (very experienced) on the scale below.

(Please circle a whole number)



**Warmest thanks,**

Linda Ross, Brett Williams &amp; Paul Jennings

## Appendix G: Focus group discussion questions

1. In your experience as a paramedic have you ever attended older patients who had needs beyond the physical? Please tell me about some of those experiences.
2. Have you been able to meet some of these needs? If so how?
3. Have there been time when you have been unable to address these needs? Why?
4. Have you ever transport an older patient to hospital when it was not required? Discuss why?
5. What training or resources would help you be better able to address the psychosocial needs of older patients?

## Appendix H: Chapter 4 ethics approval (MUHREC)



# MONASH University

Monash University Human Research Ethics Committee (MUHREC)  
Research Office

### Human Ethics Certificate of Approval

This is to certify that the project below was considered by the Monash University Human Research Ethics Committee. The Committee was satisfied that the proposal meets the requirements of the *National Statement on Ethical Conduct in Human Research* and has granted approval.

**Project Number:** CF14/3504 - 2014001843

**Project Title:** Student paramedic knowledge of, and attitudes toward older adults

**Chief Investigator:** Assoc Prof Brett Williams

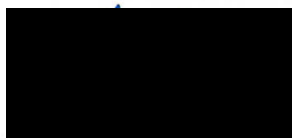
**Approved:** From: 24 November 2014

To: 24 November 2019

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**Terms of approval - Failure to comply with the terms below is in breach of your approval and the Australian Code for the Responsible Conduct of Research.**

1. The Chief investigator is responsible for ensuring that permission letters are obtained, if relevant, before any data collection can occur at the specified organisation.
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 include your project number.
6. **Amendments to the approved project (including changes in personnel):** Require 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 Nip Thomson  
Chair, MUHREC

## Appendix I: Demographic and experience with older adults survey

### 1. Experience with Older Adults

1. What is your current age?

2. What is your gender? (please tick one box below for all questions)

1. Female ☐

2. Male ☐

3. Which University do you attend?

1. Monash University ☐

2. Australian Catholic University ☐

3. Victoria University ☐

4. La Trobe University ☐

4. Which year of your course are you currently in?

1. Year 1 ☐

2. Year 2 ☐

3. Year 3 ☐

4. Year 4 ☐

5. How old is your oldest living parent?

1. < 55 ☐

2. 55 - 64 ☐

3. 65 - 74 ☐

4. 75 - 84 ☐

5. > 84 ☐

6. N/A ☐

7. Don't know ☐

**6. How old is your oldest living grandparent?**

- 1. < 55 ☐
- 2. 55 - 64 ☐
- 3. 65 - 74 ☐
- 4. 75 - 84 ☐
- 5. > 85 ☐
- 6. N/A ☐
- 7. Don't know ☐

**7. Have you ever had an older adult ( $\geq 65$ ) live with you on a full-time basis?**

- 1. Yes ☐
- 2. No ☐

**8. Have you completed specific coursework on older adults/geriatrics as part of this course (or previous courses if applicable)?**

- 1. Not at all ☐
- 2. Part of a unit/subject ☐
- 3. An entire unit/subject ☐
- 4. An entire course/degree ☐

**9. Have you participated in geriatric specific placements as part of your current course (or previous courses if applicable)? E.g. nursing home or community placements**

- 1. Yes ☐
- 2. No ☐

**10. Have you participated in other clinical placements where you have encountered older adults ( $\geq 65$ ) as part of your current course (or previous courses if applicable)? E.g. ambulance or hospital placements**

1. Yes ☐

2. No ☐

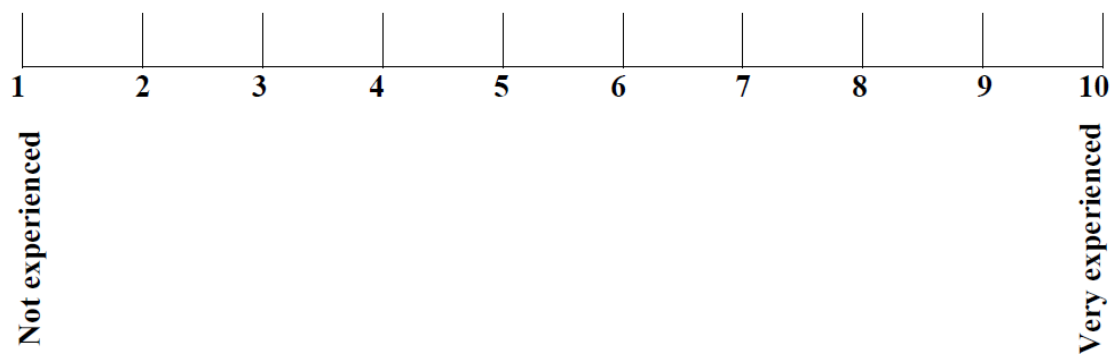
**11. Do you have previous paid work or volunteer experience with older adults ( $\geq 65$ )?**

1. Yes ☐

2. No ☐

**12. Please rate your current level of experience interacting with older adults ( $\geq 65$ ) from 1 (not experienced) to 10 (very experienced) on the scale below.**

**(Please circle a whole number)**





## Appendix J: Attitudes towards older adults survey (ASD)

### 2. Attitudes towards Older Adults (The Aging Semantic Differential)

(Rosencranz & Mcnevin, 1969)

Below are listed a series of polar adjectives accompanied by a scale.

You are asked to circle a number along the scale at a point which in your judgment best describes older adults.

Make each item a separate and independent judgment. Do not worry or puzzle over individual items.

Do not try to remember how you have marked earlier items even though they may seem to have been similar.

It is your first impression or immediate feeling about each item that is wanted.

#### Social Object: Adults ≥ 65

Progressive	1	2	3	4	5	6	7	Old-fashioned
Consistent	1	2	3	4	5	6	7	Inconsistent
Independent	1	2	3	4	5	6	7	Dependent
Rich	1	2	3	4	5	6	7	Poor
Generous	1	2	3	4	5	6	7	Selfish
Productive	1	2	3	4	5	6	7	Unproductive
Busy	1	2	3	4	5	6	7	Idle
Secure	1	2	3	4	5	6	7	Insecure
Strong	1	2	3	4	5	6	7	Weak
Healthy	1	2	3	4	5	6	7	Unhealthy
Active	1	2	3	4	5	6	7	Passive
Handsome	1	2	3	4	5	6	7	Ugly
Cooperative	1	2	3	4	5	6	7	Uncooperative
Optimistic	1	2	3	4	5	6	7	Pessimistic
Satisfied	1	2	3	4	5	6	7	Dissatisfied
Expectant	1	2	3	4	5	6	7	Resigned
Flexible	1	2	3	4	5	6	7	Inflexible
Hopeful	1	2	3	4	5	6	7	Dejected
Organised	1	2	3	4	5	6	7	Disorganized
Happy	1	2	3	4	5	6	7	Sad
Friendly	1	2	3	4	5	6	7	Unfriendly
Neat	1	2	3	4	5	6	7	Untidy
Trustful	1	2	3	4	5	6	7	Suspicious
Self-Reliant	1	2	3	4	5	6	7	Dependent
Liberal	1	2	3	4	5	6	7	Conservative
Certain	1	2	3	4	5	6	7	Uncertain
Tolerant	1	2	3	4	5	6	7	Intolerant
Pleasant	1	2	3	4	5	6	7	Unpleasant
Ordinary	1	2	3	4	5	6	7	Eccentric
Aggressive	1	2	3	4	5	6	7	Defensive
Exciting	1	2	3	4	5	6	7	Dull
Decisive	1	2	3	4	5	6	7	Indecisive

## Appendix K: Knowledge of older adults survey (FAQ 2)

### 3. Knowledge of Older Adults (Australian Facts on Ageing Quiz)

(Pachana, Helmes & Gudgeon, 2013)

Please circle the letter marking the correct response to the following questions and statements.

1. In old age, a person's height

- A Does not change
- B Only appears to change
- C Tends to decline
- D Depends on how active one is

2. Compared with younger persons, more older persons (65 years or over) are limited in their activity by which type of illness?

- A Acute illnesses (short term)
- B Colds and flu
- C Infections
- D Chronic illnesses

3. Which type of illness do older persons have less frequently than younger persons?

- A Chronic illness
- B Arthritis
- C Stroke
- D Acute illness

4. Compared with younger persons, older persons have

- A More injuries in the home
- B About the same number of injuries in the home
- C Fewer injuries in the home
- D Twice the likelihood to be injured in the home

5. Older workers' absenteeism rates

- A Are higher than among younger workers
- B Cannot be trusted
- C Are about the same as among younger workers
- D Are lower than among younger workers

6. The life expectancy of Indigenous Australians at age 65 years

- A Is higher than that of Non-Indigenous Australian
- B Is lower than that of Non-Indigenous Australians
- C Is about the same as that of Non-Indigenous Australians
- D Has not been determined

7. Men's life expectancy at age 65 years compared with women's

- A Is lower
- B Is dropping
- C Is about the same
- D Is higher

8. What per cent of medical expenses for older people does Medicare pay?

- A About 15 to 25%
- B Nearly 50%
- C About 75 to 85%
- D Nearly 100%

9. Social security benefits

- A Automatically increase with inflation
- B Are not subject to change
- C Must be adjusted by parliament
- D Are often cut back to balance the deficit

10. The Aged Pension:

- A Guarantees a minimum income for the needy older people
- B Provides extra income for all older people
- C Supplements the income of older people in nursing homes
- D Pays medical expenses for older people

11. As for income

- A The majority of older people live below the poverty level
- B Older people are the poorest age group in our society
- C Older people get their proportionate share of the nation's income
- D The income gap between older people and younger people is widening

12. Compared with younger persons, rates of criminal victimisation among older people are

- A Higher
- B Lower
- C About the same
- D Steadily increasing

13. Fear of crime among older people

- A Is higher than among younger persons
- B Is about the same as among younger persons
- C Is lower than among younger persons
- D Is not significant

14. The most law abiding adults are

- A Those in their 20s
- B Those in their 30s
- C Those 45 to 65 years
- D Those older than 65 years

15. Comparing widows with widowers among older people

- A Their numbers are about equal
- B There are more than twice as many widows as widowers
- C There are more than five times as many widows as widowers
- D There are more than twice as many widowers as widows

16. The age group who have the greatest interest in political matters are people

- A Older than 65 years
- B Aged 55 to 64 years
- C Aged 40 to 54 years
- D Aged 20 to 39 years

17. Being elected or appointed to a government position is

- A Rare among those older than 65 years
- B More frequent among those younger than 65 years
- C More frequent among those older than 65 years
- D Similar in frequency among older and younger persons

18. The proportion of Indigenous Australians among older people is

- A Growing
- B Declining
- C Staying about the same
- D Small compared with other minority groups

19. Participation in voluntary organisations usually

- A Does not decline among healthy older persons
- B Declines among healthy older persons
- C Increases among healthy older persons
- D Is highest among healthy youth

20. The majority of old people live

- A Alone
- B In long-stay institutions
- C With their spouses
- D With their children

21. The rate of poverty among older people is

- A Lower than among those younger than 65 years
- B Higher than among those younger than 65 years
- C The same as it is for other age groups
- D High as a result of their fixed incomes

22. The rate of poverty among older Indigenous Australians is

- A Less than that of Non-Indigenous Australians
- B About the same as that of Non-Indigenous Australians
- C Greater than that of Non-Indigenous Australians
- D No different to other Indigenous age groups

23. Older persons who reduce their activity tend to be

- A Happier than those who remain active
- B Not as happy as those who remain active
- C About as happy as others
- D Healthier

24. When the last child leaves home, the majority of parents

- A Have serious problems of adjustment
- B Have higher levels of life satisfaction
- C Try to get their children to come back home
- D Suffer from the 'empty nest' syndrome

25. The proportion widowed among older people

- A Is gradually decreasing
- B Is gradually increasing
- C Has remained the same in this century
- D Is unrelated to longevity

26. In general, across the developed and developing worlds, including Australia, lifespan continues to increase. The average gain in lifespan every year, averaged across all countries, is

- A Five days
- B Two weeks
- C Three months
- D Six months

27. The number of people over age 100 in Australia now is

- A Less than 50
- B Between 100 and 500
- C Between 1000 and 2000
- D Over 4000

28. The use of social media (e. g. Facebook, Instagram, Twitter) by adults over age 65 is

- A Much lower than in younger (20 – 40 years) aged adults
- B Lower than in younger adults
- C About the same as in younger adults
- D Higher than in younger adults

29. The value of volunteer activities by older adults to the Australian economy, including childcare, is about

- A \$50 million
- B \$250 million
- C At least \$1 billion
- D Over \$30 billion

30. The greatest cause of disability among older adults is

- A Heart disease
- B Arthritis
- C Depression
- D Cancer

31. Grandparents are increasingly taking on the role of carer. Grandparents most frequently provide care for

- A Grandchildren
- B Adult children
- C Spouse
- D Clients of service organizations

32. The most rapidly growing segment of the Australian population is

- A People over 80
- B People aged 65 to 79
- C People aged 50 to 64
- D Children under 15

33. The most common risk factor for illness among older adults is

- A Hormone changes
- B Obesity
- C Smoking
- D Genetic factors

34. The most common form of recreation among older adults is

- A Golfing
- B Card games
- C Reading
- D Watching television

35. Most older adults live

- A Alone
- B With a spouse
- C With relatives
- D In a residential care home



### **The effectiveness of educational interventions designed to improve health care student behaviors and/or attitudes toward older people: a systematic review protocol**

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Linda Ross

#### **Review question/objective**

What is the effectiveness of educational interventions designed to improve health care student behaviors and/or attitudes toward older people?

#### **Background**

According to population projections, one quarter of all people living in the developed world will be 65 years or over within the next few decades. Currently in the UK, 17% of the population is over 65, with this set to rise to 25% by 2051.<sup>1</sup> In the year 2000, 12.9%, or one in every eight Americans, were in this age group.<sup>2</sup> Forecasts indicate this will increase to 19% by 2030.<sup>2</sup> Likewise, in Canada, the 65 and older age group is set to increase from 13.2% in 2005 to 24.5% by 2036.<sup>3</sup> In Australia, this age group is set to nearly double, from 13% in 2007 to 24% by 2056.<sup>4</sup> A number of factors have been attributed to these changes. Some of these include: medical advances, increased fertility rates, better health care and education, and the coming of age of “baby boomers”.<sup>5,6</sup> The aging population poses a number of challenges for the provision of high quality and targeted services to older people.

Declining health, functioning and independence is a natural consequence of aging. As people age they are more likely to suffer from chronic diseases which affect their daily living, such as heart disease, arthritis, diabetes and dementia.<sup>6,7</sup> Additional non-physical challenges such as social isolation, financial constraints, transportation issues, lack of education and access to health care services are also at play.<sup>8,9,10</sup> Each of the aforementioned issues affecting older people do not occur in isolation but are

inter-related. Loss of social networks and support, and significant life events, such as the death of a spouse or close friends, for example, adversely affect mortality and morbidity.<sup>11</sup> The complexity of these intertwined biopsychosocial issues amongst older adults impacts on the demand for health and social services.

The increasing demand on health and social services by this demographic is well documented across all disciplines. In nursing, global nursing shortages are attributed to multiple factors of which an aging population tops the list.<sup>12</sup> The demand for hospital bed days is projected to almost double over the next 45 years, requiring additional doctors, nurses and specialist medical staff.<sup>13</sup> The requirements for post discharge and community health and social services care are also rising as hospital bed shortages necessitate shorter stays.<sup>14</sup> As the demand for services to treat older patients increases so does the necessity for trained health care professionals who are equipped to meet their complex, multidimensional needs.

Undergraduate health care students begin their studies with preconceived ideas about older adults.<sup>15</sup> They are not learnt intentionally but based on past experiences with their own grandparents, extended families and friends, employment experiences and/or media portrayal of the elderly.<sup>16,17</sup> Undergraduate education based on a biomedical model can also indirectly increase negative beliefs and attitudes towards these patients with students viewing them in terms of their ailments rather than holistically.<sup>18</sup> It is also evident that regular contact and interaction with older adults is diminishing due to changing societal pressures and family dynamics.<sup>19</sup> Increasing numbers of health care students are therefore entering professions with little or no experience with older people who will become their most frequent patients. As these beliefs and attitudes can positively or adversely affect patient care,<sup>20</sup> it is imperative that specialist education and experience with older adults be integrated into undergraduate health care courses.

An initial review of the literature found primary studies involving a range of educational interventions across a variety of health care disciplines. Interventions included placements within geriatric or community facilities, traditional didactic teaching approaches, workshops, simulation and gamification, or combinations of these. For example, one study involving first year psychology students used "The Game of Late Life", which was designed to allow students to image themselves as older adults as they move through various stages of life and encounter events along the way.<sup>21</sup> Statistically significant improvements in attitudes were seen following the intervention.<sup>21</sup> Several studies explored the use of "The Aging Game", a simulation game that allows students to experience sensory deficits and functional dependency.<sup>22</sup> All studies reported varying degrees of success in improving medical, nursing and allied health student attitudes towards older adults.<sup>23,24,25</sup> This review therefore aims to evaluate the effectiveness of educational interventions designed to improve health care student behaviors and/or attitudes toward older people.

## Keywords

health care student, attitudes, behavior, older people, educational intervention

## **Inclusion criteria**

### ***Types of participants***

This review will consider studies that include undergraduate health care students from disciplines including: medicine, nursing, psychiatry, social work, paramedicine, speech therapy, physiotherapy, occupational therapy and dietetics.

### ***Types of intervention(s)/phenomena of interest***

This review will consider studies that evaluate the outcomes of educational interventions which are designed to improve health care student behaviors and/or attitudes toward older people ( $\geq 65$  years). The intervention may include any educational activity that aims to improve participant attitudes or behavior. These may include but will not be limited to interventions that incorporate traditional didactic methods, simulation, clinical placements, case studies, service learning, workshops and gamification. The interventions may be a “once-off” or over multiple sessions.

### ***Types of outcomes***

This review will consider studies that measure health care student behaviors and/or attitudes toward older people following an educational intervention. Studies that use validated measures of attitudes towards older people, such as Aging Semantic Differential<sup>26</sup> and Kogan’s Old People Scale<sup>27</sup> will be considered, in addition to studies that describe behavioral or attitudinal change through any observer- or self-report or survey or questionnaire.

### ***Types of studies***

The quantitative component of the review will consider both observational and experimental study designs for inclusion. These will include randomized controlled trials, non-randomized controlled trials, quasi-experimental, before and after studies, prospective and retrospective cohort studies, case control studies, cross sectional studies, case series and case reports.

## **Search strategy**

The search strategy aims to find both published and unpublished studies. A three-step search strategy will be utilized in this review. An initial limited search of MEDLINE and CINAHL will be undertaken followed by an analysis of the text words contained in the title and abstract, and of the index terms used to describe the article. A second search using all identified keywords and index terms will then be undertaken across all included databases. Thirdly, the reference list of all identified reports and articles will be searched for studies not identified through the database searches. Only studies available in English and published from 1995 to the current date will be considered for inclusion in this review. This date range is most relevant for studies relating to the education of health care professionals and the care of aging populations.

The databases to be searched include:

Ovid MEDLINE, CINAHL, PsycINFO, ERIC and Scopus

The search for unpublished studies will include:

ProQuest Dissertation and Theses, Google Scholar, Web of science core collection, Mednar

Initial keywords to be used will be:

student, undergraduate, health occupations, healthcare, health care, paramedic, medic, nurse, psychiatrist, psychologist, social worker, speech therapist, physiotherapist, occupational therapist, dietician

education, teaching, instruction, pedagogy, method, approach, intervention, technique, strategy, innovation, program, design

behavior, attitude

aged, aging, elderly, old, older, greater than or equal to 65,

Synonyms, truncations and MeSH terms associated with the above key words will be combined using Boolean operations such as 'OR' and "AND" for the search.

### **Assessment of methodological quality**

Quantitative papers selected for retrieval will be assessed by two independent reviewers for methodological validity prior to inclusion in the review using standardized critical appraisal instruments from the Joanna Briggs Institute Meta-Analysis of Statistics Assessment and Review Instrument (JBI-MASARI) (Appendix I). Any disagreements that arise between the reviewers will be resolved through discussion, or with a third reviewer.

### **Data extraction**

Quantitative data will be extracted from papers included in the review using the standardized data extraction tool from JBI-MASARI (Appendix II). The data extracted will include specific details about the interventions, populations, study methods and outcomes of significance to the review question and specific objectives.

### **Data synthesis**

Results from quantitative papers will, where possible, be pooled using JBI- MASARI. All results will be subject to double data entry. Effect sizes expressed as odds ratio (for categorical data) and weighted mean differences (for continuous data) and their 95% confidence intervals will be calculated for analysis. Heterogeneity will be assessed statistically using the standard Chi-square and also explored using subgroup analyses based on the different quantitative study designs included in this review. Subgroups will include undergraduate discipline, year level and age. Where statistical pooling is not possible the findings will be presented in narrative form including tables and figures to aid in data presentation where appropriate.

### **Conflicts of interest**

There are no conflicts of interest.



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## Appendix M: Chapter 6 ethics approval (MUHREC)



### Monash University Human Research Ethics Committee

#### Approval Certificate

This is to certify that the project below was considered by the Monash University Human Research Ethics Committee. The Committee was satisfied that the proposal meets the requirements of the *National Statement on Ethical Conduct in Human Research* and has granted approval.

**Project Number:** 1370

**Project Title:** Making real connections: enhancing patient care through interactions between older people and paramedic students.

**Chief Investigator:** Assoc Professor Brett Williams

**Expiry Date:** 21/12/2021

**Terms of approval - failure to comply with the terms below is in breach of your approval and the *Australian Code for the Responsible Conduct of Research*.**

1. The Chief Investigator is responsible for ensuring that permission letters are obtained, if relevant, before any data collection can occur at the specified organisation.
2. Approval is only valid whilst you hold a position at Monash University.
3. It is 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 letterhead and the Monash University complaints clause must include your project number.
6. Amendments to approved projects including changes to personnel must not commence without written approval from MUHREC.
7. Annual Report - continued approval of this project is dependent on the submission of an Annual Report.
8. Final Report - should be provided at the conclusion of the project. MUHREC should be notified if the project is discontinued before the expected completion date.
9. Monitoring - project may be subject to an audit or any other form of monitoring by MUHREC at any time.
10. Retention and storage of data - The Chief Investigator is responsible for the storage and retention of the original data pertaining to the project for a minimum period of five years.

Thank you for your assistance.

Professor Nip Thomson

Chair, MUHREC

CC: Ms Linda Ross



## Appendix N: Images of patient centred interview data collection



## Appendix O: Knowledge of older adults survey (FAQ2) – short version

### Knowledge of Older Adults (Australian Facts on Ageing Quiz)

(Adapted from: Pachana, Helmes & Gudgeon, 2013)

Please circle the letter marking the correct response to the following questions and statements.

1. In older age, a person's height

- A Does not change
- B Only appears to change
- C Tends to decline
- D Depends on how active one is

2. Compared with younger people, older people (65 years or over) are limited in their activity by which type of illness?

- A Acute illnesses (short term)
- B Colds and flu
- C Infections
- D Chronic illnesses

3. Which type of illness do older persons have less frequently than younger persons?

- A Chronic illness
- B Arthritis
- C Stroke
- D Acute illness

4. Compared with younger people, older people have

- A More injuries in the home
- B About the same number of injuries in the home
- C Fewer injuries in the home
- D Twice the likelihood to be injured in the home

5. Men's life expectancy at age 65 years compared with women's is

- A Lower
- B Dropping
- C About the same
- D Higher

6. Fear of crime among older people

- A Is higher than among younger people
- B Is about the same as among younger people
- C Is lower than among younger people
- D Is not significant

7. Being elected or appointed to a government position is

- A Rare among those older than 65 years
- B More frequent among those younger than 65 years
- C More frequent among those older than 65 years
- D Similar in frequency among older and younger people

8. Participation in voluntary organisations usually

- A Does not decline among healthy older people
- B Declines among healthy older people
- C Increases among healthy older people
- D Is highest among healthy youth

9. The majority of old people live

- A Alone
- B In long-stay institutions
- C With their spouses
- D With their children

10. The rate of poverty among older people is

- A Lower than among those younger than 65 years
- B Higher than among those younger than 65 years
- C The same as it is for other age groups
- D High as a result of their fixed incomes

11. Older people who reduce their activity tend to be

- A Happier than those who remain active
- B Not as happy as those who remain active
- C About as happy as others
- D Healthier

12. The proportion widowed among older people

- A Is gradually decreasing
- B Is gradually increasing
- C Has remained the same in this century
- D Is unrelated to longevity

13. In general, across the developed and developing worlds, including Australia, lifespan continues to increase. The average gain in lifespan every year, averaged across all countries, is

- A Five days
- B Two weeks
- C Three months
- D Six months

14. The number of people over age 100 in Australia now is

- A Less than 50
- B Between 100 and 500
- C Between 1000 and 2000
- D Over 4000

15. The use of social media (e. g. Facebook, Instagram, Twitter) by adults over age 65 is

- A Much lower than in younger (20 – 40 years) aged adults
- B Lower than in younger adults
- C About the same as in younger adults
- D Higher than in younger adults

16. The greatest cause of disability among older adults is

- A Heart disease
- B Arthritis
- C Depression
- D Cancer

17. Grandparents are increasingly taking on the role of carer. Grandparents most frequently provide care for

- A Grandchildren
- B Adult children
- C Spouse
- D Clients of service organizations

18. The most rapidly growing segment of the Australian population is

- A People over 80
- B People aged 65 to 79
- C People aged 50 to 64
- D Children under 15

19. The most common risk factor for illness among older adults is

- A Hormone changes
- B Obesity
- C Smoking
- D Genetic factors

20. The most common form of recreation among older adults is

- A Golfing
- B Card games
- C Reading
- D Watching television

## Appendix P: Interpersonal communication skills assessment forms (KCSA)

### Clinician Assessment

#### Kalamazoo Communication Skills Assessment Form

How well did the paramedic student do the following:

	<u>1</u> <u>Poor</u>	<u>2</u> <u>Fair</u>	<u>3</u> <u>Good</u>	<u>4</u> <u>Very Good</u>	<u>5</u> <u>Excellent</u>
<b>A. Builds a Relationship (includes the following):</b>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<ul style="list-style-type: none"> <li>Greeted and showed interest in the patient</li> <li>Uses words that show care and concern throughout the interview</li> <li>Uses tone, pace, eye contact, and posture that show care and concern</li> <li>Responded explicitly to the patient's ideas and feelings</li> </ul>					
<b>B. Opens the Discussion (includes the following):</b>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<ul style="list-style-type: none"> <li>Allowed the patient to complete opening statements without interruption</li> <li>Asked the patient what the main presenting problem was</li> <li>Asks "Is there anything else?" to elicit full set of concerns</li> </ul>					
<b>C. Gathers Information (includes the following):</b>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<ul style="list-style-type: none"> <li>Didn't force the conversation with his/her questions</li> <li>Asked for more detail about what the patient said</li> <li>Summarized what the patient said back to them</li> <li>Transitions smoothly to additional questions without interruption</li> </ul>					
<b>D. Understands the Patient's Perspective (includes the following):</b>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<ul style="list-style-type: none"> <li>Asked about life events, circumstances, social history that might affect health</li> <li>Asked about the patient's beliefs, concerns, and expectations about illness and treatment</li> </ul>					
<b>E. Shares Information (includes the following):</b>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<ul style="list-style-type: none"> <li>Asked what the patient understood about the illness or problem</li> <li>Allowed enough time for the patient to think and respond</li> <li>Explained things using words that the patient could understand</li> <li>Asks if the patient had any questions</li> </ul>					
<b>F. Demonstrates Empathy (includes the following):</b>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<ul style="list-style-type: none"> <li>Showed compassion and concern</li> <li>Showed they understood how the patient was feeling</li> <li>Responded to how the patient was feeling</li> </ul>					



## Patient Assessment

### Kalamazoo Communication Skills Assessment Form

**How well did the paramedic student do the following:**

	<u>1</u> <u>Poor</u>	<u>2</u> <u>Fair</u>	<u>3</u> <u>Good</u>	<u>4</u> <u>Very Good</u>	<u>5</u> <u>Excellent</u>
<b>A. Builds a Relationship (includes the following):</b>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<ul style="list-style-type: none"> <li>Greeted me and showed interest in me</li> <li>Uses words that show care and concern throughout the interview</li> <li>Uses tone, pace, eye contact, and posture that show care and concern</li> <li>Responded explicitly to my ideas and feelings</li> </ul>					
<b>B. Opens the Discussion (includes the following):</b>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<ul style="list-style-type: none"> <li>Allowed me to complete opening statements without interruption</li> <li>Asked me what the main presenting problem is</li> <li>Asks "Is there anything else?" to elicit full set of concerns</li> </ul>					
<b>C. Gathers Information (includes the following):</b>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<ul style="list-style-type: none"> <li>Didn't force the conversation with his/her questions</li> <li>Asked for more detail about what I said</li> <li>Summarized what I said back to me</li> <li>Transitions smoothly to additional questions without interruption</li> </ul>					
<b>D. Understands the Patient's Perspective (includes the following):</b>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<ul style="list-style-type: none"> <li>Asked about life events, circumstances and social history</li> <li>Asked about my beliefs, concerns, and expectations about illness and treatment</li> </ul>					
<b>E. Shares Information (includes the following):</b>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<ul style="list-style-type: none"> <li>Asked what I understood about the illness or problem</li> <li>Allowed enough time for me to think and respond</li> <li>Explained things using words that I could understand</li> <li>Asks if I had any questions</li> </ul>					
<b>F. Demonstrates Empathy (includes the following):</b>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<ul style="list-style-type: none"> <li>Showed compassion and concern</li> <li>Showed they understood how I was feeling</li> <li>Responded to how I was feeling</li> </ul>					



## Self-Assessment

### Kalamazoo Communication Skills Assessment Form

**How well do you feel you did the following:**

	<u>1</u> <b>Poor</b>	<u>2</u> <b>Fair</b>	<u>3</u> <b>Good</b>	<u>4</u> <b>Very Good</b>	<u>5</u> <b>Excellent</b>
<b>A. Builds a Relationship (includes the following):</b>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<ul style="list-style-type: none"> <li>Greets and shows interest in the patient</li> <li>Uses words that show care and concern throughout the interview</li> <li>Uses tone, pace, eye contact, and posture that show care and concern</li> <li>Responds explicitly to patient statements about ideas and feelings</li> </ul>					
<b>B. Opens the Discussion (includes the following):</b>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<ul style="list-style-type: none"> <li>Allows patient to complete opening statements without interruption</li> <li>Ask what the main presenting problem is</li> <li>Asks "Is there anything else?" to elicit full set of concerns</li> </ul>					
<b>C. Gathers Information (includes the following):</b>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<ul style="list-style-type: none"> <li>Addresses patient statements using open-ended questions</li> <li>Clarifies details as necessary with more specific or "yes/no" questions</li> <li>Summarizes and gives opportunity to correct or add information</li> <li>Transitions effectively to additional questions</li> </ul>					
<b>D. Understands the Patient's Perspective (includes the following):</b>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<ul style="list-style-type: none"> <li>Asks about life events, circumstances, social history that might affect health</li> <li>Elicits patient's beliefs, concerns, and expectations about illness and treatment</li> </ul>					
<b>E. Shares Information (includes the following):</b>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<ul style="list-style-type: none"> <li>Assesses the patient's understanding of problems and desire for more information</li> <li>Explains using words that the patient can understand</li> <li>Asks if they have any questions</li> <li>Allowed enough time for the patient to think and respond</li> </ul>					
<b>F. Demonstrates Empathy (includes the following):</b>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<ul style="list-style-type: none"> <li>Clinician's demeanor is appropriate to the nature of the conversation</li> <li>Shows compassion and concern</li> <li>Identifies/labels/validates patient's emotional responses</li> <li>Responds appropriately to patient's emotional cues</li> </ul>					