



Preparing medical graduates to care for older adults

By

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As the candidate's supervisor, I have approved this thesis for submission

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Date: 10 July 2020

DECLARATION

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DEDICATION

To my mom, who gave me the gift of life and the love for life-long learning, and my two daughters, Jivasha and Darshni.

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ABSTRACT

Background: Social accountability in medical training requires medical schools in South Africa to respond to the health needs of the country's rapidly increasing number of older adults. Reports, however, indicate that elderly patients in South Africa receive poor quality of care from health professionals. Reports also indicate that students' empathy towards older adults declines as they progress through their studies. These disparities necessitate greater awareness of the health needs and expectations of older adults and an inquiry into the geriatric care training of medical professionals.

Aim: This 360-degree study investigated the geriatric medical curriculum at one institution from the perspectives of geriatric patients, learners and health professions educators to make recommendations for improvement, and to develop policy guidelines for the enhancement of undergraduate medical education in geriatric care.

Methodology: A sequential mixed methods approach was adopted for this study. Four focus group discussions were conducted with patients aged 60 years and older from primary care facilities served by graduates of the medical institution (n=28). Data that emerged from this phase regarding patients' expectations of quality geriatric healthcare were triangulated with a review of curriculum documents, semi-structured interviews with health professions educators (n=5) and an evaluation of the levels of knowledge and attitudes of final year medical students regarding the care of older adults.

Results: The key principles for quality healthcare of older adults that were elicited from patients were respectful communication, compassion, appropriate prescribing, patient-centredness and coordinated care. However, professional attributes such as compassion and patient-centered care that were valued by geriatric patients are not explicitly taught or assessed in the curriculum. The current curriculum includes a wide variety of topics relevant to the care of older adults. Teaching and assessment relevant to geriatric care were further integrated into other modules, but no minimum standards are applied in assessment of the geriatric component. Students lacked exposure to older adults in ambulatory settings and received little teaching on health promotion or rehabilitative services relevant to the care of older adults. Despite the opportunities afforded by the problem-based learning approach in the curriculum for team-based learning and collaboration, interprofessional education was absent in teaching and learning relevant to older adults.

Overall, final year medical students possessed minimal levels of geriatric knowledge despite their perceptions of having had adequate exposure to geriatrics in the current curriculum. The majority of students had positive attitudes towards working with elderly patients. In particular, older students and those with a prior higher education qualification had significantly higher levels of knowledge and attitudes

towards caring for older adults. Of note, there was no association between geriatric knowledge and attitudes. Medical students also reported challenges in communicating with older adults and believed that their training had not prepared them adequately for this aspect.

Conclusion: The findings of the study affirmed the need to enhance the geriatric curriculum for undergraduate medical students, and to develop and implement minimum core competencies in geriatric care. Curriculum planners should consider greater attention to patient-centred care, communication skills training with older adults and interprofessional education, as well as broader community engagement. Policy guidelines based on the findings of this study were developed and recommended to the Undergraduate Committee for Teaching and Learning to improve the preparedness of medical graduates to care for older adults.

Keywords: undergraduate medical education; older adults; geriatric care; curriculum

PREAMBLE

The format of this thesis follows the recommendations for a PhD by manuscript format, as presented in the School of Nursing and Public Health in the College of Health Sciences, University of KwaZulu-Natal, South Africa. The thesis is submitted as a collection of three articles. Two are published research articles, and one manuscript which has been accepted for publication. These publications are combined with introductory and synthesis chapters to form a thesis.

Each chapter commences with a brief introduction and concludes with a summary of the main findings for emphasis and flow. The integrative material links the chapters and the findings to the overall aim of the study. The synthesis chapter at the end outlines the conclusions drawn from the results of the papers and includes recommendations. The contribution of the candidate is indicated for each manuscript, with details of the journals and their submission and review processes where necessary. The methodology and literature are revealed within each of the publications and is also presented within the integrative chapters i.e. Chapter One (Introduction), Chapter Two (Literature review), Chapter Three (Methodology) and Chapter Seven (Synthesis), with a summary after each article to establish the link between the chapters. The repetition between the integrative material and the manuscripts is necessitated by the manuscript format of the PhD presentation.

Please note the following concerning this particular thesis report:

- (i) The Vancouver referencing style has been used in the integrative material.
- (ii) Manuscripts are presented in the format required of the particular journal. There are differences in the style requirements. e.g., font and line spacing and referencing.

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Abbreviations and acronyms

AU	African Union
CanMEDS	Canadian Medical Education Directions for Specialists
CBE	Competency-Based Education
FGD	Focus Group Discussion
HIC	High-Income Countries
HIV	Human Immunodeficiency Virus
HPCSA	Health Professions Council of South Africa
IAGG	International Association of Gerontology and Geriatrics
IPE	Interprofessional Education
KZN	KwaZulu-Natal
LMIC	Low- and Middle-Income Countries
MDGs	Millennium Development Goals
MIPAA	Madrid International Plan of Action on Ageing
NCD	Non-communicable disease
NDoH:	National Department of Health
NHI	National Health Insurance
PHC	Primary Health Care
SA	South Africa
SDG	Sustainable Development Goals
SSA	Sub-Saharan Africa
UG	Undergraduate
UK	United Kingdom
UKZN	University of KwaZulu-Natal
USA	United States of America
WHO	World Health Organization

Peer reviewed publications

Published Manuscripts

Publication 1: Naidoo K, Van Wyk J. What the elderly experience and expect from primary care services in KwaZulu-Natal, South Africa. *African Journal of Primary health care & Family medicine*. 2019;11(1): p.1-6. <http://dx.doi.org/10.4102/phcfm.v11i1.2100>

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Supplementary file 1: Naidoo K, van Wyk J. Protocol for a scoping review of age-related health conditions among geriatric populations in sub-Saharan Africa. *Systematic reviews*. 2019 Dec 1;8(1):133.

Manuscripts accepted for publication

Manuscript 3: Naidoo K, Van Wyk J. The knowledge and attitudes of final year medical students' regarding the care of older patients. *African Journal of Health Professions Educators*. (Ref. AJHPE 1331)

Supplementary file 2: Naidoo K, Waggie F, van Wyk JM A review of geriatric care training in the undergraduate nursing and medical curricula at the University of KwaZulu-Natal, South Africa. *AJHPE*

CONFERENCE PRESENTATIONS

Naidoo K and Van Wyk J. What the elderly experience and expect from primary care in KwaZulu-Natal, South Africa. Presented at the annual *Rural Health Conference*, 5-7 September 2019 held in Port Shepstone, KwaZulu-Natal, South Africa

Naidoo K and van Wyk J. Preparing medical graduates to care for older adults. Geriatric medical undergraduate education: Exploring the curriculum at UKZN. Presented at *College of Health Sciences Annual Research Symposium* 1st November 2020, Nelson R Mandela School of Medicine Campus.

Naidoo K, Waggie F, van Wyk J. Shared geriatric care competencies in the undergraduate nursing and medical curricula. Presented at the *SAFRI Poster day*, 1st March 2020, Cape Town, South Africa.

CHAPTER 1 – INTRODUCTION

This chapter introduces the research area and the rationale for the study. It presents the study objectives and outlines the theoretical and conceptual frameworks. The chapter concludes by stating the research questions and briefly describes how these questions are addressed in the subsequent chapters of this thesis.

1.1. Background to the research topic

The majority of older adults in South Africa (SA) have been disadvantaged historically and continue to be marginalized in society.^[1] Despite improvements to the SA health system, the disparities between the public and private health sectors, and between rural and urban communities present ongoing challenges to the access of healthcare, particularly for older people.^[1-6] Negative attitudes and lack of understanding regarding the care needed by older adults further contribute to the health inequities experienced by populations aged 60 years and older.^[7, 8] Older adults in SA are thus more vulnerable to poor health outcomes due to the sub-optimal and often inappropriate care that they receive.^[2, 4, 9-12] Until recently, older person's health received little attention in health policies, resource allocation, and health professions training.^[13] However, increased life expectancies and the rapid increase in the number of older adults necessitates urgent attention to the health needs of older adults.

The proportion of the population in SA aged 60 and above is predicted to double from 7.8% in 2012 to 14.8% in 2050.^[14] As people age, the prevalence of chronic illnesses increases. Thus, the anticipated growth in the older population will increase the burden on resource-limited health systems. Currently, the health systems and health professions training in sub-Saharan Africa (SSA) provides little coverage of age-related health conditions prevalent among older adults.^[7, 15] Healthcare systems in SSA prioritize communicable diseases and maternal and child health in accordance with the Millennium Development Goals (MDG).^[16] In contrast, there has been limited planning for the health needs of the growing geriatric population.^[7] The consequences of the rapid increase in older adults must be considered when planning health policies and programmes.

Some initiatives have already occurred at the policy level nationally. However, there is still a need for significant restructuring of the current health systems and rethinking of health professions training to improve the quality of healthcare for the older population. In response to the disparities in health care, the SA government plans to implement a National Health Insurance (NHI) scheme.^[17] A key objective of the NHI scheme, which is currently being piloted, is to strengthen the primary healthcare system, thereby

31 improving the availability and the delivery of equitable health services to all South African citizens.^[18] The
32 majority of older people in SA, as in the rest of sub-Saharan Africa (SSA), seek health services at the
33 primary care level.^[19] Unlike in high-income countries (HICs), there is limited access to specialized
34 geriatric services or residential care facilities for older people. Robust primary healthcare and community-
35 level services are thus essential to support the health needs of older adults.^[2] Unfortunately, the care of
36 older adults at primary healthcare facilities in SA is compromised by overcrowded facilities, lack of chronic
37 medication, inadequate personnel, and limited access to health promotion and rehabilitation services.^[20, 21]
38 Increased priority to primary health care (PHC) will help address the health needs of older people.^[22]
39 However, more resources need to be mobilized within the PHC system to improve the management of
40 chronic and age-related health conditions.

41 Older patients commonly present with complex health needs that require the involvement of physicians,
42 nurses, physiotherapists, occupational therapists, pharmacists and other health professionals.^[23] Effective
43 team based care is thus especially important in caring for older adults with complex health needs.

44 Conversely poor teamwork and collaboration may result in duplication of services and adverse patient
45 outcomes. It is thus imperative that healthcare professionals involved in the care of older adults undergo
46 interprofessional education (IPE) to improve their collaboration when caring for older adults.

47 The care of older adults requires a coordinated interprofessional approach with an emphasis on preserving
48 function, rather than curing illness. However, the primary care system in South Africa focuses on acute
49 episodic care and national priority programmes such as HIV/AIDS care and maternity and child health. The
50 single-disease approach to patient care is perpetuated by the education and training of primary care health
51 professionals. Traditional health professions training occurs in discipline-specific silos with little
52 interaction with other cadres of health professionals. Such training does not promote collaboration between
53 different health professionals and lacks an integrated and coordinated approach to the care of older adults
54 with complex health needs.

55 A recent initiative that will benefit older adults is the national Integrated Chronic Disease Management
56 (ICDM) programme.^[24] This programme aims to provide comprehensive and coordinated care to people
57 with chronic illnesses. ICDM will thus benefit older adults, among whom chronic diseases are more
58 prevalent than in any other age group.^[25] The integrated care approach has the potential to reduce health
59 care costs and care dependencies in the aged. However, the success of the NHI and ICDM programmes are
60 reliant on the ability of health professionals to manage the primary healthcare needs of all people, including
61 older adults, and to function as part of a team. Unfortunately, doctors and nurses, who make up the bulk of
62 primary care health professionals in SA, reportedly receive little training in the care of older adults, or

63 interprofessional education.^[1, 2, 26] Interprofessional education (IPE), where “two or more professions learn
64 about, from and with each other to enable effective collaboration and improve health outcomes” is
65 recommended by the World Health Organisation (WHO) to improve health professionals’ competency in
66 provided coordinated care for older adults.^[27, 28] However, there has been poor uptake of this
67 recommendation by medical schools, especially in low- and middle-income countries (LMIC).^[29] The lack
68 of geriatric care training and IPE among health professionals raises concerns about the quality of care
69 provided to elderly patients.

70 The WHO also emphasises the need to include geriatric care competencies in core medical training as part
71 of the public health response to ageing populations.^[30, 31] Medical education is inexorably entangled with
72 the health of older populations, as developing appropriate geriatric care competencies will equip graduates
73 to provide quality healthcare to older adults and to redress health inequities. However, geriatric medicine,
74 the field of medicine that deals with the health concerns of older people with a focus on disease and
75 problems associated with advancing age, is a relatively new and neglected area in health professions
76 education.^[32] Current literature indicates that teaching and learning in geriatric care receive low priority in
77 undergraduate (UG) medical curricula worldwide due to low levels of interest, a crowded curriculum, and
78 more attention directed to curative medicine.^[15] Furthermore, even where geriatric medicine was included
79 in UG medical curricula, medical students demonstrated little interest and poor learning around the care of
80 older adults.^[33, 34] This may be due to intrinsic negative attitudes towards older adults, or the influence of
81 poor clinical practices regarding the care of elderly patients at training sites.^[35, 36] The limited inclusion of
82 geriatric care teaching in UG medical programmes is even more pronounced in the SSA region.^[15, 37]

83 Studies conducted in the SSA region confirm the lack of attention to geriatric care training of medical
84 students.^[15, 38] A survey of medical schools in SSA identified a lack of geriatric teaching in 40% of those
85 institutions.^[15] Even where geriatric teaching was included, there was an absence of examinable learning
86 objectives in over 60% of institutions. The situation in South Africa is similar, with only a handful of
87 medical schools having a geriatric department and an absence of prescribed minimum competencies in
88 geriatric care at a national level. As a result, there is variable coverage of geriatric care in the curricula of
89 the different medical schools. Kalula et al. 2007 have criticised the current situation in South Africa, stating
90 that “older persons’ health is not a priority in institutional planning and training curricula, and that most
91 health professionals complete medical training without adequate exposure to geriatric medicine.”^[11]
92 Furthermore, few health professions training programmes include IPE or prepare their graduates to transit
93 into multi-disciplinary teams. Limited understanding and education on geriatric care may manifest in
94 feelings of futility or frustration by health professionals when encountering elderly patients with complex
95 medical needs and hence adversely influence their medical management decisions.

96 There is an evident need for medical schools to improve the preparedness of their graduates to care for older
97 adults. However, there is a paucity of data on the health needs of older people and geriatric medical
98 education in the SSA region to inform the development of a geriatric curriculum appropriate for the SSA
99 context.^[7, 37] Most initiatives and evidence on geriatric medical education originate from studies conducted
100 in high-income countries (HICs), with different populations and with health systems that are better-
101 resourced than those in the SSA region.^[37, 39] There is no corresponding or similar body of research on
102 medical geriatric education in SSA.^[37] It is thus unclear how the reported health needs of older adults and
103 curricular responses elsewhere match the situation in SSA.

104 Curricular strategies to enhance the current geriatric care training of medical students in SSA must address
105 the local educational environment and health systems. Despite the willingness of most SSA medical schools
106 to implement geriatric care training, less than half of the institutions surveyed had plans to implement
107 teaching in the near future.^[15] Poor physical infrastructure, faculty shortages and lack of expertise in
108 geriatric medicine present challenges to the development and implementation of a geriatric curriculum at
109 medical schools in the SSA region.^[40] The curriculum development process, which organises what will be
110 taught, who will be taught, and how it will be taught, seeks to align medical education with the latest
111 information and local population needs.^[41] Despite the apparent need for medical curricula to address the
112 health needs of older adults, there has been little stakeholder engagement regarding geriatric care training
113 of medical graduates in SA.

114 The inertia around addressing the health needs of older people could be due to under-representation of older
115 people in health policies or the lack of advocacy for older persons' health in SA.^[1] It is thus incumbent on
116 medical schools in SA to review their curricula, taking into consideration the health needs of older adults
117 and the current educational environment.

118 **1.2. Problem statement**

119 The rapid ageing of the population and reports of the poor quality of care received by elderly patients in SA
120 necessitates an inquiry into the training of medical professionals in the care of older adults.^[9, 10] The lack of
121 attention to geriatric care training worldwide is well-documented in the literature—however, most studies
122 in geriatric medical education report on findings in HICs. There is little data from the SSA region on the
123 health needs of older adults or geriatric medical education at the UG level.

124 It is also unclear how medical schools in SA prepare their graduates to care for older adults within the
125 primary healthcare system, particularly given recent developments in health policies, such as the NHI
126 scheme and ICDM program.^[42, 43]

127 **1.3. Rationale for the study**

128 The academic literature on medical geriatric care training is dominated by studies from HICs. There is no
129 similar or corresponding body of scientific research on developments in geriatric medical education in SA
130 or any other country in the SSA region. There is, therefore, a gap in the research, and a pressing need to
131 examine how medical curricula in the SSA context can improve medical graduates' preparedness to care
132 for older adults.

133 The majority of older adults in SA have been deprived of many basic human rights for most of their lives
134 and continue to be subjected to poor quality healthcare services. Socially responsible medical training
135 should respond to the needs of the populations they serve through service, education, and research.^[44] It is
136 thus incumbent on medical schools to prepare their graduates to care for older adults within the local health
137 system and enable them to act as change agents to redress the health inequities experienced by older adults.
138 Future educational initiatives in medical education must also consider the health needs of older adults,
139 student learning needs, and the educational environment.

140 This study was conceptualised to review the UG geriatric curriculum at a SA medical school and explore
141 curricular strategies to improve medical students' preparedness to care for older adults. The medical
142 curriculum is a complex interplay between teacher, student, educational environment, and the community
143 served. It was, therefore, necessary to examine the curriculum within its specific context from the
144 perspectives of the relevant stakeholders, i.e., the patients, the learners on the programme and health
145 professions educators. Insight from different perspectives will help conceptualise curricular strategies to
146 enhance the geriatric care training of medical professionals, and thus enable SA medical schools to produce
147 graduates that are "fit-for-purpose."

148 Hence, this study explored the experiences and expectations of patients aged 60 years who access health
149 services at primary care facilities in KwaZulu-Natal, and the learning needs of medical students regarding
150 the care of older adults. The study also investigated the current curriculum at an SSA medical school to
151 map teaching and learning relevant to the care of older adults and identify opportunities to enhance the
152 geriatric care training of medical students. The findings of this study are intended to inform
153 recommendations for the development of the geriatric curriculum for UG medical students at the University
154 of KwaZulu-Natal (UKZN). Empiric evidence from the study will help address the gaps in research and
155 assist the development and implementation of policies to improve older person's health in SA.

156 **1.4. Aim**

157 The overall aim of this study was to investigate how the undergraduate (UG) medical curriculum at the
158 UKZN could improve the preparedness of medical students as future medical professionals to address the
159 healthcare needs of older adults.

160 **1.5. Objectives**

161 Based on the knowledge gap, the following objectives were formulated to guide the study:

162

- 163 1. To explore and describe the experiences and expectations of patients aged 60 years and older
164 regarding professional health services at primary care level in KwaZulu-Natal.
- 165 2. To evaluate the knowledge and attitudes of UKZN medical students regarding the medical care of
166 elderly patients.
- 167 3. To map the geriatric medical curriculum at the UKZN and identify opportunities to enhance
168 current teaching and learning.

169 In order to address the aim of the study, the three objectives were reformulated into the following research
170 questions to be addressed:

171

- 172 1. What are the experiences and expectations of older adults regarding professional health services at
173 primary healthcare facilities?
- 174 2. What is the level of knowledge and attitudes of UG medical students regarding the medical care of
175 elderly patients?
- 176 3. What is the current medical geriatric curriculum at the UKZN, and how can it be enhanced to prepare
177 graduates to care for older adults?

178 **1.6. Scope of the study**

179 This study focusses on UG medical education relevant to the care of older adults, and it is positioned in the
180 field of Health Professions Education (HPE). The study was conducted at the UKZN, and primary care
181 facilities in the KwaZulu-Natal province of South Africa. There is an urgent need for medical schools in
182 SSA to deliver medical graduates that are able and willing to care for older adults. This study thus aimed
183 to contribute to the growing body of knowledge investigating the factors that influence medical graduates'

184 preparedness to care for older adults. Also, by investigating a specific medical curriculum through a
185 curriculum development framework, this study links into curriculum studies as a field of inquiry. It,
186 therefore, offers additional insights to curriculum developers seeking to enhance teaching and learning
187 relevant to the care of older adults.

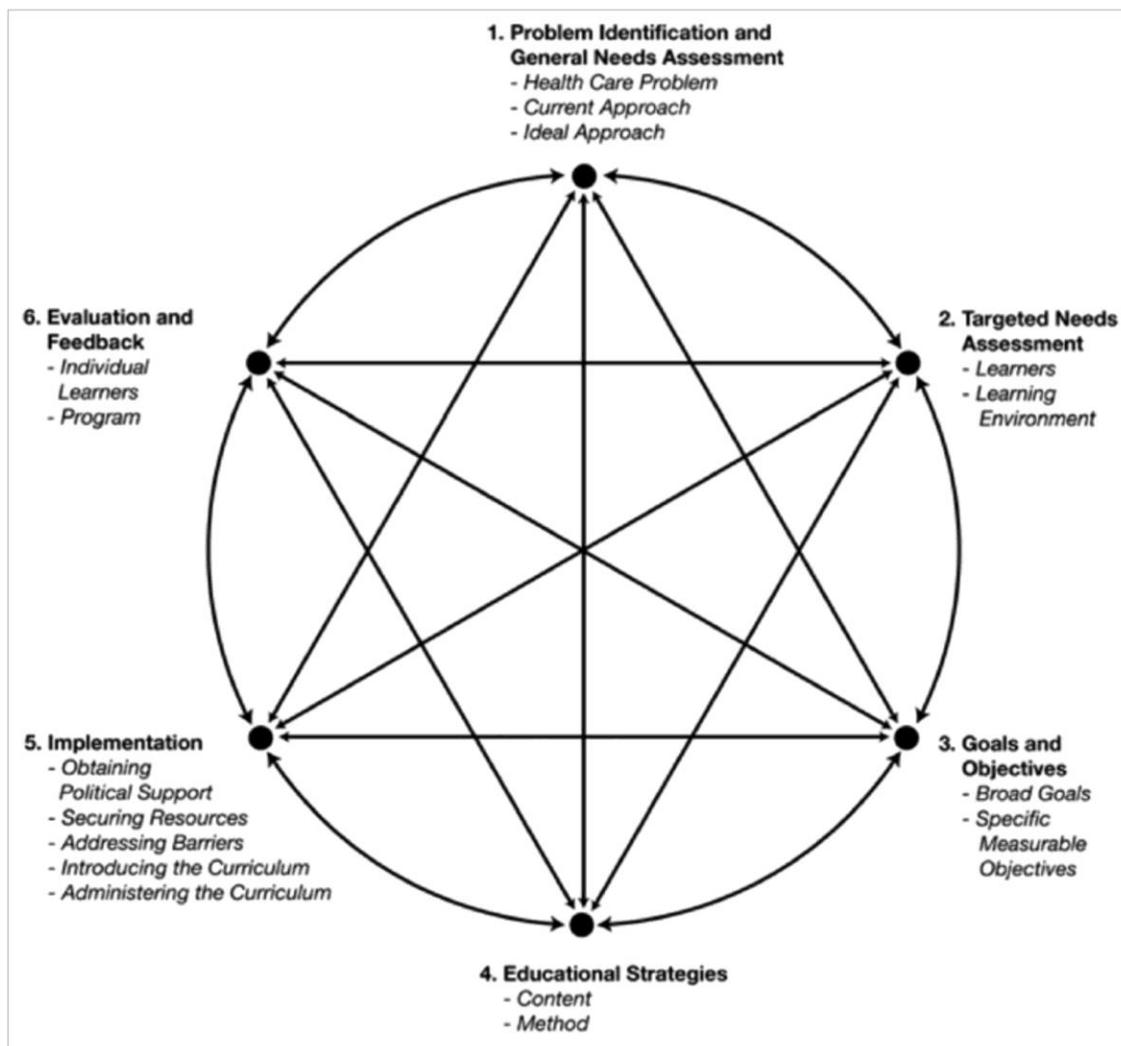
188 **1.7. Theoretical and Conceptual frameworks for the study**

189 The researcher adopted a pragmatic approach to addressing the aims and objectives of the study. In
190 Pragmatic theory, there is a focus on the purpose and consequences of knowledge.^[45] Schwab's Deliberative
191 Curriculum theory, also referred to as "the practical," informs a pragmatic approach to curriculum
192 development.^[46] The deliberative curriculum theory highlights the necessity of examining the curriculum
193 within its specific context in order to reach a common understanding of the curriculum problem, and decide
194 on the most appropriate course of action.^[46] Schwab's theory weighs strongly on the value and purpose of
195 the curriculum, and assigns as much importance to the ends as to the means of a curriculum. The intention
196 of this study is to redress the health inequities experienced by older adults through the professional
197 education of medical students. Thus, Schwab's curriculum theory was espoused by this study.

198 The need for deliberation arises from the fact that the decisions of curriculum planners should be based on
199 recent and available information. Decisions that are arrived at through the process of deliberation are based
200 on rational consideration of possible solutions to a curriculum problem. Therefore, deliberation requires the
201 ability to accept a certain degree of uncertainty or "methodological pluralism."^[47] The deliberative
202 curriculum thus appeals to the pragmatic world view that emphasises practicality and utility. The researcher
203 adopted a pragmatist approach to the research by conceptualising and evaluating the knowledge produced
204 from this 360 degree investigation of the curriculum in order to attain workable and useful
205 recommendations for geriatric care training. ^{[48][49]}

206 Kern et al.'s Curriculum Development model encompasses the context-specific approach promoted by the
207 deliberative curriculum school of thought, as it proposes that "medical education should change as our
208 knowledge base changes and as the needs or perceived needs of patients and society change."^[49] Kern's
209 six-step curriculum development model was thus adopted as the conceptual framework for this body of
210 work (illustrated in Figure 1.1.).

211 The rationale and purpose of each objective are provided with reference to the steps in the curriculum
212 development model, as illustrated in figure 1.1.



229 **Figure 1.1. Kern et al's six-step Curriculum Development model^[49]**

230 Kern et al's curriculum development model is informed by work from other health professions
 231 educationalists who have advocated for curricula to be linked to health care needs, and is thus grounded in
 232 patient and societal needs.^[50] Hence, it is inevitable that the first step described in this curriculum
 233 development process is the identification and critical analysis of a health care need. In this step curriculum
 234 planners must identify the health care problem that is to be addressed by the curriculum. In addition, they
 235 should identify the differences between how healthcare needs are currently being addressed and how it
 236 should be addressed. The differences between the current and ideal approaches to the care of older patients
 237 constitute the general needs assessment, which helps focus the goals and objectives of the curriculum. By
 238 clearly defining the health care problem to be addressed, curriculum planners provide the rationale for the
 239 changes to the curriculum and may engender political and financial support. It is thus crucial to have a clear

240 understanding of the health problem, i.e., the epidemiology, the impact on patients, healthcare
241 professionals, educators, and society. It is of particular relevance to understand how health professionals
242 are currently addressing the problem as they are the learners to whom the curriculum is targeted.

243 The second step of the curriculum development process involves assessing the needs of a targeted group of
244 learners, in this case, UG medical students. The third step is to set the goals and objectives for the
245 curriculum, based on the findings of the first two steps. Objectives may include the attainment of
246 knowledge, skills, and attitudes by the students. The development of the goals and objectives will then
247 determine the curricular content and learning methods. In the fourth step, educational methods are chosen
248 that are best suited to attaining the educational objectives defined in the previous step. The fifth step is the
249 implementation of the curriculum. This step entails mobilising the necessary resources, informing relevant
250 stakeholders of the changes, and administering the curriculum. Finally, the sixth step is to evaluate the
251 curriculum and provide feedback.

252 As Kern et al. have noted, these steps do not have to occur in sequence.^[49] Multiple steps can occur
253 concurrently, and regular review of the curriculum is required in order to remain contemporary and relevant.

254 **1.8. Significance of the study**

255 This study explored the health needs of older adults, assessed the knowledge and attitudes of UG medical
256 students regarding the care of older adults, and mapped the geriatric curriculum at a SA medical school. It
257 thus adds to the body of knowledge on older person's health in SSA and geriatric medical education. The
258 study also conceptualises curricular strategies to enhance the preparedness of medical students at an SSA
259 medical school to care for older adults.

260 **1.9. Overview of the thesis**

261 The structure of this thesis is as per the College of Health Sciences regulation for a Ph.D. thesis by
262 manuscripts. Chapters Four, Five and Six were developed to be read as separate manuscripts. Consequently,
263 there is an unavoidable degree of overlap and repetition between chapters.

264 **Chapter One** presents the background and overall aim of the study. It outlines the problem, rationale, and
265 research questions that had been addressed.

266 **Chapter Two** provides an overview of the literature relevant to this study. It chronicles the history of
267 medical geriatric education and the socio-cultural context of the health needs of geriatric populations in

268 SSA. The chapter also describes relevant scientific research on curriculum development and geriatric
269 medical education.

270 **Chapter Three** provides information on the research methods used in each phase of the study as well as
271 the overall research methodology. The results of the study are presented in the manuscript format.

272 **Chapter Four** (Objective 1) explores and describes the perceptions of patients aged 60 years and older
273 regarding the professional health services at primary care facilities in KwaZulu-Natal. (manuscript
274 published).

275 **Chapter Five** (Objective 2) reports on the outcome of an evaluation of the knowledge and attitudes of final
276 year medical students regarding medical care of elderly patients (manuscript in press).

277 **Chapter Six** (Objective 3) reports on the inclusion of teaching and learning relevant to the care of older
278 adults in the UG medical curriculum and potential opportunities to enhance current teaching and learning
279 (manuscript published).

280 **Chapter Seven** is an integrated discussion summarizing the findings of the thesis, together with an analysis
281 of the results, and its strengths and weaknesses. The implications of the study findings are discussed, and
282 the conclusions stated.

283 **1.10. Chapter summary**

284 This chapter has provided the foundations for the thesis. After introducing the research problem and
285 research questions, it was necessary to explore the research problem within the existing literature and situate
286 the study within the relevant theoretical framework. This is done in the next chapter.

287

Chapter 2. Literature review

2.1. Chapter outline

The chapter presents the empirical and theoretical literature that informed the study. It explores the socio-political context of the health of geriatric populations in SSA. It also chronicles the historical background of geriatric medical education, with a focus on curricular strategies to enhance geriatric care training of medical students.

2.2. Geriatric health in sub-Saharan Africa

2.2.1. Defining geriatric medicine and geriatric populations in SSA

Geriatric medicine is the field of medicine that deals with the health concerns of older people and focusses on health problems associated with advancing age.^[32] An “elderly” or “older” person is defined as an individual aged 65 years and older in HICs.^[51] However, the United Nations agreed to classify geriatric populations in SSA to represent people aged 60 years and older as life expectancies in this region differ from that in HICs.^[52] In many African countries, including South Africa, the pensionable age for citizens is at 60 years. The African Union (AU) also recommended that member states standardize the definition of older people as those aged 60 years and above.^[53] While the definition of older people in SSA is almost sure to change as life expectancies improve, the current study considers older adults as those aged 60 years and older.

The population of SSA is ageing at a more rapid rate than in any other region in the world. The number of people aged 60 years and older in SSA is predicted to increase from 42.6 million in 2010 to 160 million in 2050.^[54] In South Africa, the number of people aged 60 years and older is expected to outnumber those aged under five years for the first time by 2040.^[55] The demographic transition of the population has been attributed to the success of programs targeted at improving infant and child survival and reducing deaths from infectious diseases.^[56, 57] The increase in the number of older adults has significant implications for the health and social sectors in the country. Ageing is associated with chronic and age-related health conditions, as well as functional decline and the loss of independence.^[58] Consequently, the health burden among older adults is disproportionately higher than that in any other age group. Despite the increased risk for ill-health in later life, senior citizens in SA play a vital role in the community by supporting their families through their state pensions, caring for children orphaned by the HIV epidemic, and providing a living memory of our past.^[59, 60] It is thus incumbent upon the state to protect the rights of older adults, including the right to basic health services. Unfortunately, the majority of older adults in SSA are at increased risk of

318 ill-health and disability due to poor socio-economic conditions and limited access to health services.^[7] From
319 a public health and policy perspective it is important to examine the evidence on older person's health to
320 develop strategies to improve the quality of life of older people in SSA.

321 ***2.2.2. Policies regarding the health of older persons in SSA***

322 Until recently, communicable diseases and maternal and child health have been the priority health concerns
323 in accordance with the Millennium Development Goals (MDG).^[16] Consequently, there was little interest
324 from health policymakers and researchers to address the health services required by older adults in the SSA
325 region.^[7] However, this changed after the United Nations released the Madrid International Plan of Action
326 on Ageing (MIPAA) in 2002.^[61] The MIPAA was intended to improve older people's access to health care,
327 integrate care for older people in primary health care and promote training and research in geriatrics and
328 gerontology.^[61] In line with the global response to ageing, the African Union (AU) adopted the MIPAA and
329 subsequently developed the African Union Policy Framework and Plan on Ageing (AU plan).^[61] According
330 to these policies each country is responsible for protecting the human rights of their older citizens. While
331 these policies advocate for improved healthcare for older people there has been little action to address older
332 people's health in SSA.^[7, 62] The inertia of governments around the issue of older person's health has been
333 ascribed to limited resources and other priorities.^[62] Consequently, the health needs of older populations in
334 SSA continue to be neglected.

335 A recent significant development has been the recommendation by the United Nations to include non-
336 communicable diseases (NCDs) into national Sustainable Development Goal (SDG) plans. Since the
337 burden of non-communicable diseases is greatest in older adults, attention to NCDs could potentially direct
338 health policies and resources towards improving healthcare for older people, and help redress previous
339 health inequities. An analysis of the 2017 Global Burden of Disease report identified 92 age-related diseases
340 that contributed to 51.3% of the global burden of disease among adults.^[63] Most of the identified aged-
341 related conditions are non-communicable diseases (NCDs), such as hypertension, diabetes, cardiovascular
342 diseases, cancers, chronic respiratory and renal diseases, and sense organ disorders. The burden of disease
343 is higher in SSA where studies indicate that older adults face a greater morbidity and disability burden than
344 their counterparts in HICs, and are unlikely to receive the required care.^[2, 64, 65]

345 Currently, the public healthcare sector caters for over 80% of the population with only 20% of the
346 resources.^[66] In response to the disparities in access to healthcare the South African government developed
347 the National Health Insurance (NHI) scheme.^[17] A key objective of the NHI scheme, which is currently
348 being piloted, is to strengthen the primary healthcare system thereby improving the availability and the
349 delivery of equitable health services to all South Africa citizens. Increased priority to primary health care

350 (PHC) will help address the health needs of older people.^[22] However, health policies and restructuring of
351 health systems must consider the evidence on the health needs of older people in order to address the priority
352 concerns of older people. The gaps in policy and health programs for the elderly could be due in part to the
353 paucity of data on older populations in SSA. ^[2, 67]

354 **2.2.3. Research on older people's health in SSA**

355 The African Research on Ageing Network (AFRAN) was founded to address the gaps in ageing research.^[68]
356 However, the Directory of Research on Ageing in Africa 2004-2015 reports only 85 English language
357 publications in this period, of which half were conducted in South Africa and Nigeria.^[69] With the notable
358 exceptions of the Ibadan study on ageing and the 10/66 Dementia group there has been scanty funding and
359 resources dedicated to research on people aged 60 years and older in SSA. The limited evidence on the
360 health services required by the geriatric population in SSA does thus not indicate a lack of need, but rather
361 the significant gaps in knowledge on this topic. Given the need to synthesise the evidence on geriatric health
362 needs in the SSA region, a systematic scoping review was proposed. The protocol for this review was
363 developed and accepted for publication and has been included as supplementary file 1.

364 **2.2.4. Barriers to healthcare in SA**

365 The majority of older adults in SA were deprived of many basic human rights during the apartheid era and
366 are thus more prone to ill-health in later life.^[1] The Mayosi report highlighted the concern that the health of
367 the older generation of South Africans deteriorated rapidly if their age-related health needs were not
368 attended to.^[70] Evidence indicates that community-dwelling older people in SA struggle to access healthcare
369 due to the costs involved for healthcare.^[71, 72] A minority of the older population have health insurance and
370 thus most older adults are reliant on the public healthcare system or pay out-of-pocket for private general
371 practitioners or traditional healers. As a result there is a high level of unmet health needs among older South
372 Africans.^[4, 71, 73]

373 Older adults also face additional difficulties with transport to clinics due to lower levels of functional
374 capacity, long waiting periods at health public facilities and a general lack of health worker expertise on
375 the management of chronic illness and geriatric syndromes.^[9] Chronic diseases, in particular, are poorly
376 controlled with less than half of patients on adequate therapy or achieving control. ^[74, 75] Multi-morbidity,
377 the presence of two or more chronic medical conditions in older adults, is more prevalent in older adults
378 than in any other age group and requires careful coordination of health services. Unfortunately, the national
379 standard treatment guidelines developed for use by primary care providers in SA are intended for single
380 disease management. Consequently, the medical care of older adults with multi-morbidities often results in
381 polypharmacy and inappropriate prescribing.^[76]

382 There have been some initiatives to enhance the management of chronic and age-related health conditions
383 in the public health sector in SA. The SA National Department of Health (NDoH) has adopted the Integrated
384 Chronic Disease Management (ICDM) programme as part of Primary Health Care (PHC) re-engineering.
385 This program aims to provide comprehensive and patient-centered care to those with chronic illnesses.^[24]
386 This approach is also advocated in the WHO Age-Friendly Primary Health Care Toolkit.^[77] The toolkit is
387 an initiative to sensitize staff at primary health care facilities to the specific needs of their older clients and
388 to improve the quality of primary care services to older persons by focusing on preserving function and
389 quality of life. While these initiatives could potentially improve the quality of care to older adults, their
390 success is dependent on reforms in medical education and health systems.

391 Most primary health services in SSA are structured around curative care and fail to appreciate the need for
392 coordinated care in the elderly. Furthermore, there is an absence of evidence-based recommendations
393 regarding the management of geriatric conditions in SSA.^[78] Current literature indicate that health
394 professionals are poorly equipped to manage complex medical problems.^[1, 26, 79] Ideally, older adults with
395 multiple health conditions should receive integrated care delivered by a multi-disciplinary team. However,
396 the training of health professionals has traditionally been conducted in discipline-specific silos focused on
397 single-disease management. Health professionals are thus inadequately prepared to transit into functional
398 multi-disciplinary teams at primary care level or able to provide integrated care to older patients.
399 Furthermore, ageist attitudes by health professionals contribute to the poor quality of care to older adults.^[1]

400 The major obstacles to older person's health in SA that are described in this chapter require significant
401 interventions to ensure quality care for all older people. These interventions should occur at three levels i.e.
402 the macro level (policy level); the meso level (at the organizational or professional level); and the micro
403 level (clinical level). While some positive changes in SSA have occurred at policy level, it is evident that
404 significant restructuring of the current health systems and rethinking of health professions training are still
405 needed. Health systems and health professions training in SA should consider the unique context of the
406 health demands of older adults in a country with such diverse cultural perspectives such as SA. This study
407 attempts to determine how medical education can improve the preparedness of medical students to address
408 older person's health in SA.

409 **2.3. Curriculum development**

410 Curriculum review and design are central to this thesis. Therefore, in this section I define and present the
411 approaches to curriculum development and the educational strategies reported on in medical geriatric
412 curricula. It is important to recognise that curriculum development is a dynamic and complex process, and

413 that there are competing schools of thought in this area. Some of the approaches to curricular design are
414 described in order to justify the theories and positions adopted in the subsequent chapters of this thesis.

415 ***2.3.1 Theories of curriculum and curriculum development***

416 A curriculum is commonly referred to as a “planned educational experience”. The dominant model of
417 curriculum design is that proposed by Tyler (1949), referred to as the “Tyler Rationale”.^[41] He described
418 curriculum development as a process that organises what will be taught, who will be taught, how it will be
419 taught and attempts to align medical education with the latest information and local population needs.^[41]
420 Posner further unpacked the curriculum into seven elements i.e. the scope and sequence of intended learning
421 outcomes, the learning content, the content outline, the assessment standards, the sources for learning, the
422 course of study and the planned learning experiences.^[80] However, the Posner and the Tyler rationale focus
423 on the attainment of technical competencies and do not address the development of professional attributes
424 to meet societal needs. Curriculum is viewed only as a blueprint for educational activities, rather the social
425 purpose of professional education.

426 A different perspective proposed by Schwab was the Deliberative Curriculum theory. It involves
427 consideration of the fundamental value of a curriculum, and takes into account both the ends and the means
428 of a curriculum. This view of curriculum development differs from the Tyler Rational which assumes
429 learning to occur in a linear fashion with little consideration to how the instructional design and content
430 could add value to the educational process and outcome. Schwab’s deliberative theory, also referred to as
431 “the practical” argues that it is necessary to examine the curriculum within its specific context to reach a
432 common understanding of the curriculum problem and decide on the most appropriate course of action. The
433 need for deliberation arises from the fact that curriculum planners must make decisions based on the
434 available information. Decisions that are arrived at through the process of deliberation are based by rational
435 consideration of possible solutions to a curriculum problem. Thus, deliberation requires the ability to accept
436 a certain degree of uncertainty or “methodological pluralism.”^[47]

437 There are multiple factors involved in a medical curriculum. These include the learner, the educational
438 environment and the community served. A deliberative inquiry into the curriculum entails an exploration
439 of each of these factors and how they contribute to the whole.^[81] This is similar to systems thinking, which
440 explores the parts of a system that interconnect and interact to make a complete whole.^[82] Curricula can
441 also be viewed from four perspectives - the planned, taught, received and hidden curriculum.^[83] The
442 *planned* curriculum is the written, documented curriculum, designed to provide a guide for educators and
443 students. Second, the *taught* curriculum is what is actually delivered to the students. Third, the *received*
444 curriculum is how the students experience the learning process. Fourth, the *hidden* curriculum refers to the

445 norms and values embodied by the school or institution. While health professions educators design and
446 deliver the curriculum (planned and taught curriculum), the students' learning is also influenced by their
447 experiences in the educational environment (received and hidden curriculum).^[35]

448 The multiple perspectives outlined above influence the outcome of the educational process and present a
449 challenge to curriculum planners. Thus, periodic review of the curriculum is necessary to ensure that the
450 desired learning outcomes are being achieved. The process of deliberation on the curriculum includes
451 participation by all stakeholders. It is thus essential to have a clear understanding of the curriculum. One of
452 the ways in which to make a curriculum more transparent and open to review is by curriculum mapping.

453 Curriculum mapping is a method of auditing the content, time and sequence of the planned curriculum.^[84]
454 ^{85]} The methodology of curriculum mapping has been used extensively in medical education to document
455 how and where novel or specific content such as sex and gender-based medicine^[86], communication skills
456 training^[87], and substance misuse^[88] is taught and assessed in a curriculum. Curriculum mapping has also
457 been used to facilitate interprofessional education by identifying overlaps in the curricula of different
458 professions thereby informing the design of shared learning or IPE.^[89] Curriculum mapping is thus an
459 integral part of the curriculum review and development process.

460 **2.3.2. Kern et. al's Curriculum development model**

461 Kern et. al's six-step Curriculum development model provides a practical and theoretically sound approach
462 to develop, implement, evaluate and continually improve educational experiences in medical education.^[49]
463 The model encompasses the context-specific approach promoted by the deliberative curriculum school of
464 thought as it is founded on the assumption that "medical education should change as our knowledge base
465 changes and as the needs or perceived needs of patients and society change."^[49] Kern's six-step curriculum
466 development model was thus adopted as the conceptual framework for this body of work.

467 Kern's curriculum development model is founded on work by other health professions educationalists who
468 have advocated for curricula to be linked to health care needs, and is thus grounded in patient and societal
469 needs.^[50] The first step described in this curriculum development process is thus the identification and
470 critical analysis of a health care need. In this step curriculum planners must identify the health care problem
471 that is to be addressed by the curriculum. In addition they should identify the differences between how the
472 health care need is currently being addressed and how it should be addressed. The differences between the
473 current and ideal approach constitutes the general needs assessment, which helps focus the goals and
474 objectives of the curriculum.

475 Earlier in this chapter I expounded on the epidemiology and effects of age-related health conditions on
476 older populations and health systems in the SSA region and South Africa. From the literature it is evident

477 that healthcare for older adults in SSA is lacking. The gaps in knowledge on the health needs of older adults
478 in SSA have partly contributed to the limited inclusion of geriatric care competencies in UG medical
479 curricula. It is therefore essential to identify and explore the health needs of older adults in order to examine
480 how the curriculum addresses these needs. It is of particular relevance to understand how health
481 professionals are currently addressing the problem as they are the learners that the curriculum is targeted
482 at.

483 The second step of the curriculum development process involves assessing the needs of a targeted group of
484 learners, in this case undergraduate medical students. The third step is to set the goals and objectives for
485 the curriculum, based on the findings of the first two steps. Objectives may include attainment of
486 knowledge, skills or attitudes by the students. Development of the goals and objectives will then determine
487 the curricular content and learning methods. In the fourth step educational methods are chosen that are best
488 suited to attaining the educational objectives defined in the previous step. The fifth step is implementation
489 of the curriculum. This entails mobilising the necessary resources, informing relevant stakeholders of the
490 changes and administering the curriculum. Finally, the sixth step is to evaluate the curriculum and provide
491 feedback. As Kern et al. have noted, the process of curriculum development does not always progress in a
492 sequential, linear fashion across these phases; at times, two or more phases may occur concurrently.

493 The deliberative curriculum approach emphasises that all participants should be involved in determining
494 the goal of education, hence the importance of transparency and consultation in each phase of the
495 curriculum development process. While deliberation does not seek to develop theories around curriculum
496 development it does attempt to pursue the most rationale decision within a particular set of circumstances.
497 In addition to these steps health professions educators must ensure that curricula are updated in respect of
498 trends in medical education and best evidence medical education.^[90] In order to conceptualise the curricular
499 approaches to enhancing geriatric care training in a SSA medical school, one must first understand the roots
500 of geriatric medical education.

501 **2.4. Geriatric Medical Education**

502 *2.4.1. Development of geriatric medical curricula*

503 Geriatric medicine is a relatively new and neglected area in health professions education.^[32] Most of the
504 initiatives to include geriatrics in medical curricula have been reported in HICs.^[37, 91, 92] A key advocate for
505 geriatric medical training has been the International Association of Gerontology and Geriatrics (IAGG).^[93]
506 This non-governmental organization represents 64 countries and promotes gerontology training worldwide.
507 It has advocated for greater attention to geriatric care training through the WHO and the United Nations

508 (UN), and promoted geriatric training in member countries. In 2007, the IAGG published its
509 recommendations for the core competencies for geriatric medical training.^[93] (Table 2.1.)

510 **Table 2.1. *IAGG recommendations for Basic Contents for Undergraduate Medical Students**

511 * *Source: IAGG newsletter 2007 Volume 18. part 1^[93]*

1. Understand the biology of ageing - which must correlate with the clinical manifestations of diseases in older individuals.
2. Demonstrate appropriate knowledge of physiology of ageing to understand concepts such as frailty and loss of functional capacity.
3. Demonstrate knowledge of demography, especially of the demographic /epidemiology transition.
4. Demonstrate sufficient knowledge of pharmacology in order to understand basic principles of prescribing for older people, with special attention to adverse effects and iatrogenesis.
5. Recognize the role of psychosocial risk factors in the causation of diseases such as living alone, economic hardship and lack of social support.
6. Recognize the importance of providing support to family caregivers, who, themselves, may be old and in poor health.
7. Recognize prevention and rehabilitation as the main goals of Geriatric Medicine.
8. Understand how complex health in older age is - thus requiring multi-dimensional evaluation and multidisciplinary approaches for the attainment of better outcomes.
9. Consider a problem-oriented approach as the most appropriate in the care of older people.
10. Embrace a holistic perspective, understanding that older persons have a rich history behind them and embrace life-course events as the root of many of their current ill-health conditions.
11. Understand that a life course perspective also implies that today's children and younger adults are tomorrow's older people and that their health in older age depends on how they live.

512
513 Following the publication by the International Association of Gerontology and Geriatrics (IAGG) of its
514 recommendations for UG geriatric training, there was rapid development and uptake of core geriatric
515 competencies for medical students in HICs. The British Geriatric Society developed a list of minimum core

516 geriatric competencies for UG medical curricula based on the IAGG recommendations. Since then, there
517 was a noticeable improvement reported in teaching and assessment of geriatric competencies in medical
518 schools in the United Kingdom (UK) between 2008 and 2013.^[94, 95] A contributing factor for the
519 improvement was the increased attention to the quality of healthcare for older people after reports of neglect
520 of older patients. As a result, the majority of medical schools in the UK now teach on delirium, dementia,
521 stroke, falls, osteoporosis, extra-pyramidal disorders, polypharmacy, incontinence, ethics and mental
522 capacity.^[95]

523 The European Union of Medical Specialists subsequently used the British Geriatric Society's
524 Recommended Curriculum as the basis for a Delphi consensus study to develop an European UG
525 curriculum in geriatric medicine.^[92] Similar initiatives have occurred in the USA, Canada, Australia and
526 New Zealand.^[96-99] The professional bodies in HICs have been instrumental in establishing geriatric
527 competencies in UG medical curricula in those countries.

528 The lack of similar initiatives in SSA countries has possibly contributed to the poor progress in geriatric
529 medical education in the region. The South African Geriatric Society, a body of specialist geriatricians, has
530 focused most of their efforts on post-graduate training. Most medical graduates, therefore, receive little
531 training in geriatric care and lack geriatric knowledge and skills.^[100-102] Strategies, such as continuing
532 medical education and post-graduate courses in geriatric medicine, have been proposed to address the lack
533 of geriatric knowledge and skills among medical practitioners.^[100, 103] However, there has been little
534 attention and research in the area of UG geriatric care training in the SSA region.^[37]

535 **2.4.2. Geriatric care training in South Africa**

536 The state of geriatric care training in SA is similar to that reported elsewhere in the SSA region. There has
537 been greater attention directed towards post-graduate training in Geriatric Medicine, than UG medical
538 training since geriatric medicine was established as a sub-discipline of Internal Medicine. Consequently,
539 SA has more specialist geriatricians than most other countries on the continent. However, there is still only
540 an estimated one geriatrician per 275 000 older persons.^[103] In an attempt to address the need for geriatric
541 medical services, a post-graduate diploma in Geriatrics was introduced in 2015 that is targeted at primary
542 care medical practitioners and general physicians.^[103] The syllabus for this diploma was informed by the
543 recommendations of the IAGG (Table 2.1.). However, it is doubtful whether post-graduate training alone
544 will be able to address geriatric health needs in the country.

545 The rapid increase in the number of older people and the emphasis on primary care in the NHI scheme will
546 result in an increased demand for age-related health services at primary care level. Therefore, nursing and
547 medical professionals, who are the forefront of primary care services in SA, will need appropriate

548 knowledge, skills and attitudes to care for older patients. Unfortunately there is poor collaboration between
549 the ministries of health and education resulting in a gap between professional education and health
550 services.^[104, 105] It is thus unclear if medical and nursing graduates in SA are adequately prepared to deliver
551 the required health services to older adults with the planned NHI scheme, or provide integrated and
552 coordinated care as proposed by the ICDM.

553 The curricula of most SA medical schools are modelled on those in HICs, and are not concordant with local
554 health systems or the health needs of the communities served, particularly rural and disadvantaged
555 communities.^[106] Greater attention needs to be directed towards decolonizing the UG medical curriculum.
556 This requires SSA medical schools to conduct independent research in geriatric medical training. Part of
557 the process of decolonizing education is to re-establish links to the community. Education should not occur
558 independently of the communities served. Instead stakeholder engagement is essential for contextualizing
559 knowledge, deepening understanding, encouraging community involvement, and reconnecting students
560 with the social purpose of professional education. It is therefore important when reviewing curricula to
561 reflect on the goal of medical education.

562 **2.5. Medical curricula in South Africa**

563 *2.5.1. Accreditation of undergraduate medical curricula*

564 Each of the nine medical schools in SA has autonomy to develop its UG medical curriculum based on the
565 health care needs of the people in the province.^[107] There is currently no national UG medical curriculum
566 nor prescribed minimum competencies to guide the curricula of medical schools. Each undergraduate
567 programme has to be approved by the SA Council of Higher Education (CHE) and accredited by the
568 national registration body, the Health Professions Council of South Africa (HPCSA). The accreditation
569 process focusses on two aspects – educational quality and institutional integrity. The accreditation purpose
570 does not evaluate the social accountability of the medical school nor is there inclusion of community
571 representatives on the accreditation board. Social accountability of medical schools, as defined by the
572 WHO, is “the obligation to direct their education, research and service activities towards addressing the
573 priority health concerns of the community, region or nation they have a mandate to serve.”^[108] However,
574 despite successful accreditation of all medical schools there has been little improvement in the quality of
575 medical services to rural and disadvantaged communities in SA. It is thus clear that the accreditation process
576 of UG medical programmes in SA does not ensure social responsiveness of medical schools. Furthermore,
577 the absence of a national curriculum and prescribed minimum competencies has resulted in a varied
578 curriculum in geriatric care across the different training institutions in SA.

579 The design and development of undergraduate medical curricula is thus mainly influenced by intrinsic
580 factors. The drive to provide geriatric teaching to UG medical students is reliant on the presence of
581 dedicated teaching faculty to ensure the inclusion of explicit learning objectives in geriatric care in the
582 curriculum. Unfortunately, not all medical schools in SA have established departments of geriatric medicine
583 nor include teaching by medical specialists/lecturers in Geriatric Medicine.^[109] Kalula et al. 2007 have
584 criticised the current neglect of geriatric care training in SA, stating that ‘older person’s care is not a priority
585 in institutional planning and training curricula, and that most health professionals complete medical training
586 without adequate exposure to geriatric medicine’.^[1] Other educators, physicians and students in SA have
587 also commented on the neglect of geriatric care training in medical curricula.^[103, 109-111]

588 In the absence of prescribed core competencies by the accreditation body, medical schools should conduct
589 institutional self-review to ensure that their curriculum meets its purpose. However, most medical
590 schools, despite claims of stakeholder engagement, do not consider patient and community feedback
591 when reviewing their curricula. Furthermore, there is little input by the ministry of health into UG
592 medical curricula which has resulted in a gap between professional education and health services.^[104, 105]
593 It is thus essential for medical schools to establish good relationships with communities and the health
594 sector in order to better serve students and patients. Support for the UG medical programme is especially
595 relevant in light of the numerous challenges facing medical schools. Peer review by other medical schools
596 may also contribute to the transparency and accountability of medical schools.^[112]

597 Medical schools in SSA struggle to develop and implement their UG programmes amidst poor
598 infrastructure, limited resources and faculty shortages.^[40, 113] National imperatives to increase the number
599 of graduates are difficult to implement due to the lack of space in teaching venues and attrition of skilled
600 staff. Innovative and resourceful initiatives are needed to address the challenges facing the development
601 of the geriatric medical curriculum in SA. Although there is limited research on geriatric medical
602 education in SSA, global reforms in health professions education provide opportunities for health
603 professions educators to develop and implement curricular strategies that will produce medical graduates
604 that are fit-for-purpose.^[40, 114]

605 **2.6. Curricular approaches to Geriatric Medical education**

606 Several important developments have occurred in undergraduate medical education in the last two decades
607 that have reshaped the structure and delivery of curricula. Since the Lancet Commission on Health
608 Professions Education in 2010 there has been wider implementation of outcome- or competency-based
609 education (CBE) as well as increased attention to community-based education and a patient-centered care

610 approach in the health professions curricula.^[114] These curricular trends have been successfully applied in
611 many medical schools and have served to enhance UG teaching and learning in geriatric care.^[115] However,
612 most of the published work in geriatric care training has been conducted in HICs and focusses on the
613 outcomes of students. There is a lack of conceptualisation of curricular approaches to develop the geriatric
614 curriculum in LMICs to address the health needs of older adults in these countries. Many studies report on
615 educational strategies employed in geriatric care training such as establishing core competencies, senior
616 mentor programs and clerkships in geriatrics, which will be discussed further.^[116] However, these studies
617 do not address the philosophical or social concerns of older people's health and the subjective experiences
618 of illnesses. Medical education must be transformative in order to develop the appropriate professional
619 attributes in medical students to enable them to meet the expectations and needs of older people.

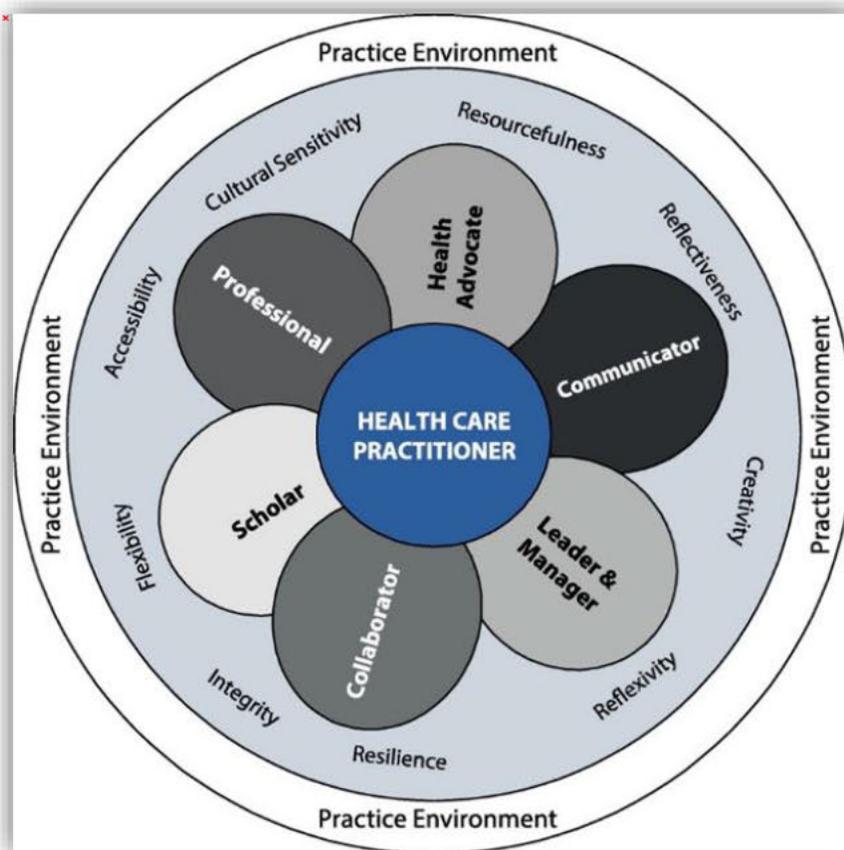
620 ***2.6.1. Establishing core competencies in geriatric care***

621 In line with global reforms in medical education, most medical schools in SSA have moved towards
622 outcomes- or competency-based education (CBE) curricula.^[117] In CBE the learning objectives are
623 identified, made explicit and communicated to all the role players. Teaching and assessment are then
624 aligned with the prescribed competencies.^[117] Prescribing core competencies in geriatric care is a strong
625 incentive for curriculum planners and HPEs to include teaching on geriatric care. It can also be instrumental
626 in stimulating student interest in geriatrics and improve learning.

627 Unlike in HICs where specialist bodies and other stakeholder have advocated for the inclusion of core
628 geriatric care competencies in medical training, there has been no such initiative in SA.^[38, 39] There is also
629 no national curricula for undergraduate medical programmes. Instead, the national regulatory body, the
630 HPCSA, has adopted the CanMEDS (Canadian Medical Education Directions for Specialists) competency
631 framework for accreditation of UG medical programmes.^[97] This framework was modified by the UKZN
632 to be applied to all the health professions programmes offered at the university. Each of the seven graduate
633 roles in this competency framework (illustrated in figure 2.1.) are relevant to geriatric care, in particular the
634 communicator and health advocate roles.

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651 **Figure 2.1. Core graduate competencies for Health Care Professionals at UKZN.**

652 *Source: Adapted from the HPCSA Core Competencies for Undergraduate Programmes in South Africa*
653 *(2014) with permission of the HPCSA Undergraduate Committee obtained March 2014.*

654 A limitation of such competency frameworks is that they are often generic and subject to interpretation. As
655 evidenced in HICs, they do not always result in the intended outcomes.^[94, 118] Another weakness of the
656 competency-based approach is that it assesses mainly student knowledge and skills, and not personal and
657 professional attributes. It is thus difficult to determine if graduates are truly fit-for-purpose by teaching and
658 assessing discrete competencies.

659 Greater attention is thus required at curricular level to strategies that improve the effectiveness of geriatric
660 care training. Harden proposed the use of the SPICES model that uses a continuum of six education
661 strategies that relate to the medical curricula.^[119] These issues can be represented as a spectrum: student-
662 centred/teacher-centred, problem-based/information-gathering, integrated/discipline-based, community-

663 based/hospital-based, elective/uniform and systematic/apprenticeship-based. The trend in medical
664 education is to move curricula towards the left of the continuum.

665 ***2.6.2. Integrated versus stand-alone teaching in geriatric care***

666 Most medical schools have transitioned towards integrated curricula, as recommended in Harden's SPICES
667 model. However, there is still debate on whether integrated or subject-based/stand-alone courses are more
668 effective regarding geriatric care training. The integrated approach is where the contents and learning
669 objectives relevant to the care of older adults is distributed throughout different courses in different
670 years.^[120] Whereas, the subject-based or stand-alone approach is one where the teaching in geriatrics is
671 delivered and assessed independent of other training.

672 A major benefit of an integrated curriculum is that it enables early exposure of students to the care of older
673 adults. This can be instrumental in stimulating student interest in the care of older adults and shaping
674 attitudes. Studies demonstrate that the pre-clinical exposure of medical students to geriatric patients assisted
675 in familiarizing students with the health needs of older adults and improved student attitudes towards caring
676 for the elderly.^[121-124] Competencies in areas such as communication skills, epidemiology and medical
677 ethics can be addressed early on to introduce students to the care of older adults.^[122, 124, 125] Integrated
678 curricula also allows for inclusion of new topics into pre-existing curricula throughout all years of study.
679 Many North American medical schools have successfully added teaching on the care of older adults through
680 integrated curricula.

681 At the University of Michigan, content in geriatric medicine was vertically integrated into their existing
682 UG medical curriculum.^[126] At the beginning of their studies medical students are introduced to a web-
683 based geriatrics portfolio with clearly stated learning objectives related to core competencies in geriatric
684 care that they are expected to acquire before graduation. Students are then expected to periodically review
685 their portfolio content during the course of study. Existing pre-clinical courses added on age-specific
686 content through lectures or case presentations, and clinical teaching involved simulated and real patient
687 encounters. Other medical schools in the USA have followed suit, and added on the Senior Mentor
688 programme.^[127]

689 The educational effectiveness of integrated curricula is considered superior to that of traditional curricula
690 as it encourages student-centered learning. This is intended to enhance student learning and improve
691 retention of knowledge. However, it is difficult to evaluate learning in individual subjects in an integrated
692 curriculum.^[126] Curriculum mapping is an important process in the development and review of integrated
693 curriculum as it enables curriculum planners to identify the inclusion or omission of specific competencies.

694 Although students in an integrated curriculum are exposed to teaching in geriatric care, studies indicate that
695 their geriatric knowledge, skills and attitudes are better developed during a specialized geriatric rotation.^{[128,}
696 ^{129]} This could be due to limited opportunities for geriatric-related teaching and assessment in integrated
697 curricula. Studies conducted at North American medical schools demonstrated that not only does a one- or
698 two-week rotation dedicated to geriatric care improve student competencies, but that increase in knowledge
699 is sustained.^[128] Even courses as short as three days were shown to improve student competency in caring
700 for older adults.^[130]

701 The choice between integrated or stand-alone teaching is a pragmatic one. Curriculum planners have to
702 consider what is practical to implement and will achieve the desired outcomes. Multiple disciplines compete
703 for time in an already time-constrained period of study. Integrated curricula allow for greater flexibility and
704 accommodation of emerging topics of medical educational interest. However, the relevance and
705 significance of the geriatric component should be highlighted to educators and coordinators. The problem-
706 based learning (PBL) approach accentuates the value of integrated curricula as it provides for practical
707 application of knowledge and allows for the involvement of different disciplines in the management of real-
708 life cases.

709 ***2.6.3. Problem-based learning (PBL)***

710 In problem-based learning (PBL) students collaborate in teams to learn through self-directed learning.^[131]
711 Thus, PBL provides an effective means of educating medical students on core geriatric topics, while also
712 helping to develop clinical reasoning and teamwork skills.^[132] This active learning method is student-driven
713 and has been used effectively to address geriatric learning objectives. PBL enables psychosocial and
714 teamwork issues to be addressed that are critical to the care of older adults.^[133] Furthermore, PBL offers the
715 opportunity for interprofessional education around the care of older adults with complex health
716 conditions.^[134-136] Interprofessional care and collaboration are important principles in the care of older
717 adults and are better learnt through the PBL approach rather than didactic lectures.^[137] Another significant
718 benefit of PBL is the lack of need for specialised geriatric teaching faculty.^[138] In many medical training
719 institutions geriatric topics and teaching were included at medical schools without geriatric teaching
720 expertise through the development of appropriate PBL tools relevant to the care of older adults.^[37]

721 ***2.6.4. Senior Mentor programs (SMP)***

722 The literature strongly suggests that community-based education and mentorship programmes with healthy
723 community-dwelling older adults produce positive attitudinal changes in students.^[139-142] An example of
724 this is the Senior Mentor program (SMP). This geriatric curriculum intervention began in the early 2000s
725 in North American medical schools.^[143] The SMP is designed as a longitudinal integrated clerkship whereby

726 UG medical students are exposed to healthy, community-dwelling older adults over the course of their
727 studies.^[144] Learning in geriatric care occurs through activities designed to improve knowledge of ageing
728 and stimulate critical self-reflection.^[139, 142, 144]

729 Unlike in hospitals where students focus on the disease process, in the SMP students learn about the
730 importance of health promotion and healthy ageing. Some studies have suggested that the SMP influences
731 patient-centredness in students as they began to view elderly people as individuals and not as a homogenous
732 group characterized by declining health.^[145, 146] The SMPs have also been used to facilitate interprofessional
733 education around the care of older adults.^[144]

734 A major advantage of the SMP is that, apart from the administration of the program, there is little increase
735 in the teaching workload. Many geriatric topics can be covered by self-directed learning facilitated by the
736 student-mentor interactions.^[139] The main resource required is the recruitment of elderly community
737 volunteers who meet with the students several times a year throughout the UG programme. Unfortunately
738 many of these SMPs have been terminated, not because of inefficacy but due to restructuring at the medical
739 schools.^[147]

740 Apart from the SMP there has been a lack of community-based educational strategies in geriatric care. A
741 survey of geriatric curricula in the UK highlighted a failure to involve patients and the public in teaching.^[118]
742 One of the few community-based studies in the UK demonstrated that first year students who conducted
743 home visits supervised by a specialist geriatrician resulted in students becoming more comfortable with
744 interacting with older people and dispelled stereotypes about aging.^[148] However, such strategies are not
745 feasible with the large numbers of medical students and scarcity of specialist geriatricians in SSA.

746 ***2.6.5. Interprofessional education (IPE)***

747 Integrated and coordinated care are fundamental principles in caring for older adults and thus, geriatric
748 medical training should include interprofessional education.^[149] Interprofessional education (IPE) is where
749 two or more professions learn with and about each other in order to improve collaboration and the quality
750 of care to patients.^[150] The WHO recommends that in order to provide effective coordinated care to older
751 adults, health professionals should possess appropriate skills in interprofessional collaboration and care.^[151]
752 The skills required for interprofessional care include effective communication, clear understanding of roles
753 and team dynamics and an ability to resolve conflict. The objective of IPE is not only to attain geriatric care
754 competencies, but to develop these interprofessional practice skills. The Lancet commission highlighted
755 the shortcomings of teaching students in “professional silos” and advocated for IPE in health professions
756 education.

757 Various approaches have been applied to including IPE in geriatric care training such as lectures, case-
758 based workshops, clinical placements, e-learning, residential care visits and simulation training with role-
759 playing.^[135, 136] Most of these teaching methods followed a PBL approach.^[133, 152] The use of IPE has shown
760 positive gains in student competencies relevant to the care of older adults as well as improved teamwork
761 skills. Even IPE programmes as short as eleven hours have been effective in developing appropriate
762 knowledge, skills and attitudes in students.^[133, 153]

763 Despite these positive outcomes and strong recommendations few programmes have implemented IPE for
764 geriatric care training. This has been mainly due to the significant logistic and programmatic challenges of
765 coordinating teaching between different disciplines.^[152] Also, many faculty express reluctance in changing
766 the traditional model of discipline-specific teaching and lack the expertise to conduct IPE.

767 ***2.6.6. Transformative education***

768 The complex environment in which medical graduates will practice requires medical education to be
769 transformative in order for students to successfully transition into their professional roles. Ageism, the
770 stereotyping, prejudice, and discrimination against people on the basis of their age, is prevalent in the
771 medical profession and adversely affects health outcomes in the elderly.^[154, 155] While teaching in
772 geriatric care almost invariably improves student knowledge, the same does not apply to students'
773 attitudes.^[156] Student attitudes towards older adults have been reported to decline through medical school
774 despite exposure to geriatric teaching.^[157] In light of this, health professions educators have attempted to
775 target student attitudes towards elderly patients and their care through transformative learning strategies.

776 Transformative learning is the process of effecting change in a frame of reference.^[158] In order for educators
777 to develop positive attitudes in students towards older adults it is necessary to get students to confront their
778 perceptions towards older adults, critically analyse them and reframe those perceptions. The transformative
779 learning activities employed in geriatric education include simulation of ageing, self-reflective essays, and
780 the use of arts.^[125, 159-161] All of these methods entail a process of critical self-reflection with varying degrees
781 of success.

782 In the simulation of ageing activities, students simulate age-related impairments such as wearing opaque
783 glasses to simulate cataracts or plugging ears with cotton wool to simulate hearing impairment. The
784 outcome of this activity was noted to increase empathy among the students but worsened attitudes
785 towards elderly people.^[125, 162] This may be due to students' perceptions of the numerous limitations
786 associated with ageing that increase the need for help. These studies indicate that exposure to only the
787 negative aspects of ageing can reinforce stereotypes of elderly people. However, a systematic review

788 indicated that empathy-building activities such as the ageing game can be effective in improving student
789 attitudes, especially when combined with exposure to healthy older adults.^[140]

790 Self-reflective activities such as reflective journaling have multiple positive outcomes on student learning.
791 It is associated with an increase in student insight, empathy as well as cultural sensitivity.^[163] When used
792 in geriatric care training self-reflective activities can induce changes in attitudes towards ageing.^[164]
793 However, the design of reflective writing interventions need to be consistent with the desired learning
794 outcomes. Reflective journaling also provides valuable insights into the process by which medical students
795 react to the formal and hidden curriculum. This can assist educators greatly in refining the curriculum in
796 order to improve student outcomes. Furthermore, critical reflection can help develop the health advocate
797 role, a key graduate competency in the care of older adults.^[165]

798 **2.6.7. Patient-centredness**

799 Mead and Bouwer argue that patient-centredness is a core competency of health care professionals and
800 should be addressed during training.^[166] This was reiterated by Meiboom et al. 2018 who established that
801 the most important element in enhancing geriatric medical education was a patient-centered curriculum.^[167]
802 Patient-centredness is a generic principle that could apply not only to geriatric training but to the entire
803 curriculum. However, this will require a paradigm shift in teaching and learning at medical schools. Patient-
804 centered medicine refers to understanding the whole person rather than a person with an illness.^[168] This is
805 at odds with the traditional biomedical approach in medical training that tends to focus on identifying and
806 treating standard disease entities. Patient-centredness is also a skill that is difficult to teach and assess, as
807 there are no established educational models to guide the instruction of patient centeredness.^[169]

808 Some of the elements identified that contribute to developing a patient-centered approach in students are
809 attention to communication skills training, IPE, community-based education including exposure to healthy
810 older adults, and longitudinal integrated clerkships. Although most UG medical education programmes
811 include communication skills very few address the unique communication skills needed for the care of
812 elderly patients who have cognitive and sensory impairments. Culturally sensitive and appropriate
813 communication is a key element of quality care of older adults. In addition, communication with elderly
814 patients often involves interaction with their care-giver. Communication is a skill that cannot be taught
815 through lectures. Students must learn and practice verbal and non-verbal communication techniques. This
816 can be facilitated by engaging with simulated or real patients and conducting role-playing with a skilled
817 facilitator.^[170] Another benefit of the use of simulated patients is the reported improvement in student's
818 self-confidence when approaching older adults and enhanced patient-centredness.^[170]

819 Another strategy to incorporate patient-centered learning in the curriculum is to expose students to well
820 elderly as in the Senior Mentor programme described earlier in this chapter. The continuity of care inherent
821 in the SMP helps students to focus on the whole person and health promotion rather than searching for a
822 diagnosis.^[171] Exposure to ambulatory older adults may also help reshape students' approach to the care of
823 older adults.

824 **2.7. Chapter summary**

825 In an effort to generate theoretical perspectives on the geriatric curriculum in undergraduate medical
826 education, it was essential to locate the curriculum in the relevant context, and to critically review past and
827 present educational strategies. This chapter described the socio-political context of the health of geriatric
828 populations in SSA and provided an overview of the scientific literature on geriatric medical education.
829 The findings were that there is a paucity of data on geriatric health needs in SSA, which has contributed to
830 the poor implementation of policies regarding the care of older persons. As a result, older person's health
831 has been neglected by researchers and educators. There is an evident absence of data on geriatric medical
832 education from SSA countries. The relevant literature emphasizes the importance of including patient-
833 centredness and interprofessional education in the geriatric curriculum.

834 There is therefore a gap in the research and a pressing need for data to inform the development of an UG
835 medical curriculum that addresses the health needs of older patients. Consequently, the next chapter will
836 introduce the methodology employed in order to address the gaps in the research literature.

837

Chapter 3 – Methodology

839 3.1. Introduction

840 The previous chapters outlined the context and purpose of the study, and the literature and theoretical
841 framework used to answer the research objectives. In this chapter, the conceptual framework for the study
842 is described, and the study design justified. Owing to the design of this thesis by manuscript, each
843 manuscript describes the methods used as indicated in Chapters 4 to 6. Therefore, Chapter 3 provides an
844 overview of the methodology that frames the overall study and provides the rationale for the mixed methods
845 approach. Details of all the methods employed are given. Finally, the ethical issues related to the research
846 are addressed, including the reflexive positioning of the researcher.

847 3.2. Conceptual framework

848 This study adopted Kern's et al. six-steps approach to curriculum development as the framework for the
849 study (Figure 3.1.).^[172] The six steps in this curriculum development model have been specifically designed
850 to address educational problems. The ontological assumption is that a geriatric medical curriculum has to
851 be explored from different perspectives i.e. the needs of the patients and community served by the medical
852 school, health professions educators who train on geriatric care, and the students who receive the training.
853 Furthermore, a review of the curriculum should entail an investigation of the learning objectives,
854 educational experiences and the assessment of the learning objectives.^[41]

855 As Kern et al. have noted, the process of curriculum development does not always progress in a sequential,
856 linear fashion across these phases; at times, two or more phases may occur concurrently. This was the case
857 with this study; the rationale and purpose of each objective is provided in relation to the steps in Kern's
858 curriculum development model. The six steps in this curriculum development model include the following:

859 Step 1. Identification and critical analysis of the health care need involved a qualitative evaluation of the
860 principles of quality geriatric healthcare services from the perspective of patients.

861 Step 2. Targeted needs assessment of learners whose geriatric knowledge and attitudes towards the care of
862 older adults were assessed;

863 Step 3. Formulation of specific outcomes based on the results of the general and targeted needs assessments;

864 Step 4. Educational strategies in the current curriculum were mapped and reviewed;

865 The remaining steps i.e. 5. Implementation; 6. Evaluation and feedback were not included in the current
866 study.

867 This study was able to address three of these steps, as tabulated in table 3.1. To analyse the health problem
868 and general needs assessment of the geriatric population, it was necessary to explore geriatric patients’
869 perceptions of the services received at primary care facilities, and their suggestions on what aspects of
870 medical training could be enhanced. Next, a targeted needs assessment was conducted to evaluate medical
871 students’ knowledge and attitudes regarding the care of older adults, and possible factors affecting student
872 learning in geriatric care. This was necessary to understand the outcomes of the current geriatric curriculum
873 on student knowledge and attitudes. Finally, the current curriculum was mapped through a document review
874 and interviews with health professions educators, in order to identify opportunities to enhance the current
875 teaching and learning relevant to the care of older adults. The other steps were outside the scope of this
876 study.

877 **Table 3.1. The Kern’s approach to Curriculum Development in this study**

	Objectives	Step in Kern’s Curriculum development model	Manuscript/ Chapter
1.	To explore the experiences and expectations of geriatric patients and make recommendations for teaching and learning.	Problem identification and general needs assessment	1 (Chapter 4)
2.	To assess the knowledge and attitudes of final year medical students regarding the care of elderly people.	Targeted needs assessment of learners	2 (Chapter 5)
3.	To document the degree to which geriatric care teaching is covered in the medical UG training program at UZKN.	Map and review the educational strategies of the curriculum	3 (Chapter 6)

878 **3.3. Mixed methods study design**

879 The pragmatic paradigm in which this study is situated attempts to improve the quality and scientific power
880 of data through methodological plurality.^[173] The geriatric medical curriculum that was investigated in this

881 study is a complex and contextually dependent entity. The pragmatic research paradigm allows for a degree
882 of uncertainty about the findings. Thus, a mixed methods study design was selected to address the research
883 objectives. Mixed methods research, which refers to the integration of quantitative and qualitative research
884 methods, attempts to provide a greater breadth and depth of understanding and corroboration of evidence
885 contributing to the purpose of the study.^[174, 175] Triangulation of data was achieved by making use of various
886 data sources and multiple perspectives for interpretation. This study design enabled the overall study aim
887 to be addressed through investigations of the various facets of the curriculum.

888 In order to address the health problem, it was crucial to explore and examine the perceptions of geriatric
889 patients regarding the care received at primary healthcare facilities. This provided qualitative data to
890 enhance the scientific literature on the age-related health conditions prevalent among older adults in SSA.
891 It also provided insight into the key professional competencies valued by the recipients of care, and
892 highlighted weaknesses in graduate outcomes that needed to be addressed.

893 The outcomes of undergraduate medical training was assessed, in part, by an evaluation of student
894 knowledge and attitudes regarding the care of elderly patients. The findings regarding the students' level
895 of geriatric knowledge and attitudes explored the factors associated with student learning and identified the
896 learning needs to be addressed by the curriculum.

897 In order to evaluate the current educational strategies, the curriculum was mapped regarding geriatric topics,
898 teaching time, teaching strategies and assessment methods. Data from the document review of the
899 curriculum was supported by semi-structured interviews with health professions educators. This provided
900 insight into the educational strategies and potential opportunities to enhance the geriatric curriculum.

901 The assessment of geriatric patient needs, evaluation of learner geriatric knowledge and attitudes, and
902 mapping of the geriatric curriculum all provided data that converged on the overall study purpose to inform
903 recommendations for the development of a geriatric curriculum for undergraduate medical education.

904 **3.4. Overview of the methodology**

905 The study employed a mixed-method design, and included both qualitative and quantitative data collection
906 methods.^[174] A summary of the methods used for each study objective is provided in table 3.2. The
907 quantitative component was the survey of final year medical students regarding their knowledge and
908 attitudes regarding ageing and the care of older adults, and the curriculum mapping. The qualitative
909 component involved focus group discussions with geriatric patients at primary care facilities in KZN, and
910 semi-structured interviews with health professions educators.

912 **Table 3.2. Overview of methodology linked to objectives**

	Objective 1 Identification of health problem and general needs assessment	Objective 2 Targeted needs assessment	Objective 3 Review of educational strategies	
Study population	Patients >60 years at PHC facilities in KZN	Final year medical students	Health Professions Educators	Document review of electronic curriculum platform
Sampling size	28	173	5	-
Sampling strategy	Purposive sampling	Whole population sampling	Purposive sampling	-
Study instrument	Discussion guide (Appendix 5)	Questionnaire – Palmore’s facts on ageing quiz & UCLA- Geriatrics attitude scale (Appendix 7)	Semi-structured interview guide (Appendix 9)	(Appendix 10)
Data type	Qualitative	Quantitative	Qualitative	Quantitative and qualitative
Data analysis	Thematic analysis	Frequencies, mean, bivariate logistic regression	Content analysis	Content analysis

913 **3.5. Study Methods**

914 **3.5.1. General needs analysis – Geriatric patients**

915 *Study setting*

916 This phase of the study was conducted at three primary healthcare facilities in KwaZulu-Natal, South
917 Africa; one of which was in a rural location, one peri-urban and one urban. The facilities offer acute and
918 chronic care to patients of all ages, and are managed by the KwaZulu-Natal Department of Health.

919 *Study design and sampling*

920 The interpretative exploratory design was chosen to explore older persons' perceptions of ageing and age-
921 related health changes, and their experiences and expectations of the services provided by medical
922 practitioners. A purposive sampling technique was employed to identify participants aged 60 years or older,
923 who reflected the gender and ethnic profile of the population, and to ensure representation from urban, rural
924 and peri-urban communities in KZN. Sampling continued until saturation of data.

925 *Data collection*

926 The focus group discussion guide was piloted to finalize the specific wording, phrasing and sequence of
927 questions prior to conducting the focus group discussions with participants. The data collection was
928 facilitated by an experienced, research assistant fluent in both English and isiZulu, aided by the discussion
929 guide. Four focus group discussions were conducted between October and November 2018, on the days
930 when participants were attending the facility for scheduled appointments. The interviews lasted between
931 40 and 50 minutes. Two of the four focus group discussions consisted of eight participants each and the
932 remaining two groups of six participants each. Two of the groups were located in an urban community and
933 one each from a peri-urban and rural community. The groups were small enough to enable all participants
934 the opportunity to share their insights, and large enough to provide a diversity of understanding. Interviews
935 were conducted in either isiZulu or English, depending on participants' preference.

936 *Data management*

937 The discussions were audio-recorded and transcribed verbatim. Field notes were written by the researcher
938 while the research assistant was conducting the interviews, to augment these data and to record non-verbal
939 cues and details. Before data analysis, a research associate fluent and competent in both isiZulu and English
940 translated all isiZulu interview transcripts verbatim into English.

941 *Data analysis*

942 The transcripts were imported into Nvivo 12 software for analysis. All of the transcripts were read
943 thoroughly to get a sense of the whole, and thematic analyses was conducted of each transcript. Similar
944 concepts were clustered together, data were integrated and synthesised into a descriptive structure and codes
945 were created. Themes derived from these codes were then grouped into domains.

946 *Trustworthiness*

947 Both the researcher and an independent coder skilled in the field of research analysed the transcripts to
948 avoid interpretation bias by the researcher. This assisted in ensuring dependability. Tape-recorded data and
949 field notes were kept as an audit trail to ensure confirmability.

950 **3.5.2. Targeted needs assessment - learning needs of final year medical students**

951 *Study setting and design*

952 The investigation of the second objective of the study was conducted at the University of KwaZulu-Natal
953 (UKZN), one of nine medical training facilities in South Africa where the MBChB curriculum spans six
954 years. Teaching in pre-clinical years of the programme follows a problem-based learning (PBL) approach
955 in the classroom, followed by three years of clinical-based teaching. The first three years are coordinated
956 by the school of Laboratory Medicine, and the final three years by the school of Clinical Medicine.

957 *Sampling and sample size*

958 All students registered for the 6th year of study were invited to complete a self-administered questionnaire,
959 distributed and collected by a research assistant. Participation was voluntary. The response rate for the
960 survey was 79% (n= 173).

961 *Data collection instrument*

962 The self-administered questionnaire (appendix 7) included questions on demographic characteristics, a quiz
963 to test students' geriatric knowledge (Palmore's Facts on Ageing Quiz) and the UCLA Geriatrics Attitudes
964 Scale to determine student attitudes.^[176, 177]

965 The Palmore's Facts on Ageing Quiz comprises of 50 true-false questions designed to assess factual
966 knowledge on ageing and geriatric care. Correct responses scored one and incorrect responses zero. The
967 total scores were converted to a percentage. Higher scores indicate a greater knowledge of ageing and
968 geriatric care.

969 The UCLA Geriatric Attitude Scale (UCLA-GAS) was used to measure student attitudes towards the aged
970 and their care. This 14-item survey assesses attitudes towards the aged and their medical care on a 5-point
971 Likert scale. The scores on the negatively worded statements were reversed, and the mean calculated for
972 each statement as well as the overall response.

973 Both instruments used to evaluate geriatric knowledge and attitudes are tools that have been used
974 extensively in the US and internationally, with good internal reliability. Minor modifications were made to
975 reflect the South African context. The reliability coefficient of the instrument using Cronbach alpha test
976 was 0.69.

977 *Data management and analysis*

978 Data collection occurred between September and November 2019. The data were captured on Excel
979 spreadsheets and exported to the statistical software package Stata (version 15) for analysis. Statistical
980 analyses were performed using Analysis of Variance (ANOVA) to compare mean student knowledge and
981 attitude scores among variables (age, prior qualifications, exposure to older adults). Spearman's correlation
982 reported to examine the relationship of knowledge and attitude scores. A p-value of 0.05 was set for
983 statistical significance.

984 **3.5.3. Review of educational strategies- mapping the geriatric medical curriculum**

985 Data to answer this objective was obtained from document review and semi-structured interviews with
986 health professions educators.

987 *Document review*

988 Learning objectives on the web-based curriculum platform the **L**earning **O**pportunities, **O**bjectives and
989 **O**utcomes **P**latform (LOOOP) were scanned for content, activity and outcomes relevant to the care of older
990 adults.^[178] This electronic platform contains information on all the modules offered in the MBChB
991 curriculum, and outlines individual learning objectives and related teaching and assessment outcomes. In
992 addition, it reports on the contribution of each module to each of the competency domains as related to
993 CanMEDS competency framework.^[97]

994 Data extracted from this electronic platform were collated on a purpose-designed data collection tool
995 (Appendix 10). Data obtained regarding the geriatric curriculum was cross-referenced against the facilitator
996 guides and student manuals. Findings from the document review was augmented by interviews with health
997 professions educators.

998 *Contribution of health professions educators*

999 Sampling and sample size

1000 Participants were purposively sampled to represent health professions educators involved in teaching on
1001 geriatric topics or the curriculum (n=5). These included the chair of Geriatric Medicine, a family physician,
1002 psychiatrist, clinical tutor and specialist physician.

1003 *Data collection and analysis*

1004 Semi-structured interviews were conducted with participants aided by a discussion guide (appendix 9).
1005 Interviews were recorded, with consent, transcribed verbatim and the data was anonymised. The transcripts
1006 were returned to participants to verify data. The transcripts were then read thoroughly together with field
1007 notes, and content analysis was conducted of each transcript.

1008 **3.6. Ethical considerations**

1009 Before the study was initiated the protocol was reviewed and approved by the University of KwaZulu-Natal
1010 Biomedical Research Ethics Committee. (BE287/18 & BE049/19) (Appendices 11 & 16). Gatekeepers’
1011 permission to access the primary healthcare facilities was obtained from the provincial department of health
1012 as well as from each facility (Appendices 12-14). Permission from the university registrar was also obtained
1013 (Appendix 15) in order to undertake the student survey. The purpose of the study was explained to
1014 participants prior to conducting interviews, discussions and surveys, and written informed consent obtained
1015 (Appendices 1,2,3,4,6,8). Participation was voluntary and participants were informed of their right to
1016 withdraw from the study at any time and without providing a reason. To eliminate bias research assistants
1017 were employed to assist with data collection from patients and students. All participants were assigned a
1018 study code to ensure anonymity. Data from the study was stored in a locked cupboard or password-protected
1019 laptop, accessible only to the researcher.

1020 **3.7. Researcher background and reflective statement**

1021 Reflexivity has been described as an explicit self-aware analysis by the researcher with regard to how
1022 his/her subjectivity impacts upon the research.^[179] A brief history of the researcher and her journey is
1023 provided below.

1024 As a family physician I have worked in primary care for over twenty years, caring for patients of all ages.
1025 I have observed how older adults are neglected in a healthcare system that is fragmented and focused on
1026 curative care. I also realised that my medical training was inadequate to address the challenges of geriatric

1027 care. My concern for the medical care of elderly patients stems from personal observations of poor quality
1028 of care and unnecessary suffering of our senior citizens. Levels of empathy are reportedly declining among
1029 health professionals who are not cognisant of the impact of sub-optimal care on the lives of older adults,
1030 nor aware of the benefits of interprofessional collaboration and care. This study provided an opportunity to
1031 advocate for better health care for elderly patients.

1032 Since joining the medical school as a lecturer I realised that undergraduate medical students are still poorly
1033 prepared to care for elderly patients. There is minimal coverage of conditions such as chronic non-
1034 communicable diseases in the undergraduate curriculum, which are the most prevalent conditions seen in
1035 ambulatory care departments at primary care facilities. There is also little emphasis on the psychological
1036 and social factors that impact greatly on the health of older adults. Even more worrying is the self-absorption
1037 of the millennial generation students, who fail to appreciate how influential they can be on the healthcare
1038 system and society in general.

1039 This PhD study is part of my academic journey. I recently completed a fellowship in Health Professions
1040 Education by the sub-Saharan Africa-FAIMER institute (SAFRI). The fellowship has enabled me to
1041 collaborate with other like-minded people to further scholarship in Health Professions Education in Africa.
1042 I am fortunate to be in a position to influence both undergraduate and postgraduate medical training, as well
1043 as provide direct care to older adults. The SAFRI fellowship has empowered me to implement changes at
1044 my institution to improve the quality of teaching and learning, particularly in the area of interprofessional
1045 education. This study represents my attempt to raise awareness of the neglect of older adults in SA and
1046 guide evidence-based recommendations to improve the quality of care of older adults.

1047 **3.8. Conclusions**

1048 This chapter provides insight into the research design of this body of work. An overview of the research
1049 methodology is provided as well as the rationale for the methods chosen. The details of the methods specific
1050 to each component of the study is discussed more extensively in the manuscripts in Chapters 4 to 6. The
1051 relevance of the methods related to each research objective is presented, and the relationship to the overall
1052 study aim clarified. Also, ethical considerations, methodological challenges, and the reflexive positioning
1053 of the researcher are thoroughly elucidated.

1054

1055

Chapter 4: What the elderly experience and expect from primary care services in KwaZulu-Natal, South Africa

Manuscript published: *African Journal of Family Medicine and Primary care* Vol.11(1) 2020. p.1-6

4.1. Introduction

Medical schools should ensure that their curricula address local population needs in order to be socially accountable and responsive to the communities served.^[180] However, there is a paucity of data on geriatric health services from the patient perspective to inform the curriculum. A few studies in South Africa report that elderly patients in South Africa have many negative perceptions of health professionals and the care received.^[4, 10] Further investigation is required to explore the reasons for this and elicit recommendations from patients to improve current service delivery.

Ageism, the stereotyping, prejudice, and discrimination against people based on their age, is known to negatively influence older people's perceptions of themselves and their access to healthcare.^[154] Ageist attitudes among health professionals can result in negative behaviour towards older patients, thereby adversely affect health outcomes among older adults.^[154, 155, 181] Medical practitioners are ideally positioned to confront patients' perceptions of aging and challenge stereotypes.^[182] They could potentially facilitate the adoption of preventive health strategies by the elderly and improve the quality of life in their later years.^[183, 184] Furthermore, by providing appropriate care to older adults, health professionals can help reduce disabilities and care dependency in old age. It is thus necessary to examine and confront how older adults are cared for in health facilities in order to inform reforms to the health system and health professions training.

The CanMEDS framework outlines seven roles that students should become proficient in as a future medical practitioners. These roles are the professional, communicator, collaborator, scholar, leader, health advocate and medical expert. The attainment of each of these roles will greatly contribute to the care of geriatric patients. However, there are few studies available that describe the professional attributes that older patients associate with quality healthcare. The views of older patients, who are the recipient of health services, should be considered when planning and reviewing the geriatric curriculum.

This chapter explores the perceptions of patients aged 60 years and older regarding the health services received at primary care facilities. In additions, their recommendations for improving the quality of care for older patients was obtained. The findings presented in this manuscript provide empirical evidence to

1086 inform interventions in the primary healthcare system and health professions education to improve the
1087 quality of care for older people in SA.

1088 **4.2. Publication details**

1089 The findings of this study has been published and the details summarized below.

Title	What the elderly experience and expect from primary care services in KwaZulu-Natal, South Africa
Authors	Keshena Naidoo, Jacqueline Marina van Wyk
Journal	African Journal of Primary Health Care & Family Medicine
Details	Peer reviewed (double-blinded). Open-access journal Listed with department of higher Education and training (DoHET)
Status	Published

1090

1091 **4.3.1. Journal information**

1092 The African Journal of Primary Care and Family Medicine publishes one issue each year. This is an open
1093 access journal which means that all content is freely available without charge to the user or his/her
1094 institution. Articles are published online when ready for publication and then printed in an end-of-year
1095 compilation. Users are allowed to read, download, copy, distribute, print, search, or link to the full texts of
1096 the articles, or use them for any other lawful purpose, without asking prior permission from the publisher
1097 or the author. This is in accordance with the Budapest Open Access Initiative (BOAI) definition of open
1098 access.

1099 The African Journal of Primary Care and Family Medicine seeks to publish innovative research, reviews,
1100 country profiles, editorials and opinion pieces on all aspects of primary health care and family medicine in
1101 the African context. The research includes education and training of professionals and health workers in
1102 family medicine and primary health care on the African continent.

1103

1104

1105 **4.2.2. Publication details**

1106 The manuscript was submitted to the journal on the 3rd April, 2019 and was published on the 10th of
1107 October, 2019.

1108 **4.2.3 Contribution Record**

1109 The candidate conceptualised the paper, collected and analysed the data, and was the main author. Professor
1110 Van Wyk refined the study protocol and the writing of the manuscript.

1111 **4.3 Key Findings and Contribution of the Manuscript to the Thesis**

1112 This paper addressed the first step in Kern et al's six-step framework for curriculum development, which
1113 was to identify the health care need. The findings highlighted the areas of health professions education in
1114 need of improvement by identifying the gap between the current and ideal care for older patients. The key
1115 principles for quality care of older adults that were elicited from patients were compassion, respectful
1116 communication, appropriate prescribing, patient-centredness and coordinated care. This research identified
1117 areas to improve undergraduate medical training in geriatric care, particularly regarding behavioural and
1118 attitudinal attributes. The findings of the paper affirmed the need to review the geriatric curriculum for
1119 undergraduate medical students, and to develop and implement minimum core competencies in geriatric
1120 care. This generated the need to evaluate the current geriatric curriculum at UKZN to establish the extent
1121 to which patient health needs are addressed. This investigation is reported in Chapter 6 of the thesis.

1122

What the elderly experience and expect from primary care services in KwaZulu-Natal, South Africa



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Background: People aged 60 years and above are predicted to outnumber those aged under 5 years in South Africa for the first time by 2040. This will put increased demands on the health system to address geriatric health needs. However, data on geriatric populations in sub-Saharan Africa are scarce. Health policymakers need to be informed of the expectations of the elderly people regarding health services, especially at primary care level.

Aim: The aim of this study was to explore the experiences and expectations of people aged 60 years and above regarding ageing and health services, and the factors that might improve the quality of primary care services for geriatric patients.

Setting: The study was conducted at three public health primary care facilities in KwaZulu-Natal province, South Africa: one in a rural setting, one in a peri-urban and one in an urban setting.

Methods: This qualitative study involved a purposive sample of 28 participants, aged 60 years and above. Four focus group discussions were conducted in either isiZulu or English, depending on the preference of the participants. Data were analysed thematically using an inductive approach.

Results: Nineteen of the 28 participants were women. Five key findings emerged from the study: (1) long waiting times – participants were distressed by lengthy waiting times, (2) illness-centred care – participants felt that they were seen as diseases to be treated, (3) lack of caring – health providers were perceived to lack compassion, (4) pill burden – participants experienced adverse effects of prescribed medication and (5) need for priority care – participants wanted a separate queue for the elderly.

Conclusion: Health systems and health professions educators should consider the need for patient-centred and integrated care for geriatric populations. Further research is required on the unmet needs of geriatric people in the community.

Keywords: geriatric; older adult; primary care; sub-Saharan Africa; KwaZulu-Natal.

Introduction

The geriatric population in sub-Saharan Africa (SSA), which is defined by the World Health Organization (WHO) as people aged 60 years and above, is predicted to increase from 42.6 million in 2010 to 160 million in 2050.¹ The rapid ageing of populations in this region is attributed to the success of programmes directed at reducing maternal and infant mortality and enhanced access to antiretroviral therapy.^{2,3} In South Africa, the number of people aged 60 years and above is predicted to outnumber those aged under 5 years for the first time by 2040.⁴ Despite the anticipated shift in age-specific health demands, there has been little response from health systems on the continent to address geriatric healthcare. This could be partly because of the lack of data on the health needs of older adults in SSA to inform policymakers.⁵ Most evidence on geriatric health needs is derived from high-income countries (HICs) and thus cannot be generalised to geriatric populations in SSA.

The majority of older adults in SSA utilise primary healthcare facilities for their health needs. Community clinics are the most commonly used providers of health services, while a small number of pensioners also access services from private general practitioners or traditional healers.^{6,7} Specialised geriatric services and specialist geriatricians are rarely available. As reported in 2017, there was only one geriatrician per 275 000 older adults in South Africa.⁸ Despite improved access to primary care services post-democracy, the elderly in South Africa face several challenges in meeting their healthcare needs.⁹ The major barriers that the elderly face in utilising health

services include cost, transportation and accessibility. More than 60% of older adults in low- and middle-income countries reportedly did not access healthcare because of the cost of the visit or lack of transportation.¹⁰ High out-of-pocket expenses are associated with chronic diseases where frequent clinic or hospital visits are required.⁹ Transport is another major barrier to accessing healthcare, especially for the elderly in rural areas and in those with restricted mobility.¹¹ Primary care health facilities in KwaZulu-Natal (KZN), South Africa, face resource constraints that present several challenges to geriatric patients. Older adults with physical impairments and urinary incontinence may be discouraged to attend health facilities with long queues and lack of accessible toilets.⁹ Despite policies to improve healthcare access for patients with disabilities, infrastructure at health facilities is still lacking.¹² Studies in South Africa have reported that elderly patients associated service delivery at the clinics with long waiting times, averaging between 2 and 5 h.⁶ Few facilities prioritise the elderly and physically impaired. Also, existing healthcare services are fragmented with little coordination between care providers.

Currently, the clinical guidelines endorsed for use by primary care providers in South Africa are designed for the management of single diseases, and they inadequately address the problem of multi-morbidity.¹³ Multi-morbidity, defined as the presence of two or more medical conditions, is more prevalent in the elderly people aged 60 and above than in people of other age groups.^{14,15} As a consequence of multi-morbidity and poor coordination of care, polypharmacy in geriatric patients is common. A study conducted by Saka et al. in 2018 described the high prevalence of inappropriate drug prescription for elderly patients in Nigeria and South Africa.¹⁶ The management of geriatric patients is further compounded by age-related sensory and functional impairments. These impairments could result in poor quality of life and adverse health outcomes in the elderly if not identified and managed appropriately.⁶ Health systems and health professions training assign greater importance to curative medicine than to preventative health and rehabilitation.¹⁷ Consequently, the complex health needs of geriatric patients are often ignored.

Ageism, defined as the stereotyping or discrimination against people because of their age, is another factor that contributes to the poor quality of healthcare for older adults. A recent study found multiple manifestations of ageism in the healthcare system, ranging from inappropriate treatment to discriminatory communication practices.¹⁸ A study in Cape Town reported that over 80% of indigent elderly considered staff members at clinics to be unhelpful.⁶ Health professionals with low expectations of health outcomes in the elderly may neglect to address treatable conditions.¹⁹ Sub-standard clinical care can reinforce negative perceptions of patients towards ageing and the ability to be treated successfully. Evidence indicates that elderly people value a relationship with their healthcare providers based on care for the individual and not focus on disease management.²⁰ Training courses for health professionals need to consider a change from traditional

disease-focused care to patient-centred care in order to improve the quality of care provided to the elderly.

Little attention has been directed towards health professions training in geriatrics. A survey of medical curricula in SSA revealed little inclusion of geriatrics.²¹ As a result, most medical professionals working in primary care have had little training in geriatric care.²¹ Almost all health professionals in SSA will encounter older adults and will therefore require an understanding of the needs and challenges of geriatric patients. Health professions educators must consider the growing demand of geriatric health services and how to prepare graduates for this. Health policymakers also need to consider how primary care services can be modified to improve the quality of care for the elderly. Given the paucity of literature on the needs of people aged 60 years and above in SSA, this study was conducted to explore the experiences and expectations of older adults regarding ageing and health services, and the factors that might improve the quality of primary care services for geriatric patients.

Methodology

Study design

This qualitative exploratory study involved people aged 60 years and above attending primary care facilities in KZN. The interpretative exploratory design was chosen to explore older persons' perceptions of ageing and age-related health conditions, and their experiences and expectations of health services.

Population and sampling

A total of 28 participants were purposively selected from four community health centres to reflect the gender and ethnic profile of the population, and to ensure representation from urban, rural and peri-urban communities in KZN. All clinic attendees aged 60 years and above were eligible for the study.

Demographic data

Of the 28 participants, 19 were women (67.9%). Participants represented different ethnic backgrounds, that is, black, Indian, mixed race and white. The main languages spoken were isiZulu and English.

Bias

Sampling bias was avoided by carefully selecting participants based on their age, thus representing the group of interest for the research. Interviews were held at a time and place convenient to participants and in a language of their choice. An independent coder was employed to assist in preventing interpretation bias.

Setting

Data were collected from three health facilities in KZN. These community health centres are managed by the KZN

Department of Health. One facility was in a rural location, one in a peri-urban and one in an urban setting. All health facilities from which participants were recruited provide a package of primary care services to the general population and are staffed by medical, nursing and other health professionals.

Data collection

Four focus group discussions were conducted between October and November 2018. The interviews lasted for about 40–50 min. Two of the four focus group discussions consisted of eight participants each and the other two groups consisted of six participants each. Two of the groups were located in an urban community and one each from a peri-urban and a rural community. The groups were small enough to enable all participants the opportunity to share their insights, but large enough to provide a diversity of understandings. Data were collected on days when the participants were attending the primary care facility for scheduled appointments. Participation in the study did not compromise or facilitate services at the facility. The managers and staff at the facilities assisted the researcher in organising the venue for the interviews and inviting participants to take part. The research assistant explained the purpose of the research and the process of data collection. Interviews were conducted in either isiZulu or English, depending on participants' preferences. An interview guide was used by a research assistant to collect the data. The discussions were tape-recorded and transcribed verbatim.

Data analysis

Before data analysis, a research associate fluent and competent in both isiZulu and English translated all isiZulu interview transcripts verbatim into English. The transcripts were imported into Nvivo 12 software. The researcher read through all of the transcripts, together with field notes, and conducted content analysis of each transcript. Similar concepts were clustered together, data were integrated and synthesised into a descriptive structure and codes were created. Themes derived from the codes were categorised into four domains (see Box 1).

Trustworthiness

The use of an independent coder skilled in the field of research assisted in ensuring dependability. Tape-recorded data and field notes were kept as an audit trail to ensure confirmability.

Ethical considerations

Participation in the study was voluntary. Written informed consent was obtained from all the participants before the study commenced. All personal data of participants were anonymised. The recordings and transcripts of the focus

group discussions were stored on a password-protected laptop accessible only to the researcher and the research assistant. Approval for the study was obtained from the University of KwaZulu-Natal Biomedical Ethics Committee (BE 287/18) and the managers of the health facilities.

Findings

Five key themes emerged from the data: long waiting times, illness-centred care, lack of caring from professionals, pill burden and the need for priority care. Each theme is discussed below.

Long waiting times

Participants reported being frustrated by the long waiting times, especially when waiting to see a health professional. It was the most significant concern expressed about visiting health facilities. Multiple visits were sometimes necessary because of shortages of medication:

'The biggest worry is the queue ... sometimes you spend the whole day here.' (Participant 4, Group 1, 66-year-old female)

'Sometimes you're standing in a queue for a long time ... over 60 years and you are standing!' (Participant 4, Group 2, 65-year-old female)

'All of us have to wait, and they can tell us to come back next day.' (Participant 1, Group 2, 70-year-old female)

'We are in our 70s. Imagine ... paying all the taxi fare, coming back the next day.' (Participant 2, Group 1, 72-year-old female)

Illness-centred care

Health professionals were perceived to view elderly patients as diseases to be treated rather than individuals with health needs. Patients attending the clinic for a chronic disease were not seen as important, and little interest was expressed about patients' concerns. This reinforced participants' negative perceptions about chronic illnesses associated with ageing, and significantly altered the identity and self-esteem of participants. Quotes supporting this theme included the following:

'Every 6 months I must come for my heart, take my medication – I am chronic.' (Participant 1, Group 1, 66-year-old female)

'As long as you are chronic, they don't care They just write down your medication and tell you to go. They don't even look at you. Chronic is just for medication.' (Participant 3, Group 2, 70-year-old female)

'If you are a chronic, doctors don't look at you, just write the prescription.' (Participant 2, Group 1, 72-year-old female)

'I try to analyse that word chronic case ... it means that you are no more, you will die with it.' (Participant 5, Group 1, 69-year-old female)

Lack of coordination regarding the various aspects of care needed was also evident. Patients with chronic illnesses received medical services in a designated section of the facility dealing only with patients on chronic medication. If they expressed new symptoms, they would be referred to another department. Participants were confused and

BOX 1: Domains of data coding.

1. Patients' experiences of ageing and related health condition	2. Patients' experiences of health services
3. Concerns related to ageing	4. Patients' expectations of healthcare

frustrated about this fragmentation of services. Participants expressed the following frustrations:

'The doctor I'm seeing cannot help me, they refer me to the general doctor. What is the purpose of this doctor I'm seeing?' (Participant 3, Group 3, 68-year-old female)

'They do not want us to do two things at the same time.' (Participant 4, Group 3, 66-year-old female)

'I hear, sometimes not well, but I don't know where I can get help.' (Participant 2, Group 4, 74-year-old male)

Lack of caring from health professionals

Participants perceived health professionals to lack respect or care for older patients. Their lack of interest in patients' concerns was interpreted as a lack of caring. Patients craved physical contact with the doctor. The need for kindness and empathy was frequently mentioned by most of the participants. This was evident from the following quotes:

'They do understand but they don't speak the right way to you, and they wouldn't do that to their parents.' (Participant 3, Group 2, 70-year-old female)

'We worked all our lives ... and they feel like they are doing us a favour when you come to a state hospital.' (Participant 4, Group 2, 65-year-old female)

'Just be polite, we don't want to take long.' (Participant 1, Group 2, 70-year-old female)

'I think the education has gone so much into them [that] they forgot about love and care.' (Participant 4, Group 1, 66-year-old female)

'To be kind, even to ask some questions relating to your life ... then you will see he is really taking care of you.' (Participant 5, Group 1, female)

'The way he talks can be able to release your pains, your aches.' (Participant 4, Group 1, 66-year-old female)

Pill burden

Patients struggled with the multiple medications prescribed or 'pill burden'. There was poor understanding of the purpose of the medications as health professionals provided little information or education about prescribed treatment. Sometimes, drugs were out of stock and participants were instructed to purchase them at their own cost, or do without. Furthermore, multiple adverse effects were experienced with prescribed medication. Some participants discontinued the medication on their own, while others persisted despite the negative side effects. Participants expressed this in the following ways:

'Maybe, you have BP and they give you lot of tablets and I do not know what these tablets are for.' (Participant 3, Group 3, 65-year-old female)

'I take the tablets but I don't know where they are helping me.' (Participant 2, Group 2, 68-year-old female)

'The doctor gives you tablets without explaining what they are for.' (Participant 3, Group 2, 70-year-old female)

'... [S]hortage of medicine, now we have to buy medicine. Now we get so less pension money and now you expect us to go buy the tablets.' (Participant 4, Group 1, 66-year-old female)

'Another doctor gave me tablets that made my heart beat hard ... made me dizzy, I do not drink them and I never went to the doctor. I am right without them.' (Participant 2, Group 3, 69-year-old female)

Need for priority care

The participants indicated that they wanted priority care for the elderly, especially for the very old (i.e. over 80 years) and frail patients who attend the facility. Participants in all the groups agreed that there should be a separate queue for the elderly. Quotes supporting this theme included the following:

'The doctors need to understand we are old, see to us first and not put us with children.' (Participant 2, Group 1, 66-year-old female)

'A clinic for old people must be separate.' (Participant 7, Group 3, 71-year-old male)

'They should see us first because we are older and do not have the strength.' (Participant 3, Group 4, 72-year-old female)

Discussion

This study identified five key findings regarding the perceptions and expectations of people aged 60 years and above about primary healthcare services in KZN province, South Africa. These were (1) long waiting times, (2) illness-centred care, (3) lack of caring from professionals, (4) pill burden and (5) the need for priority care. Participants were dissatisfied with several aspects of primary care services, that is, long waiting times, lack of caring from health professionals, fragmentation of services and multiple medications prescribed.

The main concern expressed was the long waiting times experienced at the clinic. This was exacerbated by return visits to collect medications that were out of stock. Chronic diseases were common among people aged 60 years and above, and necessitated regular clinic visits and multiple medications. The participants found the prescription of multiple medications confusing and sometimes associated with unpleasant side effects. Previous studies have reported that polypharmacy and inappropriate drug prescription are a common occurrence in the elderly. This is associated with an increased risk of adverse drug reactions.¹⁶ In this study, there was poor communication about the prescribed drugs. Little information was provided in this regard, and there was a lack of knowledge among participants about their medications. As a result, the participants often self-managed the adverse effects experienced with medication without discussing with their healthcare providers. Greater vigilance is required by prescribers when treating the elderly patients.

Clinic services were disease-centred, resulting in fragmentation of the care provided to elderly patients. Participants were required to see different health providers at the same clinic to attend to different health concerns. Participants perceived healthcare professionals to lack respect or care for them, as they showed little interest about patients' concerns. It was important for the participants that health professionals demonstrate kindness and compassion towards them.

Recommendations emerging from this study to make primary care services more age-friendly included the following: medical staff members need to be more empathetic, clinics should have an integrated service for all health concerns and there should be a priority queue for the elderly and very ill patients. Patient-centred and integrated care for older adults are well-documented principles considered essential for age-friendly services.²² The participants were in agreement with these principles. However, despite the economic and health benefits of organising integrated healthcare services for the elderly, there has been little success globally in achieving this objective.²³ A survey of people over 60 years in 11 HICs reported a lack of coordination of care in 41% of cases.²⁴ Countries in SSA need to look at innovative and resource-efficient models of providing quality care to geriatric patients in our context. Collaboration between health professionals is essential to provide comprehensive care to geriatric patients and reduce polypharmacy and inappropriate drug prescription. Integral to this is the inclusion of geriatric care training in health professions education that emphasises patient-centredness and integrated care.

Limitations

This study was a community clinic-based study and was conducted over a short period of time. It may not represent all people aged 60 years and above in KZN, especially those who do not regularly use health services. Further research is required on the elderly population in the community.

Conclusion

This study provides data on the quality of primary healthcare services provided to the elderly people in KZN from the perspective of the recipients of care. The challenges experienced by people aged 60 years and above who attend community health facilities included long waiting times, lack of caring from health professionals, high pill burden, illness-centred care and low priority care to the elderly. There was strong support for facilities to have a priority queue to attend to the very old (i.e. above 80 years) and frail patients. The fragmented services reported by the study participants highlighted the need for integrated healthcare services at primary care level. As geriatric patients are prone to multiple health problems, they would benefit from integration of various services required, and there should be an emphasis on function rather than on single-disease treatment.^{25,26} This would potentially reduce waiting times and improve the overall quality of geriatric healthcare. Training of health professionals should consider the need for a compassionate and comprehensive approach when seeing geriatric patients. Greater exposure to geriatric medicine and awareness regarding the unique needs of older adults are critical to health professions training in KZN, South Africa.

The key recommendation for health policymakers and educators is to align geriatric health services with a patient-centred and integrated approach. This study was limited to facility-based care of the elderly in KZN, South Africa. Further research is required regarding the unmet health

needs of the elderly in the community. There is also a need for research on health professions education regarding geriatric healthcare, particularly in SSA.

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Competing interests

This article has not been published before nor has it been submitted to any other journal for publication. Each author has substantially contributed to conducting the underlying research and drafting of the manuscript. In addition, the authors have declared that they have no conflicts of interest, financial or otherwise.

Authors' contributions

K.N. was responsible for conceptualising the study, data collection, analysis of results and write-up of the manuscript. J.v.W. refined the study protocol and writing of the manuscript.

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Data availability statements

Data are available from the authors upon request.

Disclaimer

The views and opinions expressed in this article are those of the authors and do not necessarily reflect the official policy or position of any affiliated agency of the authors.

References

1. Aboderin IA, Beard JR. Older people's health in sub-Saharan Africa. *Lancet*. 2015;385(9968):e9–e11. [https://doi.org/10.1016/S0140-6736\(14\)61602-0](https://doi.org/10.1016/S0140-6736(14)61602-0)
2. Velkoff V, Kowal P. Population ageing in sub-Saharan Africa: Demographic dimensions 2006. US Census Bureau, Current Population Reports. P 95/07-1. Washington, DC: US Government Printing Office; 2007.
3. Audain K, Carr M, Dikmen D, Zotor F, Ellahi B. Exploring the health status of older persons in sub-Saharan Africa. *Proc Nutr Soc*. 2017;76(4):574–579. <https://doi.org/10.1017/S0029665117000398>
4. Day C, Gray A. Health and related indicators. *S Afr Health Rev*. 2017;2017(1): 217–339.
5. Kowal PR, Wolfson LJ, Dowd JE. Creating a minimum data set on ageing in sub-Saharan Africa. *SAfr J Gerontol*. 2000 Oct;9:18–23. <https://doi.org/10.21504/sajg.v9i2.203>
6. Govender T, Barnes J. The health status and unmet health needs of old-age pensioners living in selected urban poor communities in Cape Town, South Africa. *J Commun Health*. 2014;39(6):1063–1070. <https://doi.org/10.1007/s10900-014-9851-9>
7. Antimisiaris D, Morton L. The urgent need for robust geriatric patient care skills in primary care. *Prim Care*. 2017;44(3):xv–xvi. <https://doi.org/10.1016/j.pop.2017.06.001>
8. Cassim B. Formal geriatric medicine training in South Africa and beyond: Developments and challenges. *Innovat Aging*. 2017; 724–724 <https://doi.org/10.1093/geroni/igx004.2604>
9. Albanese E, Liu Z, Acosta D, et al. Equity in the delivery of community healthcare to older people: Findings from 10/66 Dementia Research Group cross-sectional surveys in Latin America, China, India and Nigeria. *BMC Health Serv Res*. 2011;11(1):153. <https://doi.org/10.1186/1472-6963-11-153>

10. World Health Organization. The World Health Report 2006: Working together for health. Geneva: World Health Organization; 2006; Mar 23.
11. Kalula SZ. The quality of health care for older persons in South Africa: Is there quality care?: Conference paper. *ESR Rev Econ Soc Rights S Afr*. 2011;12(1):22–25.
12. Vergunst R, Swartz L, Mji G, MacLachlan M, Mannan H. 'You must carry your wheelchair' – Barriers to accessing healthcare in a South African rural area. *Global Health Action*. 2015;8(1):29003. <https://doi.org/10.3402/gha.v8.29003>
13. Alkhalwaldeh A, Alomari O, Albashtawy M, et al. Long-term conditions in older adults using primary care services. *Prim Health Care*. 2016;26(2):31. <https://doi.org/10.7748/phc.26.2.31.s23>
14. Chatterji S, Byles J, Cutler D, Seeman T, Verdes E. Health, functioning, and disability in older adults – Present status and future implications. *Lancet*. 2015;385(9967):563–575. [https://doi.org/10.1016/S0140-6736\(14\)61462-8](https://doi.org/10.1016/S0140-6736(14)61462-8)
15. Mayosi BM, Flisher AJ, Lalloo UG, Sitas F, Tollman SM, Bradshaw D. The burden of non-communicable diseases in South Africa. *Lancet*. 2009;374(9693):934–947. [https://doi.org/10.1016/S0140-6736\(09\)61087-4](https://doi.org/10.1016/S0140-6736(09)61087-4)
16. Saka S, Oosthuizen F, Nlooto M. Interventions towards reducing adverse drug reactions among geriatric population in Africa: A scoping review of the literature from 1990–2016. *PULA: Botswana J Afr Stud*. 2017;31(1):180–194.
17. Higashi RT, Tillack AA, Steinman M, Harper M, Johnston CB. Elder care as 'frustrating' and 'boring': Understanding the persistence of negative attitudes toward older patients among physicians-in-training. *J Aging Stud*. 2012;26(4):476–483. <https://doi.org/10.1016/j.jaging.2012.06.007>
18. Ben-Harush A, Shiovitz-Ezra S, Doron I, et al. Ageism among physicians, nurses, and social workers: Findings from a qualitative study. *Eur J Ageing*. 2017;14(1):39–48. <https://doi.org/10.1007/s10433-016-0389-9>
19. Clarke A, Martin D, Jones D, et al. 'I try and smile, I try and be cheery, I try not to be pushy. I try to say "I'm here for help" but I leave feeling... worried': A qualitative study of perceptions of interactions with health professionals by community-based older adults with chronic pain. *PLoS One*. 2014;9(9):e105450. <https://doi.org/10.1371/journal.pone.0105450>
20. Bower P, Roland M, Campbell J, Mead NJB. Setting standards based on patients' views on access and continuity: Secondary analysis of data from the general practice assessment survey. *BMJ*. 2003;326(7383):258. <https://doi.org/10.1136/bmj.326.7383.258>
21. Frost L, Liddie Navarro A, Lynch M, et al. Care of the elderly: Survey of teaching in an aging sub-Saharan Africa. *Gerontol Geriatr Educ*. 2015;36(1):14–29. <https://doi.org/10.1080/02701960.2014.925886>
22. Araujo de Carvalho I, Epping-Jordan J, Pot AM, et al. Organizing integrated health-care services to meet older people's needs. *Bull World Health Organ*. 2017;95(11):756–763. <https://doi.org/10.2471/BLT.16.187617>
23. Ashby S, Beech R. Addressing the healthcare needs of an ageing population: The need for an integrated solution. *IJCRIMPH*. 2016 Apr 1;8(4):284.
24. Osborn R, Moulds D, Squires D, Doty MM, Anderson C. International survey of older adults finds shortcomings in access, coordination, and patient-centered care. *Health Aff*. 2014;33(12):2247–2255. <https://doi.org/10.1377/hlthaff.2014.0947>
25. Fougère B, Cesari M, Arai H, et al. Involving primary care health professionals in geriatric assessment. *J Nutr Health Ageing*. 2018;22(5):566–568. <https://doi.org/10.1007/s12603-018-1001-0>
26. Kogan AC, Willber K, Mosqueda L. Person-centered care for older adults with chronic conditions and functional impairment: A systematic literature review. *J Am Geriatr Soc*. 2016;64(1):1–7. <https://doi.org/10.1111/jgs.13873>

1129 **Chapter 5- The knowledge and attitudes of final year medical**
1130 **students' regarding the care of older adults**

1131 **(Manuscript in press: African Journal of Health Professions Education**
1132 **AJPHE1331)**

1133 **5.1. Chapter overview**

1134 This chapter introduces the next step of this curriculum development study, which is a targeted assessment
1135 of medical students' learning needs. The previous chapter highlighted the professional attributes valued by
1136 geriatric patients and the perceived shortcomings in current health professional services. The paper
1137 described in this chapter expands on the analysis of medical geriatric training by evaluating the level of
1138 knowledge and attitudes of final year medical students regarding the care of older adults. It also reports on
1139 factors influencing student knowledge and attitudes towards the care of older adults, and highlights
1140 educational strategies to address the gaps in student learning.

1141 Student learning is dependent not only on the planned curriculum but also intrinsic factors and the hidden
1142 curriculum. Having a clearer understanding of student learning in geriatric care and the factors influencing
1143 their knowledge and attitudes regarding the care of older adults contributes to the emerging body of
1144 knowledge on geriatric care training of health professionals in SSA. Studies from HICs indicate that
1145 medical students have little interest in geriatric medicine.^[185, 186] Evidence also suggests that students
1146 possess negative attitudes towards the care of elderly patients and that their attitudes decline during the
1147 extended study period at medical school.^[155] Low levels of interest and negative attitudes may adversely
1148 affect student learning in geriatric care competencies, and contribute to the poor quality of care for geriatric
1149 patients as reported in the previous chapter. Conversely, student interest and learning in geriatric care could
1150 provide the impetus for medical professionals to advocate for quality healthcare for their older patients.

1151 Socially responsive medical schools must periodically review their curricula to determine whether the needs
1152 of the population served are adequately addressed.^[187] Curriculum review is also necessary to evaluate
1153 whether graduate outcomes are consistent with those intended in the stated learning objectives. In view of
1154 the rapid increase in the older population in SA it is important for students to be sensitized to the health
1155 inequities experienced by older adults, as described in chapter 2, and attain the necessary competencies in
1156 order to care for older patients. In chapter 4 the expectations of geriatric patients were elucidated regarding
1157 the services provided by health professionals. This chapter focusses on the recipients of the training
1158 program, and documents the degree to which current medical students are prepared to care for older patients.

1159

1160

1161 **5.2. This manuscript has been accepted for publication and the details summarized below.**

Title	The knowledge and attitudes of final year medical students' regarding care of older patients
Authors	Keshena Naidoo, Jacqueline Marina van Wyk
Journal	African Journal of Health Professions Education
Details	Peer reviewed (double-blinded). Open-access journal Listed with department of higher Education and training (DoHET)
Status	Accepted for publication

1162

1163 **5.2.1. Journal information**

1164 The African Journal of Health Professions Education (AJHPE) is a journal for health professions educators.
1165 It carries research articles, short scientific reports, letters, editorials, education practice, personal opinion
1166 and other topics related to the education of health care professionals.

1167

1168 A double-blind review process is followed to optimise the quality of the published papers. AJHPE is an
1169 Open Access Journal and provides immediate open access to its content on the principle that making
1170 research freely available to the public supports a greater global exchange of knowledge. The journal is
1171 published online quarterly (one volume comprising 4 issues per annum). Users are permitted to read,
1172 download, copy, distribute, print, search, or link to the full text of these articles, or use them for any other
1173 lawful, non-commercial purpose, without asking prior permission from the publisher or the author.

1174

1175 **5.2.2 Publication Record**

1176 The manuscript was submitted to the journal on the 3rd March, 2020, was accepted 27th May, 2020.

1177 **5.2.3 Contribution Record**

1178 The candidate was primarily responsible for the conceptualisation of the paper, data collection and
1179 drafting of the manuscript. Prof. Van Wyk contributed substantially to the finalisation of the manuscript.
1180 Both student and supervisor read and reviewed the final manuscript.

1181

1182 **5.3. Key Findings and Contribution of the Manuscript to the Thesis**

1183 This chapter describes an investigation into the knowledge and attitudes of final year medical students at
1184 the UKZN regarding the care of elderly patients. The results indicate that final year medical students
1185 displayed a minimal level of geriatric knowledge despite their perceptions of having had adequate exposure
1186 to geriatrics in the current curriculum. However, it was encouraging to note that the majority of students
1187 had positive attitudes towards working with elderly patients.

1188 Most students found elderly patients pleasant and interesting to listen to, but also reported that it was
1189 laborious to take a medical history from them. Students would thus benefit from increased communication
1190 skills training relevant to the older patient. Older students and those with a prior higher education
1191 qualification were seemingly better prepared to care for older adults. This finding has implications for the
1192 admissions policy of medical schools. Increasing the intake of mature students into medical programmes
1193 could indirectly improve the quality of care for older adults. Of note, there was no association between
1194 geriatric knowledge and attitudes. Further qualitative investigation is needed into the reasons for this.

1195 The poor knowledge demonstrated by students is significant to the overall study aim as it further validates
1196 the need to enhance the current geriatric curriculum to improve students' preparedness to care for older
1197 adults. The findings are also concordant with the report in the previous chapter that geriatric patients were
1198 dissatisfied with the level of communication and prescribing skills of health professionals. Identifying
1199 student learning gaps is a crucial component of curriculum development and informs changes to the
1200 curriculum that will produce the desired outcomes. The findings imply that greater attention should be
1201 directed to communications skills training, particularly around the challenges of communicating with older
1202 adults.

1203 The principle of constructive alignment is an underlying concept in curriculum development and is aimed
1204 at achieving intended learning outcomes.^[188] Attention to the alignment between geriatric care learning
1205 objectives and outcomes will presumably better enable medical graduates to provide quality care to older
1206 adults.^[187]

1207 The findings of this investigation provide insight into the knowledge and attitudes of final year medical
1208 students regarding the care of elderly patients. The following chapter examines the current geriatric care
1209 training in view of the findings of chapter 4 and 5.

1210 **The knowledge and attitudes of final year medical students' regarding the care of older**
1211 **patients**

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1217 **Background**

1218 Medical graduates in South Africa, in almost all disciplines, will encounter older adults in their professional
1219 lives due to the rapid ageing of the population.⁽¹⁾ The number of people aged 60 years and above in South
1220 Africa (SA) is predicted to double from 7.8% of the total population in 2012 to 14.8% in 2050.⁽²⁾ This will
1221 result in an increased demand for health services that are responsive to the health needs of older adults.
1222 Studies in South Africa indicate that older patients receive poor quality and inadequate medical care at
1223 primary care level.^(3,4) This is partly due to the limited geriatric training and perceived ageist attitudes of
1224 health professionals.^(3,5) The planned implementation of a National Health Insurance (NHI) scheme in South
1225 Africa is dependent on primary care providers' ability to deliver quality health services to all, including
1226 elderly patients. However, it is unclear whether medical graduates possess an appropriate level of
1227 knowledge and attitudes towards caring for older patients.

1228 A recent systematic review indicated that medical students have little interest in geriatric medicine.⁽⁶⁾
1229 Geriatric medicine, the field of medicine that focuses on the healthcare of the elderly, is a relatively new
1230 and neglected area in medical education, and is often perceived by medical students as unimportant.⁽⁷⁾ The
1231 pensionable age in SA is 60 years, and geriatric medicine in SA is therefore directed at people aged 60
1232 years and older.⁽⁸⁾ There is a scarcity of geriatric teaching faculty in SA often resulting in limited geriatric
1233 teaching in the undergraduate (UG) medical curriculum.⁽⁹⁾ Lack of exposure to geriatric teaching may
1234 contribute to students' lack of interest in caring for older patients. Furthermore, due to a lack of interest,
1235 student learning in geriatrics may be poor.⁽¹⁰⁾

1236 Apart from the formal curriculum, students' geriatric knowledge and attitudes towards their elderly patients
1237 are influenced by cultural factors, experiences with older adults and the hidden curriculum.⁽¹¹⁾ Meiboom's
1238 investigation into the hidden curriculum in the Netherlands revealed that medical students were influenced
1239 by negative attitudes from their role models towards caring for elderly patients.⁽⁶⁾ This finding is supported
1240 by evidence indicating that students' attitudes towards the care for older people declined as they progressed

1241 through medical school.⁽¹²⁾ This phenomenon could also be due to students' exposure to high levels of
1242 morbidity and mortality among geriatric patients, resulting in students' perceived futility of caring for the
1243 aged. Whilst most studies indicate that medical students' possess negative attitudes towards the elderly and
1244 their care, at least one study from Malawi demonstrated positive attitudes among medical and nursing
1245 students.⁽¹³⁾ The positive finding may be attributed to cultural factors and exposure to community-based
1246 education. In most traditional African societies, the elderly are both revered and respected. It is likely that
1247 these traditional values and attitudes may persist during undergraduate training if supported by on-going
1248 engagement with the community.

1249 Given that health professions educators are being increasingly challenged to prepare medical graduates to
1250 care for aging populations, this study was conducted to explore the knowledge and attitudes of final year
1251 medical students towards caring for the elderly. The information on student geriatric knowledge and
1252 attitudes will inform the design of educational interventions targeted at improving student preparedness to
1253 care for older patients.

1254 **Aims**

1255 To explore and describe final year medical students' knowledge of and attitudes towards the care of elderly
1256 people.

1257 **Objectives**

- 1258 1. To evaluate medical student knowledge of medical care for elderly patients
- 1259 2. To evaluate medical student attitudes towards the care of elderly patients.
- 1260 3. To investigate factors influencing student knowledge and attitudes towards caring for elderly
1261 patients.

1262 **Methodology**

1263 This cross-sectional, descriptive study was conducted at the University of KwaZulu-Natal (UKZN) between
1264 September and November 2019. The UG medical program spans six years and uses a problem-based
1265 learning approach. Teaching and assessment of geriatric topics are integrated into other modules across
1266 most years of the academic programme.

1267 The study population consisted of all UG medical students registered for the final (6th) year of the medical
1268 programme at the University of KwaZulu-Natal (N=219). A research assistant distributed a self-
1269 administered questionnaire to all eligible participants at the end of teaching sessions.

1270 **Data collection tools**

1271 The self-administered questionnaire included questions on demographic characteristics, prior
1272 qualifications, exposure to older adults outside the curriculum, and assessments of geriatric knowledge and
1273 attitudes. Both the knowledge and attitude assessment instruments have been used globally, with good
1274 internal reliability. Minor modifications were made to reflect the South African context. (Appendix A). The
1275 tool was piloted prior to data collection.

1276 Students' geriatric knowledge was assessed using the Palmore's Facts on Ageing Quiz.⁽¹⁴⁾ This survey
1277 comprises of 50 true-false questions to assess factual knowledge on ageing and geriatric care. Correct
1278 responses scored one and incorrect responses zero. The total scores were converted to a percentage. Higher
1279 scores indicate a greater knowledge of ageing and geriatric care.

1280 The University of California at Los Angeles Geriatric Attitudes Scale (UCLA-GAS) is a 14-item survey
1281 assessing attitudes towards the aged and has previously been used among medical students.⁽¹⁵⁾ The survey
1282 uses Likert-scale responses to indicate whether the respondent agrees or disagrees with the statement.

1283 **Data management and analysis**

1284 Data were exported to the statistical software package Stata (version 15) for analysis. One outlier was noted,
1285 and included in the statistical analyses. Statistical analyses were performed using Analysis of Variance
1286 (ANOVA) to compare mean student knowledge and attitude scores among variables (age, prior
1287 qualifications, exposure to older adults). Spearman's correlation reported to examine the relationship of
1288 knowledge and attitude scores. A p-value of 0.05 was set for statistical significance.

1289 **Ethical approval**

1290 Ethical approval was obtained from the UKZN Biomedical Research Ethics Committee (BE479/19) prior
1291 to data collection. Participants were assigned a study number, and no personal identifying data were
1292 recorded.

1293 **Results**

1294 The response rate for the survey was 79% (N= 219). Nearly 60% (n=103) of the cohort consisted of female
1295 students and the median age was 24 years (IQR 23-24). Twenty four of the respondents (14%) had a prior
1296 higher education qualification in fields of study that included science, finance and optometry. Of all
1297 respondents, 38% had some exposure to geriatric patients outside the formal curriculum.

1298 *Geriatric knowledge of medical students*

1299 The mean score on the Palmore's Facts on Ageing quiz was low (56.84% +/-10.42). As indicated in table
1300 1, students aged 26 years and older (n=24) had a significantly higher mean score than younger students.

1301 The students' knowledge scores did not differ significantly by gender or ethnicity. Possession of a prior
 1302 higher education qualification was associated with greater geriatric knowledge.

1303 **Table 1. Mean geriatric knowledge percentage scores per variable**

	n (%)	Mean+/-SD	p value
Age group			
<23	56 (32.4)	57,6 +/- 9.6	0,0004*
23-24	74 (42.8)	54,2 +/- 10,4	
24-25	16 (9.2)	54,5 +/- 10.5	
26-34	27 (15.6)	63,9 +/- 9.6	
Gender			
Female	103 (59.5)	57,3 +/- 10.5	0,47
Male	70 (40.5)	56,1 +/- 10.6	
Ethnicity			
Black	116 (67.0)	55,4 +/- 10.6	0,05
Colored	9 (5.2)	60,6 +/- 6.5	
Indian	43 (24.9)	59,3 +/- 10.6	
White	4 (2.3)	64,5 +/- 5.7	
Not specified	1 (0.6)	56.8	
Other qualifications			
Yes	24 (13.9)	62,3+/- 9.6	0,01*
No	149 (86.1)	56,0+/- 10.4	

1304 *Student attitudes towards caring for elderly patients.*

1305 The UCLA-GAS measured attitudes on a scale of 1 to 5, with the scores reversed on the negatively worded
1306 statements. Scores above 3.5 indicate a mostly positive attitude towards the aged, and a score less than 3.5
1307 indicates a negative attitude. In this study, participants demonstrated a mean score of 3.67, indicating a
1308 slightly positive attitude towards the elderly. The Cronbach alpha was 0.69.

1309 **Table 2. Associations between student attitudes and demographic characteristics**

	% (n)	Mean+/-SD	p value
Age group			
<23	56 (32.4)	51,4 +/- 5.6	0,11
23-24	74 (42.8)	49,9 +/-6.7	
24-25	16 (9.2)	50,8+/-8.5	
26-34	27 (15.6)	53,5+/-6.5	
Gender			
Female	103 (59.5)	51,2+/-6.4	0,78
Male	70 (40.5)	50,9+/-6.8	
Ethnicity			
Black	116 (67.0)	51,2+/-6.8	0,42
Colored	9 (5.2)	53,4+/-5.0	
Indian	43 (24.9)	50,7+/-6.4	
White	4 (2.3)	47,0+/-6.7	
Not specified	1 (0.6)	51.3	

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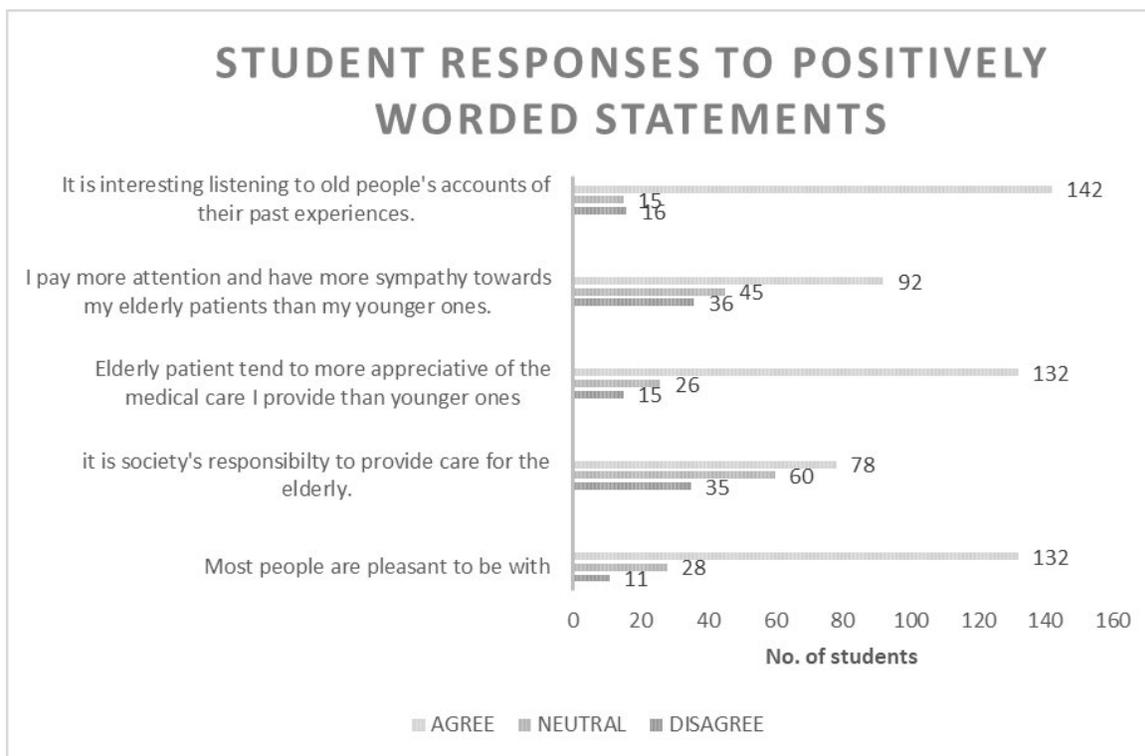
Other qualifications			
Yes	24 (13.9)	52,9+/-7.6	0,15
No	149 (86.1)	50,8+/-6.4	

There were no factors identified in this study that contributed to positive or negative student attitudes towards caring for the elderly. Although students aged 26 years and older were found to hold more positive attitudes than younger students, this was not a statistically significant difference. There were also no significant differences in student attitudes between male and female students, nor between those of different ethnicities. (Table 2) Respondents with prior higher education qualifications held more positive attitudes, but again this was not statistically significant. There was no association between previous exposure to older patients and student attitudes.

Student responses to each of the statements was analysed to obtain a deeper understanding of their attitudes towards elderly patients. The numbers of students that agreed, disagreed or were neutral to each statement are summarised in figures 1 and 2.

1338 **Figure 1. Geriatric Attitudes Scale- responses to positively worded statements**

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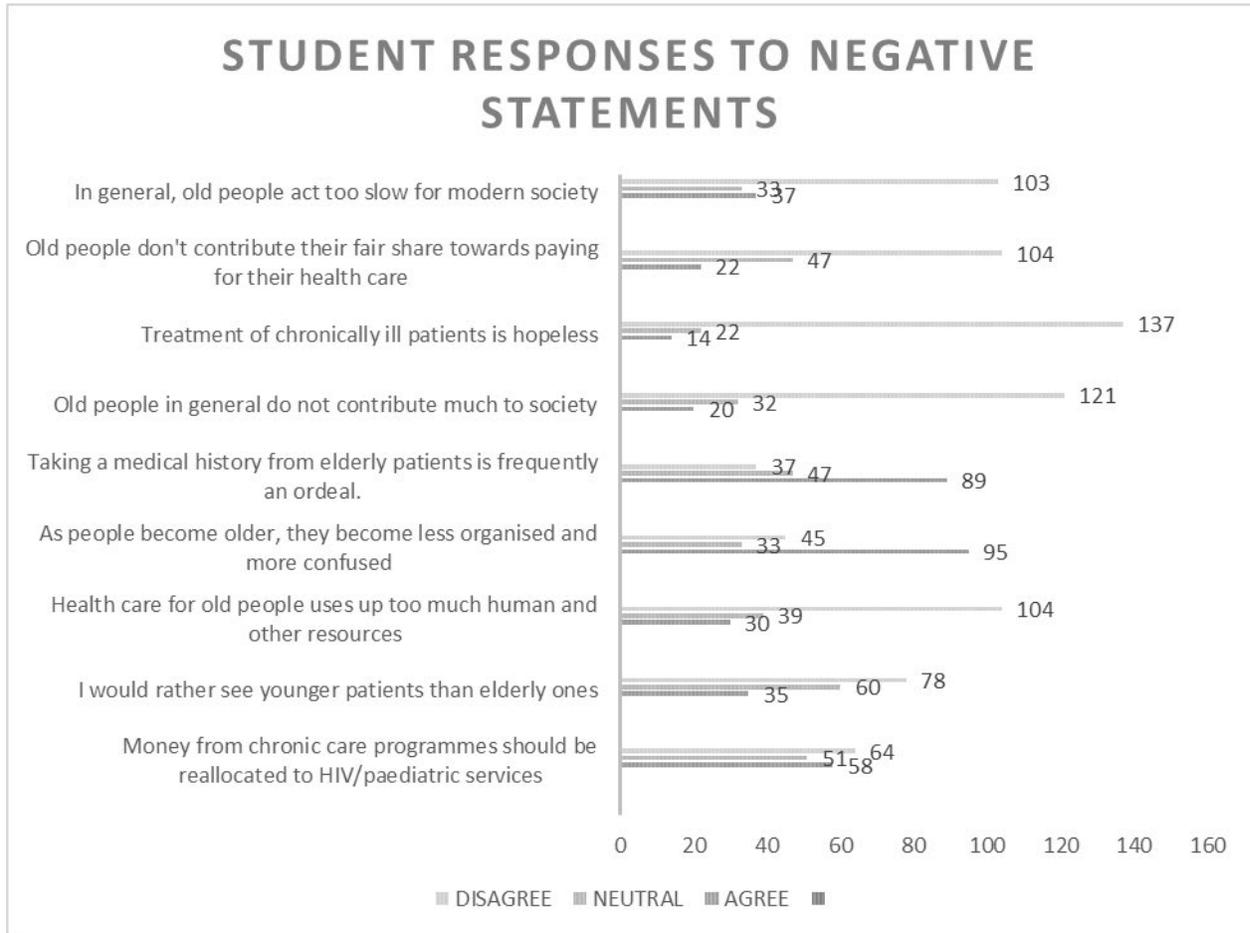
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1341 Over 82% (n=142) of students agreed that it was interesting to listen to old people's accounts of their past
1342 experiences. There were 76% (n=132) of students who also agreed that elderly patients were pleasant to be
1343 with and that they tended to be more appreciative of medical care than younger patients. However, fewer
1344 students (53%) reported that they were more sympathetic to older patients than younger ones (53%) and
1345 that it was society's responsibility to care for the elderly (45%).

1346 Student responses to negatively worded statements are indicated in Figure 2.

1347 **Figure 2. Student responses to negatively worded statement**

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1350 Over 79% (n=137) of students disagreed with the statement that treatment of chronically ill patients is
 1351 hopeless. Almost 70% of students (n=121) also disagreed with the statement that old people do not
 1352 contribute much to society. However, more students agreed than disagreed that people become more
 1353 confused as they grow older and that it was laborious to take a medical history from older patients.

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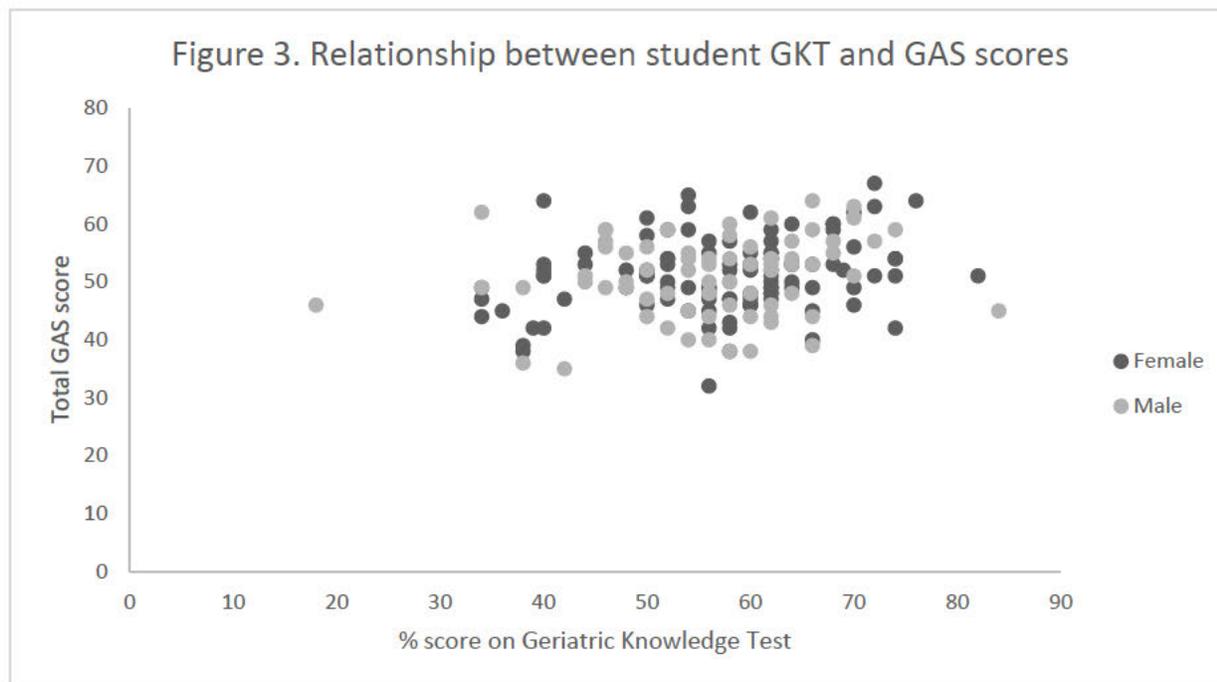
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1360 *Relationship between geriatric knowledge and attitude*

1361 **Figure 3. Relationship between student knowledge and attitude scores**

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1363

1364

1365 ***GAS- total Geriatric Attitudes score; GKT – Geriatric knowledge Test percentage***

1366 As depicted in Figure 3, there was no correlation between students' knowledge scores and their attitude
1367 scores regarding the care of older patients.

1368 **Discussion**

1369 Current literature suggest that limited knowledge and negative attitudes of health professionals result in the
1370 neglect and sub-optimal care of geriatric patients.⁽¹⁶⁾ Health professions educators are challenged to prepare
1371 medical graduates who will be both able and willing to provide quality medical care for their elderly
1372 patients. Despite student perceptions of receiving an adequate level of teaching in geriatrics, they displayed
1373 a minimal level of knowledge with a mean score of 56.84% (SD 10.42).

1374 This finding is worrying, given the inclusion of geriatric topics in almost all years of the UG medical
1375 curriculum. It is possible that the lack of sub-minima in the assessment of geriatric content contributed to
1376 students' poor learning in this discipline.⁽¹⁷⁾ It is also uncertain how this knowledge is translated into
1377 practice. To address medical students' relatively low knowledge of aging, there should be a greater

1378 emphasis on teaching and assessment of geriatric learning objectives in the curriculum. Given the limited
1379 time afforded to geriatric teaching in the curriculum, it is crucial to evaluate the efficacy of educational
1380 strategies that can improve student learning in this neglected discipline.

1381 It was encouraging to note that most students had positive attitudes towards working with elderly patients.
1382 Similar findings were noted among students in Singapore and Malawi.^(13,18) However, this conflicts with
1383 reports of negative attitudes and behaviours of medical professionals towards their elderly patients.⁽³⁾ It is
1384 possible that student attitudes after graduation could be negatively influenced by the organisational culture
1385 in health facilities and by the role models they observe in practice. Since this study only examined the
1386 attitudes of final year medical students it could not be determined if student attitudes towards caring for
1387 older patients improved or declined over the course of study. Further investigation is needed on the changes
1388 in attitudes at different stages of study and professional practice, and other factors influencing the attitudes
1389 of medical professionals towards their elderly patients.

1390 An analysis of students' attitudes indicated that communicating with older patients is a challenge to most
1391 students. Greater attention is thus required in communication skills training, especially regarding older
1392 adults with sensory and cognitive impairments. Furthermore, teaching and assessment of communication
1393 skills should be integrated with practical skills in order to provide a more realistic and comprehensive
1394 approach to the care of older adults.⁽¹⁹⁾ Communication skills is also a key educational strategy in
1395 developing patient-centred practices in students, a key element in quality care for older adults.^(20,21)

1396 Studies report that female students and those who had exposure to the elderly outside the prescribed
1397 curriculum were more inclined to have positive attitudes towards the elderly.⁽¹¹⁾ However, this was not the
1398 case in this study. It is likely that students in our study were exposed for six years on the same medical
1399 curriculum resulting in equal levels of empathy at exit level. Further research is needed to explore the
1400 influence of role models and intrinsic factors in students that could contribute to student attitudes towards
1401 caring for older adults. The seemingly better knowledge and attitudes of older students would suggest that
1402 intake of mature students into the medical profession could produce graduates better able to provide quality
1403 healthcare to elderly patients. Older students may also be more likely to choose to work with older patients.

1404 Of note, our findings showed no association between geriatric knowledge and attitudes towards caring for
1405 elderly patients. Other studies have also noted the poor relationship between geriatric knowledge and
1406 attitudes in students.⁽²²⁾ Many initiatives in geriatric medical education have been noted to improve student
1407 knowledge in geriatrics but not attitudes.⁽²³⁾ Hence, simply increasing the geriatric content in the
1408 undergraduate medical curriculum is unlikely to develop empathy in students towards caring for elderly
1409 patients. Medical educators need to include teaching and assessment approaches that target the attainment

1410 of positive attitudinal and behavioural attributes in graduates regarding the care of older adults. The use of
1411 critical reflective activities, such as self-reflection journals, would be of particular value as they assist
1412 students identify and examine their perceptions towards elderly people.

1413 Current literature indicates that educational interventions that involved community engagement and
1414 mentorship programmes with healthy community-dwelling elderly produce positive attitudinal changes in
1415 students.⁽²⁴⁾ Community skills training and interprofessional education (IPE) are considered to be of
1416 particular importance in preparing health professionals to care for older adults. These educational strategies
1417 have been shown to help develop patient-centred competencies in students and improve attitudes towards
1418 older patients.⁽¹¹⁾ Short-term clinical placements, as practiced in the current curriculum, were shown to wear
1419 down student empathy towards elderly patients.

1420 This study highlights the need to review and enhance the UG medical curriculum regarding teaching,
1421 learning and assessment of geriatric competencies. Given the overall poor geriatric knowledge of final year
1422 students, there is an evident need for educators to reach consensus on the minimum competencies required
1423 by medical graduates for effective geriatric care. Educational interventions are required to stimulate student
1424 interest in geriatrics, and improve learning in this field. Further studies should address the role of curricula
1425 in developing student attitudes, and identify the reasons for the discordance between student attitude and
1426 graduate behaviour towards elderly patients. In addition, it is evident that continuing medical education is
1427 required to enhance the limited geriatric knowledge of our graduates, particularly those working with aged
1428 patients.

1429 **Strengths and limitations**

1430 The results of this study have limited generalizability because it was carried out at a single academic
1431 institution. The questionnaire only provided for binary classification of gender, and did not allow for ethnic
1432 classification other than the four groups enrolled at the facility.

1433 **Conclusion**

1434 South Africa's growing elderly population needs good quality medical care. Findings from this study
1435 identified that students held mainly positive attitudes towards older patients but that they had poor geriatric
1436 knowledge. This requires an urgent analysis of the undergraduate geriatric curriculum to assist health
1437 professions educators to enhance teaching and learning of core geriatric competencies. These could possibly
1438 include communication skills training, interprofessional education, greater community engagement and
1439 mentorship programs with healthy community-dwelling elderly. There is also an urgent need to gain
1440 consensus on the minimum geriatric care competencies for inclusion in the undergraduate medical

1441 curriculum. The poor geriatric knowledge of soon-to-be medical graduates also highlights the importance
1442 of continuing medical education in geriatric care for medical professionals worked with aged patients.

1443 **Acknowledgements**

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1445 at UKZN College of Health Sciences, for input on statistical analyses and reporting.

1446 **Author contributions**

1447 KN was primarily responsible for the conceptualisation of the study, data collection and drafting of the
1448 manuscript. JvW contributed substantially to the finalisation of the manuscript; and all authors read and
1449 approved the final manuscript.

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1451 None

1452 **Conflicts of interest**

1453 None

1454 **References**

- 1455 1. Banerjee S. Multimorbidity—older adults need health care that can count past one. *Lancet*.
1456 2015;385(9968):587-9. [https://doi.org/10.1016/S0140-6736\(14\)61596-8](https://doi.org/10.1016/S0140-6736(14)61596-8)
- 1457 2. UNFPA H. Ageing in the twenty-first century: a celebration and a challenge. London: United
1458 Nations Population Fund. UNFPA), New York, and HelpAge International; 2012.
- 1459 3. Kelly G, Mrengqwa L, Geffen L. “They don’t care about us”: older people’s experiences of
1460 primary healthcare in Cape Town, South Africa. *BMC Geriatr*. 2019;19(1):98,
1461 https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6449977/pdf/12877_2019_Article_1116.pdf
- 1462 4. Naidoo K, van Wyk J. What the elderly experience and expect from primary care services in
1463 KwaZulu-Natal, South Africa. *Afr J Prim Health Care Fam Med*. 2019 ;11(1):6
1464 <http://dx.doi.org/10.4102/phcfm.v11i1.2100>
- 1465 5. Kalula SZ. The quality of health care for older persons in South Africa : is there quality care? :
1466 conference paper. *ESR Review : Economic and Social Rights in South Africa*. 2011;12(1):22-25.
1467 <https://hdl.handle.net/10520/EJC33376>
- 1468 6. Meiboom A, Diedrich C, Vries HD et al. The Hidden Curriculum of the Medical Care for Elderly
1469 Patients in Medical Education: A Qualitative Study. *Gerontol Geriatr Educ*. 2015 ;36(1):30-44.
1470 <https://www.tandfonline.com/doi/pdf/10.1080/02701960.2014.966902>

- 1471 7. Kirk H. Geriatric medicine and the categorisation of old age; the historical linkage. *Aging Soc.*
1472 1992;12(4):483-497. <https://doi.org/10.1017/S0144686X00005286>
- 1473 8. Padmadas S, Tiemoko R, Madise N et al. Tracking progress towards the Madrid International
1474 Plan of Action on Ageing (MIPAA) in East and Southern Africa: milestones and challenges. *Intl Journal*
1475 *on Ageing in Developing Countries.* 2018;2(2):184-206, <http://eprints.soton.ac.uk/id/eprint/423733>
- 1476 9. Frost L, Liddie Navarro A, Lynch M et al. Care of the elderly: survey of teaching in an aging sub-
1477 Saharan Africa. *Gerontol Geriatr Educ.* 2015 ; 36.
1478 <https://www.tandfonline.com/doi/pdf/10.1080/02701960.2014.925886>
- 1479 10. Robbins TD, Crocker-Buque T, Forrester-Paton C et al. Geriatrics is rewarding but lacks earning
1480 potential and prestige: responses from the national medical student survey of attitudes to and perceptions
1481 of geriatric medicine. *Age Ageing* 2011;40(3):405-408
1482 <https://academic.oup.com/ageing/article/40/3/405/21597>
- 1483 11. Samra R, Cox T, Gordon AL et al. Factors related to medical students' and doctors' attitudes
1484 towards older patients: a systematic review. *Age Ageing* 2017;46(6):911-919
1485 <https://academic.oup.com/ageing/article/46/6/911/3787763>
- 1486 12. De Biasio JC, Parkas V, Soriano RP. Longitudinal assessment of medical student attitudes toward
1487 older people. *Med Teach* 2016;38(8):823-8,
1488 <https://www.tandfonline.com/doi/full/10.3109/0142159X.2015.1112891>
- 1489 13. Zverev Y. Attitude Towards Older People Among Malawian Medical and Nursing Students. *Educ*
1490 *Gerontol.* 2013;39(1):57-66. <https://doi.org/10.1080/03601277.2012.660869>
- 1491 14. Palmore E. Facts on Aging: A short quiz 1977. p.315-320
- 1492 15. Reuben DB, Lee M, Davis Jr JW et al. Development and validation of a geriatrics attitudes scale
1493 for primary care residents. *J Am Geriatr Soc.* 1998;46(11):1425-30.
1494 <https://onlinelibrary.wiley.com/doi/pdf/10.1111/j.1532-5415.1998.tb06012.x>
- 1495 16. Chang E-S, Kanno S, Levy S et al. Global reach of ageism on older persons' health: A
1496 systematic review. *PloS One.* 2020 ;15(1):e0220857. <https://doi.org/10.1371/journal.pone.0220857>
- 1497 17. Cilliers FJ, Schuwirth LW, Adendorff HJ et al. The mechanism of impact of summative
1498 assessment on medical students' learning. *Adv Health Sci Educ.* 2010;15(5):695-715,
1499 https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2995206/pdf/10459_2010_Article_9232.pdf

- 1500 18. Koh GC, Merchant RA, Lim WS et al. The knowledge-attitude dissociation in geriatric education:
1501 can it be overcome? *Ann Acad Med Singapore*. 2012;41(9):383-389,
1502 <https://doi.org/10.1080/03601277.2012.660869>
- 1503 19. Silverman J. Teaching clinical communication: a mainstream activity or just a minority sport?
1504 *Patient Educ Couns* 2009;76(3):361-367. <https://doi.org/10.1016/j.pec.2009.06.011>
1505 <https://www.sciencedirect.com/science/article/abs/pii/S0738399109002572?via%3Dihub>
- 1506 20. Bombeke K, Symons L, Vermeire E. et al. Patient-centredness from education to practice: the
1507 'lived' impact of communication skills training. *Med Teach* 2012;34(5):e338-e348,
1508 <https://doi.org/10.3109/0142159X.2012.670320>
- 1509 21. de Carvalho IA, Epping-Jordan J, Beard JR. Integrated Care for Older People. *Prevention of*
1510 *Chronic Diseases and Age-Related Disability*: Springer; 2019. p. 185-195. doi:
1511 <http://dx.doi.org/10.2471/BLT.16.187617>
- 1512 22. Nagoshi MH, Tanabe MK, Sakai DH et al. The impact of curricular changes on the geriatrics
1513 knowledge, attitudes and skills of medical students. *Gerontol Geriatr Educ*. 2008 ;28(3):47-58.
1514 https://doi.org/10.1300/j021v28n03_04
- 1515 23. Samra R, Griffiths A, Cox T et al. Changes in medical student and doctor attitudes toward older
1516 adults after an intervention: a systematic review. *J Am Geriatr Soc*. 2013 ;61(7):1188-1196,
1517 <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3808566/pdf/jgs0061-1188.pdf>
- 1518 24. Ross L, Jennings P, Williams B. Improving health care student attitudes toward older adults
1519 through educational interventions: a systematic review. *Gerontol Geriatr Educ*. 2018 ; 39(2):193-213.
1520 <https://doi.org/10.1080/02701960.2016.1267641>

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1523 **Chapter 6: Preparing medical graduates to care for geriatric**
1524 **patients: A case study of the undergraduate medical**
1525 **curriculum at a South African university**

1526 **Manuscript published: South African Family Practice journal**
1527 **<https://doi.org/10.4102/safp.v62i1.5081>**

1528

1529 **6.1. Introduction**

1530 The previous chapter reported that final year medical students had poor knowledge and mildly positive
1531 attitudes regarding the care of elderly people. In this chapter I present the findings of the investigation into
1532 the geriatric curriculum. In line with the overall purpose of the study to conceptualise the key principles for
1533 the development of a geriatric curriculum, this objective aimed to identify and describe learning
1534 opportunities to enhance teaching and learning of geriatric care competencies. The paper deliberated on
1535 how older patients' health needs and expectations, as reported on in chapter 4, could be addressed in the
1536 curriculum.

1537 The paper highlighted the necessity of curriculum mapping in the curriculum development process. Most
1538 medical schools in SSA have adopted a PBL approach to the curriculum in line with global reforms in
1539 medical education. Such programmes entail the integration of topics across modules and years of study,
1540 creating challenges for health professions educators to track teaching and learning in specific topics. My
1541 investigation of the curriculum involved the use of an electronic curriculum platform, LOOOP, and
1542 provides insight into the strengths and weaknesses of this novel methodology.

1543 The findings from this paper not only contributes to enhancing medical education in geriatric care, but can
1544 facilitate the development of IPE in geriatric care by providing a reference for other health professions
1545 programmes regarding teaching and learning relevant to the care of older adults.

1546 **6.2. Publication details**

1547 The results of this study has been published and the details summarized below.

Title	Preparing medical graduates to care for geriatric patients: A case study of the undergraduate medical curriculum at a South African university
Authors	Keshena Naidoo, Jacqueline Marina van Wyk

Journal	South Africa Family Practice (SAFP) journal
Details	Peer reviewed (double-blinded). Open-access journal Listed with department of higher Education and training (DoHET)
Status	Published

1548

1549 **6.2.1. Journal information**

1550 The South African Family Practice (SAFP) journal is a peer-reviewed scientific journal, which strives to
 1551 provide primary care physicians (and their teams), as well as researchers, with a broad range of scholarly
 1552 work in the disciplines of family medicine, primary health care, rural medicine, district health and other
 1553 related fields. The journal publishes at least one issue each year. Articles are published online when ready
 1554 for publication and then printed in an end-of-year compilation. This is an open access journal which means
 1555 that all content is freely available without charge to the user or his/her institution, and is in accordance with
 1556 the Budapest Open Access Initiative (BOAI) definition of open access.

1557 SAFP adheres to the international acceptable editorial standards, as published by The International
 1558 Committee of Medical Journal Editors (ICMJE). The journal has a double-blinded peer review process.
 1559 Manuscripts are initially examined by editorial staff and are sent by the Editor-in-Chief to two expert
 1560 independent reviewers, either directly or by a Section Editor. The journal's editors are supported by an
 1561 editorial board, which consists of South African members representing the nine academic training
 1562 programmes as well as a representative from RuDASA (Rural Doctors Association of South Africa), and
 1563 key members from the international family medicine and primary care community.

1564 **6.2.2. Publication details**

1565 The manuscript was submitted to the journal on the 16th December 2019, was accepted 27th February 2020,
 1566 and published on the 20th April 2020.

1567 **6.2.3 Contribution Record**

1568 The candidate conceptualised the paper and was the main author. Dr Van Wyk contributed towards the
 1569 concept and reviewed the paper.

1570 **6.3 Key Findings and Contribution of the Manuscript to the Thesis**

1571 This paper mapped the current geriatric curriculum as part of the curriculum development process outlined
1572 in Chapter 2. The findings of the study were that there is inclusion of teaching on a wide range of geriatric
1573 topics, which contrasts findings from chapter 5 of the poor geriatric knowledge of students. However,
1574 teaching and learning mainly targets the attainment of geriatric knowledge and skills, while student attitudes
1575 are not addressed. Professional attributes such as compassion and patient-centered care that were valued by
1576 geriatric patients (chapter 4) were not explicitly taught or assessed in the curriculum. Greater attention
1577 should be directed to teaching and assessment of behavioural and attitudinal attributes, considering the poor
1578 health professional attitudes reported on in chapter 4.

1579 Despite the opportunities afforded by the PBL approach in the curriculum for team-based learning and
1580 collaboration, there was an absence of IPE in the delivery of teaching and learning relevant to older adults.
1581 There was also a lack of attention to communication skills training, an area that that was identified in the
1582 previous chapter as problematic for students.

1583 The main findings of the curriculum review paper were that a consensus is needed on the core geriatric
1584 competencies to avoid gaps in geriatric knowledge, skills and attitudes of medical graduates. Also, greater
1585 stakeholder involvement from professional bodies and geriatric communities is required in the development
1586 of a core geriatric curriculum. Consensus on the core curriculum will also inform the educational strategies
1587 such as community-based education and early and longitudinal student exposure that will result in the
1588 development of appropriate graduate attitudes. Greater attention also needs to be paid to the efficacy of
1589 teaching strategies, and inclusion of compulsory assessments of geriatric learning objectives.

1590 Further discussion of the strengths, limitations, and contribution of this work to the research literature is
1591 presented in the next chapter of this thesis.

1592

Preparing medical graduates to care for geriatric patients: A case study of the undergraduate medical curriculum at a South African university



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Background: Medical schools in South Africa must be responsive to the health needs of the rapidly ageing population. Reports of the poor quality of care received by elderly patients raises concerns about the training of medical students. A review of the curriculum can help to assess current geriatric care training and identify the areas in need of improvement. This study was conducted to describe the nature and scope of undergraduate medical education in geriatric care at a South African university.

Methods: An exploratory, descriptive case study was conducted to analyse the learning objectives, opportunities and outcomes of the 6-year undergraduate medical program. Data included an electronic curriculum supported by student and teacher guides. Semi-structured interviews were conducted with health professions educators.

Results: The curriculum covered key geriatric competencies that included addressing geriatric syndromes and conducting a comprehensive geriatric assessment. Teaching on geriatric competencies occurred mainly in the clinical years, was integrated and no sub-minima was applied in its assessment. Teaching occurred in disciplinary silos with little involvement of the multidisciplinary team. Learning objectives and assessments focussed on geriatric knowledge and skills.

Conclusion: The curriculum targets the development of student geriatric knowledge and skills, but not student attitudes towards caring for older patients. However, a national curriculum will ensure greater coverage of geriatric care competencies, particularly advocacy and attitudes towards caring for geriatric patients. Greater engagement with stakeholders in geriatric health care will inform suitable educational guidelines for undergraduate medical education in geriatric care at this institution. This may also contribute to a standardised national curriculum.

Keywords: medical education; health professions education; geriatric; elderly; curriculum.

Background

Health care professionals in South Africa are facing a rapidly ageing population with increased demands for age-related health care services.¹ Old age is associated with chronic illnesses and functional impairments that result in an increased burden of disease among older adults.² The high prevalence of multi-morbidities and sensory impairments in older adults requires an integrated approach from health care professionals with a focus on function and quality of life.³ The National Health Insurance Bill, which aims to provide Universal Health Coverage (UHC) to all South African citizens, is dependent on health professionals' ability to deliver comprehensive health services to all at primary care level.⁴ It is thus essential that all medical students receive training in the core competencies of geriatric care to ensure the delivery of quality primary care services to elderly patients.⁵ The World Health Organization (WHO) highlighted the necessity of including geriatric training in undergraduate (UG) medical curricula almost two decades ago, but medical schools have been slow to implement this recommendation.⁶

Geriatric medicine, the field of medicine that deals with ageing and health conditions associated with advancing age, is a relatively new and neglected area in health professions education.⁷ A global survey conducted by the WHO in 2002 revealed a lack of attention to geriatrics in UG medical curricula.⁵ It was also disconcerting that data from only one sub-Saharan African (SSA) country, namely Ghana, had been included in that study. A 2015 survey of 25 medical schools across 11 countries in Africa reported on inclusion of geriatric topics at UG level in only 60% of the participating institutions.⁸ Dedicated teaching time for geriatrics was very limited, consisting

of < 10 h in relation to the entire degree programme. Furthermore, < 30% of the medical schools surveyed in SSA included examinable learning objectives in geriatrics. The main factor identified for the limited inclusion of geriatrics in UG medical curricula in SSA medical schools was the absence of a national curriculum.⁵ The low priority afforded to geriatric training at UG medical level was reportedly because of limited space in the curriculum, scarcity of teaching faculty in geriatrics and low levels of interest by staff and students.⁹

Most initiatives to prepare medical graduates to care for geriatric patients are from high-income countries (HICs), which have markedly different resources and health systems than those of SSA. Professional bodies in HIC such as the American Geriatric Society, British Geriatric Society and Australian Society for Geriatric Medicine have advocated for the inclusion of geriatric medicine in the UG medical curriculum of their countries.^{10,11,12} These bodies of specialist geriatricians have developed and proposed minimum core competencies for geriatric medical education, many of which are derived from recommendations of the International Association of Gerontology and Geriatrics (IAGG), a non-governmental organisation that aims to promote training in geriatric care globally (Online Appendix 1).^{10,11,12,13,14,15} Although the IAGG recommendations are no longer available online, the principles of geriatric training for medical students remain largely the same. Medical educational reforms worldwide have focussed on a competency- or outcomes-based approach within the context of population needs.¹⁶ The development and adoption of minimum core competencies for geriatric care in national curricula have resulted in significant improvements in UG medical education in geriatrics in HICs.¹⁷

South Africa has, however, few specialist geriatricians and limited input from special interest groups towards prescribed geriatric training at UG medical level in South Africa.^{9,18} Furthermore, the Health Professions Council of South Africa (HPCSA), the body that regulates and accredits the training of health professionals in South Africa, does not have a prescribed national curriculum for UG medical training. Instead, the HPCSA has adopted a revised Canadian Medical Education Directions for Specialists (CanMEDS) framework to develop and assess seven attributes of medical graduates in the curricula.¹⁹ This core competency framework originally developed for physicians in the 1990s by the Royal College of Physicians and Surgeons of Canada has been refined and adopted by the HPCSA to guide a competency-based education approach for medical curricula. Each of the nine medical schools in the country has total autonomy over its UG medical programme, subject to accreditation by the HPCSA. A lack of attention to core minimum standards has resulted in either the omission or selective coverage of examinable geriatric competencies at UG level at South African medical schools.²⁰ It is crucial that both local health systems and the curricula of medical schools represent and address the needs of the local population. This will ensure that medical schools are socially accountable and responsive to those communities being served by its graduates.^{21,22}

Several studies conducted in South Africa report that geriatric patients in South Africa have many negative perceptions of health professionals and the care that they received.^{23,24,25} A recent study conducted in KwaZulu-Natal documented that geriatric patients described health care professionals as uncaring and lacking in respect for their elderly patients.²⁵ Health services to older adults were perceived as 'disease-centred' and fragmented. These studies indicate the need to improve geriatric care training of health professionals, especially regarding behavioural and attitudinal attributes. There is strong evidence that patient-centred care, in particular, is highly valued by older patients and is essential for the management of complex health issues in older age.^{23,24} Curricula review is critical to determine how geriatric knowledge, skills and attitudes are addressed at UG medical level, and how medical educators can enhance current offerings to be more socially accountable.

Given the limited literature available on geriatric training for UG medical students in SSA, this study was undertaken to map the geriatric curriculum offered at the University of KwaZulu-Natal (UKZN) and identify inclusion of core geriatric competencies for medical graduates to attain. As proposed by Harden, this curriculum mapping study was conducted with a view to gaining insight into the content, teaching strategies and assessment methods relevant to the care of elderly patients.²⁶ This will provide a benchmark of current teaching and assessment of geriatric-related learning objectives and provide part of the overall review of the geriatric curriculum at the UKZN.

Methods

Study design

This was a descriptive exploratory mixed methods study.

Setting

This study was conducted at the UKZN, one of nine medical training facilities in South Africa where the undergraduate medical (MBChB) curriculum spans 6 years. Teaching in pre-clinical years of the programme follows a problem-based learning (PBL) approach, which exposes students to theoretical paper-based patient cases to stimulate their learning. There is a greater focus on clinical medicine in the latter 3 years of the programme. Geriatric topics and teaching were introduced into the UG medical curriculum in 2001, the same year that the UKZN appointed a chair in the Department of Geriatric Medicine.

Data collection

A document review of the curriculum was undertaken, and semi-structured interviews were conducted with a purposive sample of health professions educators ($n = 5$). The participants were lecturers or tutors involved in geriatric-related teaching and curriculum development and were from the professions of family medicine, internal medicine, anatomical pathology and psychiatry.

Ethical approval was obtained prior to data collection from the UKZN Biomedical Research Ethics Committee. Data collection occurred between April and August 2019.

Learning objectives relevant to geriatric care were identified through a search on the web-based curriculum platform LOOOP (Learning Opportunities, Objectives and Outcomes Platform).²⁷ This electronic platform contains information on all modules offered in the undergraduate medical curriculum and outlines individual learning objectives and related teaching and assessment. In addition, the contribution of the modules to each of the competency domains that medical doctors should master (CanMEDS competencies) is tabulated.¹⁹ Additional data were obtained from student and facilitator study guides, and semi-structured interviews with key informants. Interviews were audio-recorded and transcribed.

Analysis

Learning objectives relevant to the care of older adults were extracted from LOOOP, collated on an Excel spreadsheet and categorised according to the year of study as documented in Online Appendix 1. A summary of the information regarding the teaching and assessment methods used for each domain in geriatric care is reported per academic year of study as indicated in Table 1. The qualitative data from the interviews with the health professions educators ($n = 5$) were analysed for content that contributed to the study objectives.

Ethical considerations

Ethical clearance was obtained from the University of KwaZulu-Natal Biomedical Research Ethics Committee (BE287/18).

Results

Geriatric content

There were 15 domains of geriatric care training identified in the curriculum, as tabulated in Table 1. Common conditions

among geriatric patients such as urinary incontinence, falls, infections, dementia, frailty, confusion, syncope and osteoporosis were formally taught and assessed. Geriatric clinical skills such as the Comprehensive Geriatric Assessment (CGA)²⁸ and Mini-mental State Examination (MMSE)²⁹ were also taught to students. The CGA is an evaluation conducted by a multidisciplinary team to determine an elderly person's medical, psychosocial, functional and environmental resources and problems. This is linked with a coordinated plan to improve overall patient functioning and independence.

Teaching methods in geriatric topics

The geriatric content is delivered through a total of 40 h of didactic lectures and a few case discussions, and approximately 10 h of practical or bedside teaching mainly to students in years 4–6. Additional resources including journal articles serve as electronic resources for self-directed learning among students. Formal teaching of communication skills, as offered at the first- and second-year level, did not include strategies to address the challenges of communicating with elderly patients.

Clinical teaching in geriatrics occurred mainly at academic hospitals and was predominantly achieved during the internal medicine modules, with some coverage in psychiatry and family medicine. The limited involvement of other disciplines to include teaching in geriatrics was highlighted by a comment from a geriatric teacher:

'... there is no interest from the other divisions to include geriatrics. For instance, in cardiology there is discussion on how it develops from childhood to adulthood, but there is little emphasis on changes from adulthood into old age.' (Participant A, female senior lecturer, more than 20 years experience, Clinical Medicine Department)

The review of the LOOOP platform did not reflect any planned bedside teaching around geriatric topics as these occurred infrequently and depended on the availability of geriatric inpatients. Bedside teaching, when it did occur, was not standardised. The programme did not include clinical

TABLE 1: Domains of geriatric care taught and assessed in the MBChB curriculum.

No.	Geriatric topic	Year	Learning	Assessment
1	Principles of geriatrics	1	Lecture	MCQ
2	Prescribing for the elderly	3	Lecture	MCQ, OSPE
3	Legal and ethical issues of ageing	3	Lecture	MCQ, OSPE
4	Physiological changes of ageing	3	Lecture	MCQ, OSPE
5	Dementia – risk factors, assessment and management	3,4,5,6	Lectures	MCQ, OSPE, case study(p), long case†, DOSCE
6	Comprehensive Geriatric Assessment (CGA)	3,4,5,6	Lectures, clinical	MCQ, OSPE, case study(p), long case†, DOSCE
7	Urinary incontinence	3,4,5,6	Lectures, clinical	MCQ, OSPE, case study(p), long case†, DOSCE
8	Falls	3,4,5,6	Lectures, clinical	MCQ, OSPE, case study(p), long case†, DOSCE
9	Infections in the elderly	3,4,5,6	Lectures, clinical	MCQ, OSPE, case study(p), long case†, DOSCE
10	Frailty	3,4,5,6	Lectures, clinical	MCQ, OSPE, case study(p), long case†, DOSCE
11	Confusion	3,4,5,6	Lectures, clinical	MCQ, OSPE, case study(p), long case†, DOSCE
12	Syncope	3,4,5,6	Lectures, clinical	MCQ, OSPE, case study(p), long case†, DOSCE
13	Osteoporosis	3,4,5,6	Lectures, clinical	MCQ, OSPE, case study(p), long case†, DOSCE
14	End-of-life care (palliative care)	5	Lectures, small group seminars	Case study (p), MCQs
15	Geriatric psychiatry – neurocognitive disorders	6	Lectures, clinical	MCQs, OSCE, case studies (p)

MCQ, multiple-choice questions; OSPE, objective structured practical examination; OSCE, objective structured clinical examination; DOSCE, directly observed clinical assessment, (p), portfolio of evidence for assessment.

†, Long case – Assessment of long clinical case.

teaching on ambulatory or community-dwelling older adults despite the awareness of some of the teachers of the benefits of this exposure to students' learning:

'Students need to go out and see geriatric patients. That's what really sticks with students.' (Participant B, male senior lecturer > 20 years, Family Medicine)

Another participant expressed concern about the lack of an integrated patient-centred approach to geriatric patients as currently practised in the teaching in separate disciplines:

The assessment of the geriatric patient is so patient-centred. Each individual patient differs so much in the way you approach them.' (Participant C, female clinical tutor > 10 years, Family Medicine)

Apart from a single lecture being offered by occupational therapy on the management of dementia, almost all the lectures are delivered by a specialist geriatrician or psychiatrist. The current programme includes neither the use of multidisciplinary teams nor interprofessional educational strategies in delivering the geriatric curriculum.

Assessment methods

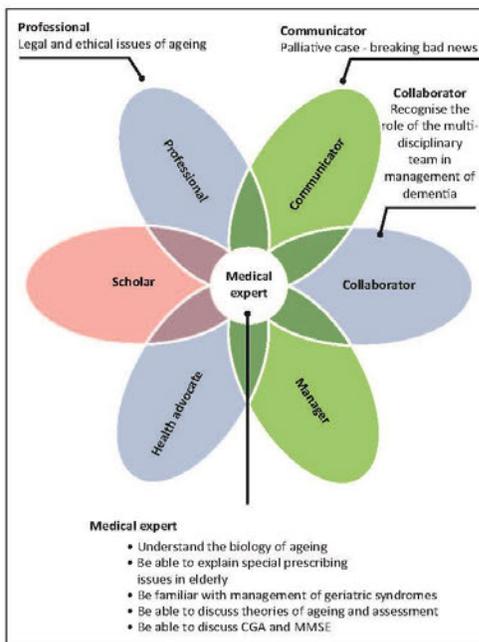
The assessment of geriatric content in years 1 to 3 forms part of the integrated module assessment and no sub-minima are applied to the geriatric content. The assessment of geriatric knowledge and skills contributes to approximately one-tenth of the internal medicine assessment of students in years four, five and six, also with no sub-minima. Assessment methods include multiple-choice questions, clinical examination, objective structured clinical examinations (OSCE), directly observed clinical assessment (DOSCE) and the assessment of portfolios of learning, as listed in Table 1. All the assessment methods are targeted at assessing students' geriatric knowledge and skills, and none examine attitudinal components of geriatric competencies.

Inclusion of recommended geriatric competencies

The domains of geriatric care taught and assessed were related to each of the seven graduate roles in the CanMEDS framework, as depicted in Figure 1. The central role of the 'medical expert' integrates the other six roles of 'collaborator', 'communicator', 'health advocate', 'manager', 'professional' and 'scholar'. Learning objectives relevant to geriatric care contributed to four of the seven graduate attributes outlined in the CanMEDS framework (Figure 1). There were no learning objectives in the geriatric care that specifically contributed to graduate attributes of scholar, health advocate and manager (Figure 1).

Discussion

This study indicates that the UG medical curriculum at UKZN includes a wide range of examinable learning objectives relevant to the care of older patients. The programme offers good coverage of key geriatric topics including geriatric syndromes and CGA. This is possibly because of the presence



Source: Adapted from the Royal College of Physicians and Surgeons of Canada

FIGURE 1: Mapping geriatric competencies as interpreted through the CanMEDS framework.

of a dedicated department of geriatric medicine to drive teaching and learning.³⁰ Although the total contact time for teaching geriatric-relevant topics at UKZN was greater than that reported by Frost et al. in other SSA medical schools, the proportion of teaching time in geriatrics is still small in relation to the entire programme.⁵ The curriculum coverage does not adequately represent the high demand for health care services by older adults in relation to the general population.

Most of the teaching is furthermore concentrated in the last 3 years of the curriculum, with only a few lectures and seminars in the first and third years. Studies have shown that early exposure to geriatrics improves both knowledge as well as attitudes of medical students regarding care of elderly patients.^{31,32,33} Learning opportunities for students in the early years could include communication skills with older adults as well as some of the IAGG-recommended competencies not currently included in the curriculum.³⁴

The methods of teaching are mostly classroom based with emphasis on students' acquisition of knowledge. There is limited clinical exposure to geriatric patients in hospital settings, who represent only a small segment of the population requiring medical care. Most of the medical care to geriatric patients is delivered at primary care level, among whom the burden of disease is higher than in any other age group because of the high prevalence of chronic

diseases and multi-morbidity. Exposure to geriatric inpatients with complex health problems has been shown to reinforce negative stereotypes about older patients and adversely affect students' attitudes towards caring for elderly patients.³⁵ It is essential that teaching in geriatric care be expanded to more settings to ensure greater teaching and learning concordance in authentic contexts where graduates are most likely to encounter elderly patients. Students require interaction with ambulant and community-dwelling older adults to appreciate the complexities of healthcare in the aged and develop a patient-centred approach. Exposure to well elderly people in the community as practised in the Senior Mentor programme in some medical schools in the USA promotes student learning in geriatrics, as well as positive attitudes towards caring for older adults.³⁶

The current programme neither facilitates interaction between medical and other health profession students nor involves interprofessional education. Many of the IAGG core competencies in geriatric care require an understanding of the role of the multi-disciplinary team in the care of geriatric patients. Although there is some inclusion of teaching by occupational therapy on the management of dementia, there is little reinforcement of that teaching elsewhere in the curriculum. The ability to function in a multi-disciplinary team is particularly important in the management of geriatric patients where the aim is to preserve function and quality of life.³⁷ Interprofessional education has also been shown to be effective in improving student attitudes towards patients and other health professionals, as well as align medical education with patient-centred care.

Regarding the assessment of geriatric learning objectives, our study found that only students' geriatric knowledge and skills were assessed and not their attitudes towards caring for elderly patients. To assess students' attitudes towards care of older patients, appropriate tools need to be developed and validated. Current assessment of geriatric topics contributes only a small component to overall assessments, with no sub-minima. There is thus insufficient evidence to determine the actual competencies of medical graduates in geriatric care. Separate assessment of geriatric components in UG medical curricula has been shown to improve both student knowledge and attitudes in geriatric care.³⁸ However, the feasibility of this model for the SSA context will have to be explored, especially given the context of overcrowded health care curricula. Introducing a sub-minimum in the assessment of geriatric topics would at least simulate student learning in those domains of geriatric care that is taught.

Our analysis of the curriculum showed that only geriatric knowledge and skills are targeted, and student attitudes are not addressed. In addition, the medical graduate roles of scholar, manager and health advocate regarding geriatric care were not addressed. This omission may partly be responsible for the low priority afforded to the health needs of older patients in South Africa. In view of the negative

reports regarding poor attitudes of health professionals towards elderly patients, it is essential that development and assessment of professional attitudes are an explicit part of the curriculum. The findings of this study highlight the need for consensus by relevant stakeholders on the minimum medical graduate competencies in geriatric care to guide medical curriculum planners. This will ensure that all medical graduates possess the minimum competencies necessary to care for their older patients.

Because of the low priority afforded to geriatrics in the curriculum, students may perceive the discipline as unimportant and fail to attain essential competencies necessary to care for the elderly patients. Similar to the findings reported on the geriatric curricula of other health professions trained at UKZN, this study identified a need for a policy to inform curriculum development for health professions training in geriatric care.³⁹ The next step of the curriculum review framework⁴⁰ suggests a targeted needs assessment of the local geriatric community and an evaluation of the outcome of the current geriatric curriculum on student knowledge, attitudes and perceptions regarding medical care of elderly patients. This would inform educational guidelines for UG medical and other health professions training in geriatric care.

Study limitations

This study was conducted at a single institution, and therefore the findings may not be generalisable to other medical curricula. This study only examined the planned and delivered geriatric curriculum as captured on the LOOP platform as of July 2019. Data from student manuals and participants highlighted that some teaching activities, such as the case discussions, were not recorded on the electronic platform. Hence, teaching and learning not documented may have been omitted from this analysis. This study also did not explore the 'hidden' curriculum in geriatrics. This is the unwritten and unintended lessons and perspectives that students learn in the educational environment.⁴¹

Conclusion

This study evaluated the geriatric curriculum at the UKZN, and the findings provide a benchmark for comparison with the curricula at other medical schools in SSA. The presence of a department of Geriatric Medicine at the UKZN has helped to drive and implement teaching and assessment of key learning objectives in geriatric care. However, geriatric teaching faculty are in short supply, and innovative strategies are required to enhance geriatric teaching that is relevant to the SSA context. These should include interprofessional education and community partnerships, the importance of which has been highlighted in this study.

Consensus over a national core geriatric competency list is needed to standardise health professions training in geriatric care. It will require greater stakeholder involvement from professional bodies and geriatric communities to ensure that

there is adequate representation of geriatric competencies in the UG curriculum. Consensus on the core curriculum will also inform discussion about suitable early and longitudinal student exposure and the educational settings that will result in the development of appropriate attitudes in medical graduates.

This study forms part of an internal curriculum review process. Further evidence is needed on the outcome of the curriculum on medical student knowledge and attitudes regarding the care of geriatric patients, and the feasibility of interprofessional education models for geriatric care training of health professions students. This will inform the development of educational guidelines for UG medical education in geriatric care at the UKZN.

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The authors have declared that no competing interests exist.

Authors' contributions

All authors contributed equally to this work.

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Data sharing is not applicable to this article as no new data were created or analysed in this study.

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References

- Aboderin IA, Beard JR. Older people's health in sub-Saharan Africa. *Lancet*. 2015;385(9968):e9–e11. [https://doi.org/10.1016/S0140-6736\(14\)61602-0](https://doi.org/10.1016/S0140-6736(14)61602-0)
- Fabrizi E, Zoli M, Gonzalez-Freire M, Salive ME, Studenski SA, Ferrucci L. Aging and multimorbidity: New tasks, priorities, and frontiers for integrated gerontological and clinical research. *J Am Med Dir Assoc*. 2015;16(8):640–647. <https://doi.org/10.1016/j.jamda.2015.03.013>
- Kalula SZ. The quality of health care for older persons in South Africa: is there quality care?. Conference paper. *ESR Rev Econ Soc Rights S Afr*. 2011;12(1):22–25.
- National Department of Health. National Health Insurance for South Africa: Towards Universal Health Coverage. Government Gazette. National Department of Health, 2015; p. 1230.
- Keller J, Makipaa A, Kalenschner T, Kalache A. Global survey on geriatrics in the medical curriculum. Geneva: World Health Organization, 2002; p. 59.
- Beard JR, Officer A, De Carvalho IA, et al. The World report on ageing and health: A policy framework for healthy ageing. *Lancet*. 2016;387(10033):2145–2154. [https://doi.org/10.1016/S0140-6736\(15\)00516-4](https://doi.org/10.1016/S0140-6736(15)00516-4)
- Ferreira M. Geriatric medicine in South Africa – A Cinderella subspecialty?. *CPD. S Afr Fam Pract*. 2006;48(5):18. <https://doi.org/10.1080/20786204.2006.10873389>
- Frost L, Uddle Navarro A, Lynch M, et al. Care of the elderly: Survey of teaching in an ageing sub-Saharan Africa. *Gerontol Geriatr Educ*. 2015;36(1):14–29. <https://doi.org/10.1080/02701960.2014.925886>
- Dotchin CI, Akinyemi RO, Gray WK, Walker RW. Geriatric medicine: Services and training in Africa. *Age Ageing*. 2013;42(1):124–128. <https://doi.org/10.1093/ageing/af5119>
- Eleazer GP, McRae T, Knebl J, et al. Core competencies for the care of older patients: Recommendations of the American Geriatrics Society. *Acad Med*. 2000;75(3):252–255. <https://doi.org/10.1097/00001888-200003000-00014>
- Naganathan V. Australian Society for geriatric medicine. Position statement no. 4. Education and training in geriatric medicine for medical students. *Aust J Ageing*. 2006;25(4):218. <https://doi.org/10.1111/j.1741-6612.2006.00196.x>
- Blundell A, Gordon A, Gladman J, Masud T. Undergraduate teaching in geriatric medicine: The role of national curricula. *Gerontol Geriatr Educ*. 2009;30(1):75–88. <https://doi.org/10.1080/02701960802690324>
- Roller-Wimsberger R, Masud T, Vassallo M, et al. European postgraduate curriculum in geriatric medicine developed using an international modified Delphi technique. *Age Ageing*. 2019;48(2):291–299. <https://doi.org/10.1093/ageing/afy173>
- Masud T, Blundell A, Gordon AI, et al. European undergraduate curriculum in geriatric medicine developed using an international modified Delphi technique. *Age Ageing*. 2014;43(5):695–702. <https://doi.org/10.1093/ageing/afu019>
- Geriatrics IAAG. Geriatrics medicine: Basic contents for undergraduate medical students. *IAGG Newsletter*. 2007;18(1):2.
- Frenk J, Chen L, Bhutta ZA, et al. Health professionals for a new century: Transforming education to strengthen health systems in an interdependent world. *Lancet*. 2010;376(9756):1923–1958. [https://doi.org/10.1016/S0140-6736\(10\)61854-5](https://doi.org/10.1016/S0140-6736(10)61854-5)
- Gordon AI, Blundell A, Dhesi JK, et al. UK medical teaching about ageing is improving but there is still work to be done: The Second National Survey of Undergraduate Teaching in Ageing and Geriatric Medicine. *Age Ageing*. 2014;43(2):293–297. <https://doi.org/10.1093/ageing/af1207>
- Antonucci T, Angel J, Michel J. IAGG world-wide report on the elderly care workforce. *Innov Aging*. 2018;2(Suppl 1):196. <https://doi.org/10.1093/geron/igy023.721>
- Frank JR, Danoff D. The CanMEDS initiative: Implementing an outcomes-based framework of physician competencies. *Med Teach*. 2007;29(7):642–647. <https://doi.org/10.1080/01421590701746983>
- Van Heerden B. Effectively addressing the health needs of South Africa's population: The role of health professions education in the 21st century. *S Afr Med J*. 2013;103(1):21–22. <https://doi.org/10.7196/SAMJ.6463>
- Seggie JL. MB ChB curriculum modernisation in South Africa – Growing doctors for Africa. *Afr J Health Prof Educ*. 2010;2(1):8–14.
- Boelen C, Woollard B. Social accountability and accreditation: A new frontier for educational institutions. *Med Educ*. 2009;43(9):887–894. <https://doi.org/10.1111/j.1365-2923.2009.03413.x>
- Naidoo K, Van Wyk J. What the elderly experience and expect from primary care services in KwaZulu-Natal, South Africa. *Afr J Prim Health Care Fam Med*. 2019;11(1):6. <https://doi.org/10.4102/phcfm.v11i1.2100>
- Kelly G, Mrengqwa L, Geffen L. 'They don't care about us': Older people's experiences of primary healthcare in Cape Town, South Africa. *BMC Geriatr*. 2019;19(1):98. <https://doi.org/10.1186/s12877-019-1116-0>
- Govender T, Barnes J. The health status and unmet health needs of old-age pensioners living in selected urban poor communities in Cape Town, South Africa. *J Community Health*. 2014;39(6):1063–1070. <https://doi.org/10.1007/s10900-014-9851-9>
- Harden RM. AMEE Guide No. 21: Curriculum mapping: A tool for transparent and authentic teaching and learning. *Med Teach*. 2001;23(2):123–137. <https://doi.org/10.1080/01421590120036547>
- Balzer F, Hautz WF, Spies C, et al. Development and alignment of undergraduate medical curricula in a web-based, dynamic Learning Opportunities, Objectives and Outcome Platform (LOOP). *Med Teach*. 2016;38(4):369–377. <https://doi.org/10.3109/0142159X.2015.1035054>
- Welsh T, Gordon AI, Gladman J. Comprehensive geriatric assessment – A guide for the non-specialist. *Int J Clin Pract*. 2014;68(3):290–293. <https://doi.org/10.1111/ijcp.12313>
- Kurlowicz L, Wallace M. The mini-mental state examination (MMSE). *J Gerontol Nurs*. 1999;25(5):8–9. <https://doi.org/10.3928/0098-9134-19990501-08>
- Nikolaus T. Research and education in geriatrics at German universities and colleges. *Zeitschrift für Gerontologie und Geriatrie*. 1998;31(4):277–280. <https://doi.org/10.1007/s003910050045>
- Alford CL, Miles T, Palmer R, Espino D. An introduction to geriatrics for first-year medical students. *J Am Geriatr Soc*. 2001;49(6):782–787. <https://doi.org/10.1046/j.1532-5415.2001.49156.x>
- Eskildsen MA, Flacker J. A multimodal aging and dying course for first-year medical students improves knowledge and attitudes. *J Am Geriatr Soc*. 2009;57(8):1492–1497. <https://doi.org/10.1111/j.1532-5415.2009.02363.x>
- Salter EK, Waldron M, Paniagua MA. Early exposure to geriatric care: Developing an undergraduate internship in ethics and geriatric practice. *Int J Med Educ*. 2014;5:15–17. <https://doi.org/10.5116/ijme.52c6.da5e>
- Adelman RD, Capello CF, LoFaso V, Greene MG, Konopasek L, Marzulk PM. Introduction to the older patient: A 'first exposure' to geriatrics for medical students. *J Am Geriatr Soc*. 2007;55(9):1445–1450. <https://doi.org/10.1111/j.1532-5415.2007.01301.x>
- Samra R, Griffiths A, Cox T, Conroy S, Gordon A, Gladman JR. Medical students' and doctors' attitudes towards older patients and their care in hospital settings: A conceptualisation. *Age Ageing*. 2015;44(5):776–783. <https://doi.org/10.1093/ageing/afv082>

36. Mendoza De La Garza M, Tieu C, Schroeder D, Lowe K, Tung E. Evaluation of the impact of a senior mentor program on medical students' geriatric knowledge and attitudes toward older adults. *Gerontol Geriatr Educ.* 2018;39(3):316–325. <https://doi.org/10.1080/02701960.2018.1484736>
37. Thistlethwaite JE. Practice-based learning across and between the health professions: A conceptual exploration of definitions and diversity and their impact on interprofessional education. *Int J Pract Based Learn Health Social Care.* 2016;1(1):15–28. <https://doi.org/10.11120/pblh.2013.00003>
38. Diachun L, Van Bussel L, Hansen KT, Charise A, Rieder MI. 'But I see old people everywhere': Dispelling the myth that eldercare is learned in nongeriatric clerkships. *Acad Med.* 2010;85(7):1221–1228. <https://doi.org/10.1097/ACM.0b013e3181e0054f>
39. Ramklass SS, Butau A, Ntinga N, Cele N. Caring for an ageing population: Are physiotherapy graduates adequately prepared? Part of a special issue: Worldwide. *Educ Gerontol.* 2010;36(10/11):940–950. <https://doi.org/10.1080/03601277.2010.487745>
40. Thomas PA, Kern DE, Hughes MT, Chen BY. Curriculum development for medical education: A six-step approach. John Hopkins University press; 2016.
41. Farrell TW, Shield RR, Wetle T, Nanda A, Campbell S. Preparing to care for an aging population: Medical student reflections on their clinical mentors within a new geriatrics curriculum. *Gerontol Geriatr Educ.* 2013;34(4):393–408. <https://doi.org/10.1080/02701960.2013.830115>

Chapter 7: SYNTHESIS AND CONCLUSIONS

7.1. Introduction

This final chapter provides an overview of the study and summarizes the main findings in response to each research question. The intention is to demonstrate how each manuscript provides evidence to address the gaps in research that were outlined in Chapter 2. The findings that emerged are then examined and discussed in relation to the implications for policy, health professions education and research.

The chapter also synergistically connects the findings from the investigation of each research objective to the overall study aim. It discusses the strengths and limitations of the study. In addition, the potential contribution of the study to the field of medical education inquiry is highlighted and the conclusions are presented.

7.2. Summary of objectives and main findings

The overall aim of this study was to determine how the undergraduate medical curriculum at the UKZN could improve medical students' preparedness to care for older adults. It explored the experiences and expectations of geriatric patients regarding professional health services at primary care level and the knowledge and attitudes of medical students regarding the care of older patients. It also mapped the current UG medical curriculum to identify opportunities to enhance teaching and learning relevant to the care of older adults. Each of these objectives has been achieved and summarized in Table 7.1.

This body of work is described in six chapters. Chapter 1 introduced the rationale for the study and the changing context requiring the review of the medical geriatric curriculum in SA. The chapter also provided the aims and objectives of the study within the conceptual framework used.

Chapter 2 detailed the literature review. The chapter described how the health needs of older adults in SSA are underrepresented in policies, research and education. There was little evidence of interventions to address the health inequities experienced by older populations nor the inclusion of relevant stakeholders in decision making. It also provided an overview of the academic literature on curriculum development and educational strategies in geriatric medical education. As discussed in the chapter, almost all of the published work on geriatric medical education originated from studies conducted in high-income countries. The literature did not provide an adequate examination of undergraduate medical education in geriatric care in SSA and failed to conceptualise curricular approaches suitable for the SSA region. Due to the paucity of

1629 evidence on the age-related health needs of geriatric populations in the SSA region, a scoping review was
1630 proposed, the protocol of which has been published and is included as supplementary file 1.

1631 Chapter 3 provides an overview of the research design, conceptual framework and methodology used. It
1632 provides the rationale for the mixed methods study design that was employed. The details of the research
1633 methods were described, which were also included in the relevant manuscripts. In addition, the ethical
1634 issues related to the research were addressed, including the reflexive positioning of the researcher's role
1635 during the conduct of the study.

1636 Conceptually, the study was framed by Kern et al.'s six-step approach to curriculum development.^[172]
1637 Each of the study objectives represented a step in the curriculum development process and together
1638 addressed the aim of the study. The research objectives entailed identifying and critically analysing the
1639 health problem to be addressed by the curriculum, evaluating the learning needs of medical students and
1640 mapping the current geriatric curriculum. The other steps in the curriculum development model, which
1641 were defining the goals and objectives, implementation and evaluation of the geriatric curriculum, were
1642 outside the scope of this study.

1643 Chapters 4 -6 presented the findings to each of the research objectives in the form of a manuscript. The
1644 details of each paper is tabulated in Table 7.1, outlining how each specific research objective had been
1645 addressed and the main findings of each manuscript.

1646

	Objective	Manuscript	Main Findings
1.	To explore and describe the experiences and perceptions of patients aged 60 years and older regarding the health services at primary care level in KwaZulu-Natal.	Chapter 4 “What the elderly experience and expect from primary healthcare services in KZN”	This publication highlighted the perceived deficits in primary health services provided to geriatric patients. These included a lack of empathy by health professionals, fragmented and disease-centered services, and inappropriate prescribing of medication. Patients expressed the need for compassionate and patient-centered care from health providers, as well as a priority queue for frail patients.
2	To evaluate the knowledge and attitudes of UKZN medical students regarding the medical care of elderly patients.	Chapter 5 “The knowledge and attitudes of final year medical students’ regarding the care of older adults.”	This paper revealed that students displayed a minimal level of geriatric knowledge despite their perceptions of having had adequate exposure to geriatrics in the current curriculum. They held mildly positive attitudes towards the care of elderly patients. Student age and prior qualification, but not gender, was associated with improved knowledge and attitudes. Students expressed challenges with communication with elderly patients. Of note, there was no association between geriatric knowledge and attitudes.

3	To map the geriatric medical curriculum at the UKZN and identify opportunities to enhance current teaching and learning.	Chapter 6 “Preparing medical graduates to care for geriatric patients: A case study of the undergraduate medical curriculum at a South African university”	The findings of the study were that UG medical curriculum at UKZN provides teaching and learning on a wide range of topics relevant to the care of older adults. Teaching is integrated into other modules with no sub-minima in the assessment of geriatric learning objectives. The lack of a national curriculum resulted in gaps in geriatric care competencies, particularly regarding graduate attitudes towards caring for geriatric patients.
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1649

1650 This study advocated for quality healthcare for older adults by highlighting health professions training and
 1651 health systems issues. Greater engagement with the relevant stakeholders is needed to obtain consensus on
 1652 the minimum core competencies for geriatric care. Specialist geriatricians have been the custodians of
 1653 medical geriatric training at post-graduate level in South Africa. However, few medical schools have a
 1654 department of Geriatric Medicine or specialist geriatricians to oversee the geriatric care training of UG
 1655 medical students. Therefore, the inclusion of multiple disciplines is required to successfully implement and
 1656 sustain geriatric care training at undergraduate level. In addition, input from members of the community
 1657 should also be considered. These publications provide relevant information to guide curriculum
 1658 development in geriatric care in South African medical schools.

1659 **7.3. Main Insights of the study**

1660 The following key insights emerged from the study:

- Insights into older patients' perceptions of the professional health services at primary care level, and quality healthcare for older adults.
- Insights into students' learning and attitudes regarding the medical care of older patients.
- Insight into curricular strategies to enhance geriatric care training.

1665

1666 **7.3.1. *Insight into geriatric patients' perceptions of professional medical services***

1667 Older adults in this study associated quality patient care with the display of compassion and interest by
1668 health professionals in the patient as an individual. Their experiences, however, indicated that health
1669 professionals were focused on diagnosing and treating diseases and lacked compassion and respect for older
1670 patients. The participants, who were mainly from previously disadvantaged communities, were acutely
1671 aware of ageist attitudes of health staff and believed that it adversely influenced their healthcare. Their
1672 perceptions are concordant with studies elsewhere that report a high prevalence of ageism among health
1673 professionals and the adverse effect of such attitudes on health outcomes in elderly patients.^[154] Negative
1674 views held by health professionals towards older adults perpetuate the health inequities experienced by the
1675 older population. Most geriatric patients in SA have already been deprived of many basic human rights for
1676 most of their lives and now face discrimination because of their age. Health professionals are respected in
1677 society and therefore ideally positioned to advocate for older people's health by acting as "change agents."
1678 Instead, deficits in professional attitudes are evident from the findings and is an area that requires
1679 improvement.

1680 Another gap noted among health professionals was the inability to provide integrated and coordinated care
1681 to older patients with multiple health conditions. The reluctance of health professionals to comprehensively
1682 address all health concerns of older patients is indicative of the discipline-specific teaching in medical
1683 education that labels and manages patients according to their disease. Despite national policies on integrated
1684 care and putting people first (the DoH motto is "Batho Pele" which means "People First"), service delivery
1685 to patients in the public health sector is still segregated. For successful implementation of the policies,
1686 health professionals must possess skills in interprofessional care and collaboration, as well as demonstrate
1687 a patient-centered approach. Further research should also be conducted into how policies promoting older
1688 people's health can be implemented at the primary care level.

1689 Patients' perceptions of compassion and patient-centered care were mostly derived from verbal and non-
1690 verbal communication during the doctor-patient consultation. Sadly, communication skills among health

1691 professionals were reportedly lacking. Primary care providers provided little information or education
1692 around prescribed treatment resulting in patients having a poor understanding of their medications. Many
1693 of the adverse effects from medications prescribed could have been avoided by improved communication
1694 and collaboration with other health workers such as pharmacists, nurse practitioners and community
1695 caregivers. The presence of functional multi-disciplinary teams at primary care facilities could mitigate the
1696 fragmentation of care reported by older patients. Such units should include occupational therapists,
1697 audiologists, physiotherapists, pharmacists, doctors and nurses. The findings highlight the need for health
1698 professionals to learn how to function as part of a multi-disciplinary team and to focus on providing
1699 integrated and coordinated care to their patients.

1700 Greater attention to communication skills and interprofessional education in the medical curriculum would
1701 undoubtedly address many of the grievances reported by the geriatric patients in this study, and contribute
1702 to developing patient-centredness among medical students.^[166] However, directing more time and attention
1703 to communication skills training and IPE should not occur at the expense of neglecting other core
1704 competencies in geriatric knowledge and skills. As reported in Chapter four, there were significant deficits
1705 noted in the clinical practice of medical practitioners, such as inappropriate prescribing and failure to
1706 recognise adverse effects of medication in older adults. These physician errors may have been attributable
1707 to poor knowledge in the area of geriatric care or the poor application of knowledge. There is an evident
1708 need for continuing medical education for primary care providers who work with older adults. Knowledge-
1709 translation strategies such as interactive education sessions, audits and feedback, could be instrumental in
1710 helping medical professionals to deliver high-quality geriatric care.^[189]

1711 Patient-centered care, as expounded on in Chapter 2, refers to understanding the whole person rather than
1712 a person with an illness.^[168] Teaching patient-centredness to students is at odds with the traditional
1713 biomedical approach in medical training that tends to focus on identifying and treating diseases. A major
1714 shortcoming in current medical education is that students are exposed to patients with mainly acute illnesses
1715 in hospital settings. Such limited experiences in healthcare delivery can negatively influence students'
1716 thinking around the role of a doctor. Expanding the sites of teaching and learning to include community
1717 settings and healthy individuals may heighten student awareness of the value of care and compassion and
1718 addressing patient expectations. Furthermore, other graduate roles outlined in the CanMEDS framework
1719 such as health advocate, communicator and collaborator, can be better developed in partnership with
1720 communities.^[97]

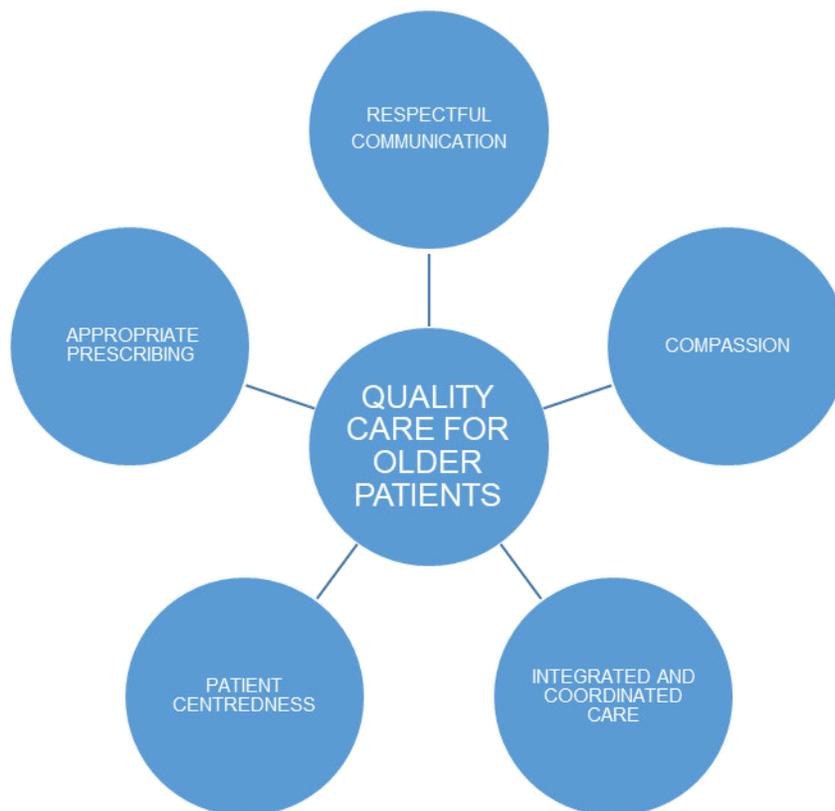
1721 The views of patients, who are the recipients of health services, are relevant to health policies and health
1722 professions education. Lay participation in health care policy and health professions training can increase
1723 professional and government accountability, as well as improve the responsiveness of medical schools to

1724 local community health needs. As much as medical expertise is essential in medical curriculum
1725 development to ensure the inclusion of relevant knowledge and skills, the integration of patient perceptions
1726 and viewpoints can guide curricular strategies to produce graduates who are fit-for-purpose.

1727 Lay people have considerable understanding and expertise around issues such as cultural sensitivity and
1728 patient-centered care, which are particularly problematic for medical educators to convey to medical
1729 students. It would thus be beneficial for medical schools to develop community capacity to participate in
1730 curriculum development. Community members can also contribute directly to student learning, as
1731 evidenced in the Senior Mentor programmes in North America.^[139, 144] The enthusiasm with which older
1732 patients participated in this study leaves no doubt of their ability to express their needs or their willingness
1733 to contribute to reconstructing the current social order.

1734 It is evident that significant reform is required to align current health systems and health professions
1735 education with the health needs and expectations of older adults. The core principles for quality care of
1736 older adults emerged from the engagement with elderly patients and are illustrated in Figure 7.1. These
1737 were compassion, patient-centredness, respectful and effective communication, appropriate prescribing,
1738 and integrated and coordinated care. Older patients appreciate a value-based health service rather than one
1739 that views patients as diseases to be treated. The specific aspects of healthcare in need of improvement are
1740 behavioural and attitudinal attributes in health professionals, coordination of care for older adults with
1741 multiple health conditions and interprofessional care and collaboration. All of these areas contribute to the
1742 delivery of patient-centered health services.

1743



1745

1746 **Figure 7.1. Core principles for quality healthcare of older adults**

1747 Medical professionals are ideally positioned to recognise the shortfalls in the current management of
 1748 geriatric patients and champion the needs of elderly patients. However, they need to understand and
 1749 demonstrate the core values to deliver quality care to older adults, as illustrated in figure 7.1. It is of
 1750 paramount importance that these values are emphasised in the curriculum, and greater initiatives occur
 1751 around interprofessional education. Finally, stakeholder input is central to policies and initiatives aimed at
 1752 improving older person's health.

1753 **7.3.2. Insight into students learning in geriatric care**

1754 The findings from the second objective of this curriculum development study revealed that the geriatric
 1755 knowledge of students was poor and their attitudes towards the care of elderly patients were mildly positive.
 1756 These findings further validate the need to address the geriatric care training of undergraduate medical
 1757 students.

1758 Our findings that students possessed poor knowledge on the care of older patients correlates with studies
1759 from HICs that indicate that medical students have little interest in learning geriatric medicine.^[185, 186] Low
1760 levels of interest may adversely affect student learning in geriatric care competencies. Subsequently, gaps
1761 in geriatric knowledge are likely to translate into poor clinical practice, as reported earlier in this chapter.
1762 Conversely, student interest and learning in geriatric care could provide the impetus for medical students
1763 to advocate for quality healthcare for their older patients.

1764 The Deliberative Curriculum theory, expounded on in Chapter 2, supports the engagement of all
1765 stakeholders in defining and addressing curriculum problems. It is thus relevant to engage with students
1766 around the issue of older person's health in SA and explore ways in which the curriculum can stimulate
1767 student interest and learning around the care of older adults. In this way, it could be possible for medical
1768 students to become "change agents" to redress the health inequities that older adults face in SA.

1769 A key finding was that the majority of students expressed difficulties in communicating with elderly
1770 patients. This finding is espoused by earlier reports that geriatric patients were dissatisfied with the manner
1771 in which health professionals communicate with older patients in primary healthcare facilities.
1772 Communication is a complex skill, particularly in a culturally diverse society as in SA. The considerable
1773 age gap between elderly patients and medical students further widens the cultural divide. The high
1774 prevalence of cognitive and sensory impairments among older adults and the presence of caregivers create
1775 additional difficulties in communicating with older patients. The challenges experienced by students in
1776 communicating with older adults may manifest in perceived disinterest and lack of empathy. Even worse,
1777 it could result in avoidable adverse events among geriatric patients, as evidenced by the drug reactions
1778 experienced by patients. It can, therefore, be concluded that the overall quality of care to older patients will
1779 be improved if medical graduates are equipped with the necessary communication skills to interact
1780 optimally with their older patients.

1781 In contrast to studies from HICs, students in this study demonstrated mildly positive attitudes towards the
1782 care of elderly patients. Positive attitudes towards older adults might be indicative of the influence of socio-
1783 cultural factors on student attitudes. Respect for one's elders is still prevalent in traditional communities in
1784 South Africa. However, our evaluation of positive student attitudes towards the care of older adults does
1785 not correlate with the accounts of poor health professional attitudes towards geriatric patients in this study.
1786 There is seemingly a disconnection between student attitudes and graduate behavior. One explanation for
1787 this is that student attitudes and behavior decline over time, as described in the literature.^[155, 190]

1788 The decline in student attitudes towards the care of older adults has been attributed to negative role-models
1789 during their education. Similarly, the shift in student attitudes towards older adults after graduation could

1790 be due to role-modelling and the organisational culture in health facilities. Public health facilities face
1791 significant challenges in terms of shortages of medical personnel who have to manage large volumes of
1792 patients. The care of elderly patients with multiple health conditions could be viewed as time-consuming
1793 and result in negative attitudes among health professionals. Since many of the behavioural and attitudinal
1794 attributes among students are influenced by the hidden curriculum, greater attention should be directed to
1795 the learning environment to ensure exposure of students to positive role models and good clinical practices
1796 in the care of older adults. An interesting finding was that older students had higher levels of geriatric
1797 knowledge and attitudes towards older adults. Seemingly, older students are more able and willing to care
1798 for older adults than younger students, which could be due to their higher levels of emotional maturity and
1799 experience. This finding has significant connotations for university admissions policies. Many medical
1800 schools reserve a portion of places for graduate students. A positive, if unintended, outcome of the
1801 admission of mature students to the UG medical programme is the potential value that older students could
1802 add to the quality of care for older adults. Further qualitative investigation is warranted into the underlying
1803 factors for student attitudes towards older people.

1804 Overall, the sub-optimal level of student knowledge and attitudes regarding the care of older adults provide
1805 a strong argument for a core curriculum for medical students. However, a core curriculum in geriatric care
1806 does not guarantee that student learning will improve. It is also necessary for health professions educators
1807 to identify the specific learning objectives to be included in the curriculum and ensure that there is
1808 constructive alignment of those learning objectives with the teaching methods and assessments. Students
1809 reported receiving adequate teaching on geriatric topics, yet their learning was poor. Student learning is
1810 dependent not only on the planned curriculum but also intrinsic factors and subjective norms (the hidden
1811 curriculum). It is, therefore, essential for HPEs to address the teaching methods and learning environment
1812 in order to improve student learning.

1813 Having a clearer understanding of student learning in geriatric care, and the factors influencing their
1814 knowledge and attitudes regarding the care of older adults contributes to the emerging body of knowledge
1815 on geriatric care training of health professionals in SSA. Further qualitative investigation is required into
1816 the effect of the hidden curriculum and other factors on student learning in geriatric care.

1817 ***7.3.3. Insight into educational strategies for the enhancement of geriatric care training.***

1818 The mapping of the geriatric curriculum reported on in Chapter 6, provided information on the inclusion of
1819 teaching and assessment relevant to the care of older adults in the UG medical programme. Most of the
1820 teaching occurred in the latter half of the programme and consisted mainly of teacher- and hospital-based
1821 methods. The disjointed coverage of geriatric teaching over the six years is a consequence of different

1822 schools overseeing the pre-clinical and clinical years of the undergraduate medical programme. Better
1823 coordination of the curriculum is needed to ensure improved vertical integration of geriatric relevant
1824 teaching in the programme.

1825 The emphasis in the geriatric curriculum is on the attainment of knowledge and skills, while student
1826 attitudes are not addressed. Values such as compassion and patient-centred care, which are priority concerns
1827 for geriatric patients, are not explicitly taught nor assessed in the curriculum. The lack of emphasis on
1828 student attitudes could be partly due to the complexity of teaching and assessing attitudinal and behavioural
1829 attributes. However, it is necessary to inculcate a patient-centred approach among students to address
1830 patient needs and expectations. Generic principles and values such as patient-centered communication and
1831 compassion could be considered as a “golden thread” that runs throughout the curriculum. The inclusion of
1832 reflective activities in the curriculum are a useful strategy to get students to confront and consider their
1833 perceptions and behaviour, thereby facilitating transformative learning.

1834 The PBL approach adopted by most medical schools has particular strengths and weaknesses in improving
1835 students’ preparedness to care for older adults. The flexibility of PBL curricula allows health professions
1836 educators to introduce new content without significant restructuring of the programme or need for
1837 additional resources. Thus, many SSA medical schools that lack geriatric care training in their UG
1838 programme could integrate teaching and learning on geriatric topics with minimal disruption of the existing
1839 curricula. Furthermore, teaching of geriatric topics could be implemented even without dedicated geriatric
1840 teaching staff. In many HICs, geriatric topics and teaching were included in medical training institutions
1841 without geriatric teaching expertise through the development of appropriate PBL tools relevant to the care
1842 of older adults.[37] The development of minimum core competencies in geriatric care for the SSA region
1843 would greatly assist in guiding such educational initiatives by assisting curriculum committees to identify
1844 specific learning objectives relevant to the care of older adults.

1845 Another strength of PBL curricula, relevant to geriatric care training, is the involvement of teamwork during
1846 the learning process. In a PBL approach, students usually work together in small groups in order to address
1847 the learning objectives.[131] This collaborative approach to learning thus offers the opportunity for
1848 interprofessional education around the care of older adults.[134-136] Geriatrics has been at the forefront of
1849 interdisciplinary care; therefore, IPE is considered particularly relevant to the attainment of geriatric care
1850 competencies. Older adults often present with multiple health conditions, requiring a multi-disciplinary
1851 team approach in order to provide integrated and coordinated care. The findings of this study highlight the
1852 contribution of integrated and coordinated care to patient-centredness and quality care for older adults.
1853 However, despite the opportunity afforded by PBL for IPE, this was not taken advantage of. Further
1854 research is needed to explore the barriers and facilitators of IPE at SSA medical schools.

1855 The mapping of the UG medical curriculum in this study provided a springboard for future initiatives in
1856 IPE on geriatric care as it detailed how medical student training in geriatric care overlaps with that of other
1857 disciplines. Case-based learning, as practiced in PBL curricula, has been successfully used in many medical
1858 schools to develop and implement IPE in geriatric care.[133, 136] The application of case-based learning
1859 to IPE can enhance student competencies relevant to the care of older adults, as well as improve teamwork
1860 skills. It also helps to contextualise theoretical learning and brings patient-centredness to the fore. However,
1861 IPE will require even greater oversight by the curriculum committee and engagement with other disciplines.

1862 A significant shortcoming noted in the current PBL approach is that teaching and learning in geriatrics is
1863 integrated into other modules. While an integrated curriculum is recommended for student-centered
1864 learning, it can potentially undermine the importance of quality care for older adults. Learning objectives
1865 relevant to the care of older adults risk being overshadowed by other learning objectives deemed more
1866 important by students. Furthermore, the lack of independent assessment of geriatric learning objectives also
1867 undermines student learning. Discreet teaching and assessment of geriatric learning objectives improves
1868 learning relevant to the care of older adults.[130] Unfortunately, with the large number of disciplines that
1869 need to be accommodated in the curriculum, it would not be feasible to have a separate module for geriatric
1870 medicine. Hence, a more pragmatic approach would be to address the efficacy of the teaching methods. It
1871 is thus essential that PBL tutors are made aware of the importance of geriatric care in the curriculum and
1872 actively engage with student learning on the learning objectives relevant to the care of older adults.

1873 A specific skill that students reported difficulty with was communicating with older adults. Although
1874 communication skills are included in the medical curriculum, little attention is paid to specific
1875 communication skills needed for older adults with cognitive and sensory impairments. Furthermore,
1876 communication skills training is usually conducted in simulated settings in the pre-clinical courses.[170]
1877 Such training methods do not adequately prepare students to consult with patients in the real-world
1878 environment of health facilities. Integrating teaching and assessment of communication skills with clinical
1879 teaching would provide a more authentic approach to the care of older adults.[191] Communication skills
1880 training is a key educational strategy in developing patient-centred practices in students.[192,193] It should,
1881 therefore, be considered as one of the “golden threads” in the medical curriculum.

1882 An innovative educational strategy that could stimulate student learning in geriatric care is the involvement
1883 of community members in student learning, as with the Senior mentor programme (SMP).[194] Exposure
1884 of students to “real” patients could help align student-driven learning with patient needs. The SMP
1885 programs have demonstrated improved outcomes in student attitudes, knowledge, patient-centredness, and
1886 even interprofessional collaboration. It is clear that increased attention to health systems and community

1887 needs in the UG medical curriculum is essential in order to prepare medical graduates to be fit-for-
1888 purpose.[195]

1889 A core curriculum in geriatric medicine would undoubtedly ensure the inclusion of core competencies
1890 relevant to the care of older adults in UG medical programmes in SA. Such a core curriculum should be
1891 developed through consensus with the relevant stakeholders, such as the South African Geriatric Society,
1892 health professions educators and special interest groups. The recommendations from the IAGG provide a
1893 useful foundation on which to develop minimum core competencies applicable to the SA context. Further
1894 research is needed into the development of a national core curriculum in geriatric care.

1895 **7.4 Theoretical and Philosophical Analysis**

1896 The researcher adopted a pragmatic approach to the analysis of the findings in this study. In Pragmatic
1897 theory the focus is on the purpose and consequences of knowledge.[45] The Deliberative Curriculum
1898 theory, which considers how real teachers will teach real students, fits in with the pragmatic paradigm.[46]
1899 Schwab’s deliberative theory, also referred to as “the practical,” argues that it is necessary to examine the
1900 curriculum within its specific context in order to reach a common understanding of the curriculum problem
1901 and decide on the most appropriate course of action. The findings of this study are interrogated for potential
1902 applications to enhance the geriatric curriculum.

1903 **7.5 Implications of the Study**

1904 A broad range of implications emanated from various aspects of the study and these are presented for their
1905 relevance to policy, education and research.

1906 **7.5.1. Policy**

1907 Countries in Africa, such as South Africa, have made commendable progress in endorsing policies targeted
1908 at improving the lives of the older population, such as the MIPAA and the AU plan.[62] At a national level,
1909 SA has ratified reforms to the health system such as the NHI scheme and Integrated Care Disease
1910 Management (ICDM) programme that could potentially improve the quality of healthcare for older adults.
1911 However, the pace of health reforms are not in keeping with the rapid increase in the number of older adults.
1912 The mindset of policymakers in Africa seemingly reflects the ageist attitudes that are pervasive worldwide.
1913 The development and implementation of policies relevant to Older Person’s health in SSA has involved
1914 little consultation with the relevant stakeholders. Policies such as the NHI, which aim towards Universal
1915 Health Coverage, ignore the specific health needs of older adults, such as the provision of rehabilitation

1916 services at primary care level.[20] As seen in Ghana and other countries in SSA, the elderly have not
1917 benefited from NHI schemes.[196] There is an evident need for governments to engage more actively with
1918 advocates of older people's health when drafting and implementing health policies. When given the
1919 opportunity, older people are capable of articulating and expressing their needs, as evidenced in this study.
1920 One of the recommendations proposed by geriatric patients in this study was to have a priority queue in
1921 health facilities for very old (i.e., >80 years) and frail patients. This is a practical and feasible idea that could
1922 be adopted as a policy by the Department of Health to improve the quality of care to geriatric patients. It
1923 would also be in keeping with the department's "Batho Pele" (people first) motto.

1924 Not only have the health needs of older people been underrepresented in health policies and service
1925 delivery, but they have also been overlooked in higher education.[197] While it is arguably beyond the
1926 reach of the health professions accreditation body to prescribe minimum core competencies to medical
1927 schools, there is no doubt that gaps exist in geriatric care competencies among health professionals in the
1928 absence of such regulations. Accreditation bodies such as the HPCSA have an essential role to play in
1929 helping medical schools prepare their students to meet patient needs. Improved alignment of medical
1930 curricula with societal needs can be accomplished, not by standardizing UG medical curricula, but by
1931 guiding and supporting change and reform.

1932 Currently, the accreditation process of UG medical programmes focuses on academic quality and
1933 institutional integrity.[198] While the principles of quality and integrity promote excellence at an
1934 institutional level, they do not necessarily ensure that graduates are fit-for-purpose. An essential purpose of
1935 the Undergraduate Education and Training sub-committee of the HPCSA is to consider how community
1936 needs can be represented and advocated for during the accreditation process.[199] Unfortunately, despite
1937 successful accreditation of all SA medical schools, there has been little improvement in the quality of
1938 healthcare of marginalized populations, such as elderly and rural communities.[199] Social accountability
1939 of medical schools needs to be higher on the agenda in accreditation policies and procedures.

1940 There is an evident need to advocate for the rights of older people who have been systematically subjected
1941 to health inequities. The publication and distribution of the study findings are intended to help improve the
1942 quality of healthcare services to older adults.

1943 **7.5.2. Education**

1944 It is the primary responsibility of each medical school to develop its UG medical curriculum to respond to
1945 changes in the health system, clinical practice and societal needs. More frequent attention to curriculum
1946 review and development is particularly pertinent in light of the imminent health system restructuring in
1947 South Africa and rapidly changing population health needs. Currently, each medical school in SA develops

1948 its own core curriculum. Since there is no national curriculum for UG medical training nor prescribed
1949 minimum core competencies for medical graduates, medical schools should consider incorporating the
1950 recommendations of specialist bodies when developing their curricula. Globally, most core curricula in
1951 specialist areas have been developed through international and national expert consensus.[203] The
1952 minimum core competencies in geriatric care for medical students in most HICs were based on evidence-
1953 based expert-validated curricula outlining learning outcomes in geriatric medicine. Documents, such as the
1954 “Keeping Granny Safe” competencies in the USA and the Recommended Curriculum for Undergraduate
1955 Teaching specified by the British Geriatrics Society (BGS), have been well received by medical schools in
1956 their countries. The uptake of recommended core competencies in geriatric medicine by medical schools
1957 has resulted in significant improvements in undergraduate learning in ageing and geriatric medicine in those
1958 countries.[95]

1959 In contrast, few specialist bodies in South Africa have developed core competencies for medical graduates
1960 in their field. There have been some initiatives such as consensus on core competencies for Family Medicine
1961 registrars by a Delphi consensus, but none for the UG medical curriculum, and none addressing geriatric
1962 care.[204] The recommendations of the IAGG provide a useful foundation to develop minimum core
1963 competencies in geriatric care.[93] Specialist geriatricians have been the custodians of medical geriatric
1964 training at post-graduate level in South Africa. However, in order for geriatric care training to be sustainable
1965 at undergraduate level there is a need for the involvement of multiple disciplines in the development of the
1966 curriculum and training. The input of primary care providers and community stakeholders is also crucial in
1967 developing the final document on core geriatric care competencies for medical graduates.

1968 As seen during the COVID-19 pandemic, medical schools can respond swiftly and effectively with
1969 curriculum changes when compelled to by external factors.[200] However, medical schools should also be
1970 intrinsically motivated to review their curriculum regularly as part of institutional quality assurance and to
1971 ensure that the programme remains relevant and contemporary. The institution’s curriculum committee or
1972 health professions unit that is responsible for steering the curriculum development process must have the
1973 support of the school’s management and be delegated with the appropriate authority to coordinate and
1974 oversee curriculum review and development. Ideally, the committee should consist of individuals with
1975 experience and training in health professions education. It is thus essential for the leadership of the
1976 institution to invest in upskilling staff and establishing a functional health professions education unit.

1977 There are multiple post-graduate courses in Health Professions Education that can improve the capacity of
1978 faculty to conduct curriculum review and development. Of note is the Sub-Saharan Africa-FAIMER
1979 Regional Institute (SAFRI), “a two-year fellowship program for health professions faculty who have the
1980 potential to improve medical education at their schools”.[201] By being part of a network of like-minded

1981 health professions educators, SAFRI fellows can promote evidence-based medical and health professions
1982 education in their institutions. Staff with expertise in health professions education can then drive faculty
1983 development initiatives to improve staff's understanding of curriculum development.

1984 The study identified a need for training of module coordinators regarding the electronic curriculum
1985 platform, LOOOP. The reliability of the data on LOOOP is dependent on the input of individual module
1986 coordinators. In this study, gaps were noted in some of the teaching activities recorded on LOOOP.
1987 Additional information was extracted from student and facilitator guides to address gaps on the electronic
1988 curriculum platform, and augmented by interviews with the module coordinators themselves. The use of
1989 the electronic curriculum platform, LOOOP, for curriculum mapping was a novel methodology, and has
1990 the potential to enhance future curriculum studies. Further investigation should be conducted into other
1991 applications for the software, and curriculum mapping in SSA.

1992 At meta-level, educational institutions that produce medical graduates need to establish links with the
1993 communities they serve. In doing so, independent and original educational strategies can emerge that will
1994 enable such institutions to decolonise their curriculum. Medical schools should thus engage with and invite
1995 input from relevant stakeholders during the curriculum review process. These should include community
1996 representatives, health department officials, students and special interest groups. In the past, poor
1997 collaboration between the medical schools and the health sector created a divide between medical education
1998 and patient services. Similarly the investigation into elderly patients' perceptions of professional health
1999 services, described in chapter 4, revealed the gaps between patient expectations and graduate behavior. The
2000 mission statement of the UKZN states that it is "critically engaged with society." The institution should
2001 formalise this sentiment by including community representatives and other stakeholders on university
2002 curriculum review boards. Students, who are the recipients of the curriculum, should also be included in
2003 the deliberations on curriculum development, as commended in Schwab's deliberative curriculum
2004 theory.[46]

2005 The study expounded on the advantages of integrated and PBL curricular designs in enhancing medical
2006 geriatric care training. However, the committee tasked with leading the curriculum review must pay
2007 attention to the vertical and horizontal integration of teaching and learning relevant to the care of older
2008 adults throughout the programme. Poor coordination of the UG medical programme can lead to poor
2009 distribution of teaching over the course of study, as revealed in the investigation of the geriatric curriculum
2010 reported on in Chapter 6. Most of the teaching on geriatric topics occurred in the latter half of the
2011 programme. By including more teaching on geriatric topics in the pre-clinical years, student learning can
2012 be improved. Students demonstrate improved attitudes towards older adults when exposed to geriatric
2013 teaching early in their training.[202]

2014 The PBL approach is an appropriate and effective curriculum design to improve medical student
2015 preparedness to care for older adults. However, the poor knowledge demonstrated by students raise
2016 concerns about attainment of the planned geriatric learning objectives. An important driver of student
2017 learning is assessments. The inclusion of a sub-minima in the geriatric component of modules is strongly
2018 recommended to stimulate student interest in this area. Another strategy to improve learning outcomes is
2019 to have a core curriculum outlining minimum core competencies in geriatric care. Furthermore, the core
2020 curriculum should emphasise the ideal values that a medical graduate should possess to provide healthcare
2021 to older adults.

2022 A weakness of competency-based education is that discrete competencies are assessed, often overlooking
2023 attainment of important professional attributes in graduates. The prescribed learning objectives relevant to
2024 the care of older adults did not adequately address the five key principles identified for quality care of older
2025 adults i.e. compassion, patient-centredness, appropriate communication, appropriate prescribing, and
2026 integrated and coordinated care. (Illustrated in Figure 7.1.). Teaching and assessment of learning objectives
2027 relevant to the care of older adults mainly addressed student knowledge and skills, but not student attitudes.
2028 Thus, the UG medical curriculum did not adequately address the health needs and expectations of older
2029 adults.

2030 The findings of this study highlighted the importance of a patient-centred approach to the care of older
2031 adults. Patient-centredness is a generic principle that needs to be incorporated into the curriculum as a
2032 “golden thread.” The Core graduate competencies for Health Care Professionals at UKZN (figure 2.1.)
2033 encompasses the principle of patient-centredness, but does not explicitly outline this concept. Further
2034 deliberation is needed to develop a uniform agreed-upon framework to inculcate a patient-centred approach
2035 among students. Patient-centredness could thus potentially be a professional characteristic of the UKZN
2036 medical graduate.

2037 Since the study identified communication skills as a core principle in quality healthcare of older adults,
2038 specific learning objectives relevant to communicating with older adults should be formulated and
2039 implemented in the curriculum. The teaching and assessment of communication skills should also include
2040 the exposure of students to older adults in ambulatory settings, and feedback to students by patients. This
2041 could be effected by integrating communication skills training with clinical teaching to provide authentic
2042 learning environments, instead of limiting teaching and assessment of communication skills to pre-clinical
2043 courses.[191] Educational strategies such as communication skills training and community-based education
2044 will reinforce attention to patient-centredness in the curriculum.[192,193]. Furthermore, teaching and
2045 assessment methods should be diversified to include empathy-building activities and interprofessional

2046 education. Although there is some evidence from HICs on pedagogies that address student attitudes towards
2047 the care of older adults, there has been little research conducted in the SSA region.

2048 One major conclusion of the study was that there is inadequate interprofessional education in the UG
2049 medical curriculum. Opportunities do exist for the involvement of other health disciplines in teaching
2050 medical students, such as the teaching on dementia by occupational therapists. However, this is an isolated
2051 teaching event not reinforced elsewhere. The PBL approach provides ample opportunity to include learning
2052 objectives relevant to interprofessional care and practice, and capitalize on the collaborative learning
2053 approach.

2054 However, foreseeable challenges to implementing IPE include planning of logistics and the lack of expertise
2055 among HPEs.[152] Faculty development is thus required to capacitate health professions educators to
2056 develop and implement models of IPE that are suitable for the local context. A useful strategy would be to
2057 identify “champions” in the different disciplines to drive institutional change around interprofessional
2058 education. The process of curriculum mapping can also facilitate IPE by identifying common areas of
2059 teaching and learning in the different health professions programmes. Similar studies in other health
2060 professions, such as nursing, pharmacy, and occupational therapy, are thus also needed. An investigation
2061 into shared geriatric care competencies in the medical and nursing curricula identified several areas for
2062 shared learning (supplementary file B). Professional accreditation bodies can add impetus to the
2063 implementation of IPE by agreeing on interprofessional collaborative practice as a common exit outcome
2064 for all health professions programmes.

2065 One of the most notable educational initiatives in medical geriatric training is the Senior Mentor
2066 programmes. In this programme, pairing students with ambulant older adults in community settings
2067 produced several positive outcomes regarding student attitudes towards the care of older adults. These
2068 included developing a more patient-centered approach to the care of older adults, increased willingness to
2069 work with elderly patients, and improved empathy. Community-based programmes are feasible for low-
2070 resource settings such as SSA as they do not increase teaching time and do not require any geriatric teaching
2071 faculty. The involvement of volunteers from the community will also help improve partnerships between
2072 the university and the community. These volunteers would also develop insight into undergraduate medical
2073 training and thus be able to provide valuable input into the curriculum review process.

2074 Developing compassion and patient-centredness in students requires careful consideration of transformative
2075 learning. Transformative learning activities such as self-reflective journaling and small-group discussions
2076 can be effective in enabling students to confront their perceptions towards older adults, critically analyse
2077 them and reframe those perceptions.[161] Targeting student attitudes is especially important to halt the

2078 decline in their attitudes towards older adults and reverse ageist attitudes. The context of learning also
2079 influences student perceptions.

2080 The limited exposure of students to older adults mainly in hospitals does not reflect the context in which
2081 most medical practitioners will care for older adults. Hospital-based teaching reinforces negative
2082 perceptions of older adults and promotes a disease-centred approach to patients. Greater emphasis is needed
2083 on preparing students to work at primary care level and in communities as proposed in the NHI scheme.
2084 The curriculum should therefore incorporate teaching on health policies and programmes relevant to clinical
2085 practice such as the Integrated Chronic Disease Management programme. Also, more student teaching and
2086 learning should occur in authentic work settings such as primary health facilities and in the community.
2087 Exposure to ambulant community-dwelling older adults can increase students' awareness of patient
2088 expectations and has been shown to positively influence student attitudes towards older adults as well as
2089 develop patient-centredness among students.[139-142]

2090 The findings led to the development of an "Action Plan" for preparing medical students at the UKZN to
2091 care for older adults. (Table 7.2.)

2092

2093 **Table 7.2. Action Plan to prepare medical students to care for older adults**

1	Faculty development focused on Interprofessional Education and patient-centred care.
2	Develop and implement model for Interprofessional Education.
3	Periodic curriculum review, including curriculum mapping.
4	Inclusion of community members on curriculum review board.
5	Apply sub-minima in the assessment of geriatric learning objectives.
6	Consensus on and adoption of core competencies in geriatric care.
7	Communication skills training to address unique communication challenges in older adults.
8	Exposure to ambulant older adults in the community and at primary healthcare level.
9.	Develop and implement tools to teach and assess behavioural and attitudinal attributes in students.
10	Incorporate “patient-centredness” as a golden thread in the UG medical curriculum
11	A conscious effort to address the learning environment/the hidden curriculum.

2094

2095 The recommendations tabled above will be proposed to the UKZN Teaching and Learning committee and
2096 the curriculum review committee/health professions unit. This will be accompanied by applications for
2097 funding of faculty development workshops on IPE.

2098 **7.5.3. Future Research**

2099 The slow pace at which policies relevant to the care of older adults has been implemented are concerning.
2100 Researchers in public health should examine the barriers and facilitators for policies such as the NHI and
2101 ICDM programme, and examine the responses of older populations to these policies. One of the factors
2102 contributing to the poor implementation of policies for older people is the lack of evidence on the health
2103 needs of older populations in this region.[205] This body of work highlighted the gaps in literature on older
2104 person's health in SA. It also revealed the disparity between the health needs of older adults and health
2105 service delivery at primary care level in one province. Until recently, governments in SSA only collected
2106 health-related statistics on children under five years and pregnant women, thereby excluding older adults
2107 from consideration in health policies. Even now, most researchers still classify people in Africa aged 50
2108 years and older as older adults, and do not consider the specific health services required by those of
2109 advanced age. In an attempt to address the information gap a scoping review was proposed on the age-
2110 related health conditions among older populations in SSA. The protocol for the scoping review has been
2111 developed and published and is included as supplementary file A.

2112 One way to address the lack of research on older people in SSA is for institutions of higher education to
2113 include gerontology and geriatric training into the curricula of professional programmes.[197] Older
2114 peoples' health is an issue that requires transdisciplinary and intersectorial collaboration – including social
2115 work, public health, law, and humanities. It is therefore of importance to investigate how older people's
2116 health is addressed in other professional programmes. Findings from curriculum mapping studies, as
2117 evidenced in this body of work, can identify potential opportunities for shared learning. Greater research is
2118 needed into how models for IPE, such as case-based learning, can be adapted for local universities. The
2119 Senior Mentor programme, in particular, offers a low-cost community-based model for professional
2120 education and should be explored further.

2121 This study adds to the body of knowledge on medical geriatric education in SSA. Due to the absence of
2122 national curricula and minimum prescribed core competencies, studies are needed in other SSA medical
2123 schools to compare geriatric care training. This will help to provide a wider understanding of geriatric
2124 medical education in this region. Research into the development of core competencies for geriatric care is
2125 needed to inform future curriculum development.

2126 The findings of this study provided useful evidence on student learning in geriatric care, some of which
2127 requires further investigation. The areas recommended for future research include the hidden curriculum
2128 and its effect on student learning, a qualitative analysis of older students' preparedness to care for older
2129 adults, and the discordance between student geriatric knowledge and attitudes. In addition, the development
2130 and implementation of an IPE model for geriatric care model should be explored.

2131 **7.6. Study contributions**

2132 This study contributes to the body of knowledge on older persons' health and geriatric medical training in
2133 the SSA region. It presents a critique of the primary healthcare services for older adults from the
2134 perspective of older patients, and conceptualizes the core values regarded by older patients to represent
2135 quality healthcare. By providing a patient perspective it presents empirical evidence to inform
2136 recommendations to improve primary health services for older adults. It thereby advocates for older
2137 person's health by highlighting areas for health systems strengthening and health professions training.

2138 The study also provided information on the level of knowledge and attitudes of students regarding the
2139 care of elderly patients, which sheds insight into student learning in geriatric care. Having a clearer
2140 understanding of student learning in geriatric care, and the associated factors contributes to the emerging
2141 body of knowledge on geriatric care training of health professionals in SSA. The finding that older
2142 students are seemingly better prepared to care for older adults has implications for the admissions policies
2143 of medical schools, and highlights a need for further research into the factors influencing student attitudes
2144 towards older adults.

2145 This is the first known study to map the geriatric curriculum at a SSA medical school, and provides a
2146 benchmark for health professions educators in this region to review their own curricula. While researchers
2147 have remarked on the general lack of data from SSA regarding geriatric medical education, this study
2148 highlighted specific gaps and recommends areas for future research. These include an exploration into IPE
2149 models and partnerships with the community. The action plan that emanated from this study is intended to
2150 guide the development of the geriatric medical curriculum at UKZN and possibly other SSA medical
2151 schools.

2152 The paucity of data on geriatric populations in SSA described in this study resulted in the development and
2153 publication of a protocol for a scoping review of the age-related health needs of geriatric populations in
2154 SSA.^[206] Health inequities among older adults in SSA are partly due to the low priority afforded to them by
2155 researchers and governments. Findings from the investigation into geriatric patients highlighted some of

2156 the barriers that elderly patients experience when accessing health services, and provides recommendations
2157 to improve the quality of care provided by primary healthcare providers.

2158 The mapping of the geriatric curriculum provided insight into the use of the electronic curriculum platform,
2159 LOOOP, and will assist future curriculum reviews. The necessity of mapping individual components in an
2160 integrated curriculum was also highlighted by the gaps in vertical integration of geriatric topics. This study
2161 explored the strengths and weaknesses of current curricular approaches and identified opportunities to better
2162 prepare medical graduates to care for older adults. Of note was the poor correlation between prescribed
2163 learning objectives and the health needs expressed by geriatric patients. There was an emphasis on the
2164 attainment of student knowledge and skills, and a neglect of core values such as patient-centredness and
2165 compassion. Greater initiatives will be required by medical schools to engage with the communities they
2166 serve in order to respond appropriately to their needs.

2167 The poor knowledge of students suggests that graduates will require continuing medical education in
2168 geriatric care to improve their ability to care for older adults. The gaps in training identified in this study
2169 should contribute to the development of teaching material for continuing medical education on the care of
2170 older adults. Public health programmes such as the ICDM need to be accompanied by in-service training
2171 of health staff.

2172 Most medical schools, despite claims of stakeholder engagement, do not include community representatives
2173 when reviewing their curricula. Furthermore, there is insufficient collaboration between the ministries of
2174 health and education resulting in a gap between professional education and health services.^[104, 105] Greater
2175 attention to health systems and community needs in the UG medical curriculum is essential in order to
2176 prepare medical graduates to be fit-for-purpose.^[195]

2177 Overall, this study has provided insight into the role of health professions education in improving the quality
2178 of healthcare for older adults in the SSA context. With this new understanding it is necessary to apply the
2179 curricular strategies conceptualized by this study to enhance current geriatric care training of UG medical
2180 students. The study advocates for quality health services for older adults by addressing the geriatric training
2181 of undergraduate medical students and draws attention to areas of the health system in need of
2182 strengthening.

2183 **7.7. Study strengths and limitations**

2184 Since a case study approach was used to map the geriatric curriculum, the findings and implications are
2185 context specific. However, a high level of trustworthiness and validity was ensured in the study by making
2186 use of original module handbooks in addition to the web-based curriculum platform. Analyses of other

2187 medical schools in SSA with similar UG medical curricula may reveal similar results. To my knowledge,
2188 this is the first study of the medical geriatric curriculum at a SSA medical school and provides a benchmark
2189 for other researchers.

2190 The use of an electronic curriculum for data collation is a novel methodology in curriculum studies.
2191 However, omissions were noted on the electronic curriculum platform, which was subsequently addressed
2192 by supplementing data from student and tutor study guides and interviews with HPEs.

2193 This study was conducted at a single medical training facility in SSA. This was due to the feasibility of the
2194 study and to provide a more in-depth analysis of the medical geriatric curriculum in the province. Since the
2195 UG medical curriculum is not standardized the findings from this study are not generalizable to the other
2196 SA medical schools.

2197 A limitation of the student survey was that, despite the good response rate, it is uncertain how the non-
2198 responders could have influenced the results of the data. Students with the least interest in geriatric medicine
2199 are most likely to have been non-participants.

2200 Another limitation was the small sample size of health professions educators interviewed in the study (n=5).
2201 Due to the feasibility of the study it was not possible to sample HPEs from all departments. Therefore, the
2202 most information-rich participants were selected.

2203 The main strength of this study was that it covers one of the first attempts to conceptualise geriatric care
2204 training of medical students in SSA. Importantly, the findings from this body of work can be used stimulate
2205 geriatric training and curriculum development studies in the SSA region.

2206 **7.8. Future research directions**

2207 The following are recommended for future research:-

2208 1. A scoping review on the age-related health needs of geriatric populations in SSA. (A protocol for a this
2209 was developed and published by the candidate- supplementary file 1)

2210 2. Quantitative and qualitative research on the unmet health needs of community-dwelling older adults in
2211 South Africa to identify how Universal Health Coverage can be achieved.

2212 3. A qualitative inquiry into students' learning on the care of older adults, including the influence of the
2213 hidden curriculum, could help deepen understanding of the knowledge gaps or barriers medical students
2214 encounter in their training.

- 2215 4. Research involving relevant stakeholders in order to reach a consensus on the minimum core
2216 competencies for medical graduates in SSA.
- 2217 5. Research on the geriatric curricula in other SSA medical schools is needed to add to the body of research.
- 2218 6. Feasibility studies are needed on the development and implementation of patient-centred pedagogies in
2219 the UG medical curriculum at UKZN, including an interprofessional education model for geriatric care
2220 training of health professionals.
- 2221 8. Research on the barriers and facilitators for IPE at the UKZN.
- 2222 9. Health systems strengthening research is also required to improve the coordination of care for older adults
2223 at primary healthcare level.
- 2224 10. Research on the geriatric learning needs of medical practitioners working with older adults will inform
2225 the design of continuing professional development programmes in the care of older adults.

2226 **7.9. Conclusions**

2227 This study highlights the pivotal role of Colleges of Health Sciences in redressing the health inequities
2228 experienced by older adults. It affirmed the need for health professions educators to improve geriatric care
2229 education and training of health professionals. An exploration of primary health services from the
2230 perspectives of patients aged 60 years and older revealed that the care of older patients was perceived to be
2231 fragmented and “disease-centered”. The core values identified for quality care of older adults were
2232 compassion, respectful communication, appropriate prescribing, patient-centred care and coordinated and
2233 integrated service provision. A supplementary exploration between the medical and nursing curricula
2234 revealed opportunities for possible collaboration. The study also recognized a need for increased attention
2235 to behavioural and attitudinal attributes in health professions training.

2236 The investigation into the medical curriculum revealed inclusion of teaching and learning relevant to the
2237 care of older adults in almost all years of study. However, only student knowledge and skills were targeted
2238 and not attitudes. Teaching and learning on the care of older adults occurred in hospital settings, and there
2239 was an absence of interprofessional education in the programme. Despite student perceptions of adequate
2240 exposure to geriatric medicine, they displayed poor knowledge and mildly positive attitudes towards the
2241 care of elderly patients. Reasons for students’ poor learning in geriatric care could be their limited exposure
2242 to older adults at primary care and community level, poor role-modelling and the lack of sub-minima in the
2243 assessment of learning objectives relevant to the care of older adults. The findings highlighted the need for

2244 engagement with relevant stakeholders to reach consensus on the minimum core competencies relevant to
2245 the care of older adults.

2246 Overall, the findings suggest that communication skills training is fundamental to improving the quality of
2247 care to older adults. The study thus recommends that specific learning objectives relevant to communicating
2248 with older adults are taught and assessed. Furthermore, patient-centredness should be incorporated into the
2249 curriculum as a “golden thread.” The problem-based learning approach of the curriculum offers
2250 opportunities for team-based learning and interprofessional education around the care of older adults. Such
2251 learning would improve the capacity of health professionals to collaborate to provide integrated and
2252 coordinated care to their older patients. In addition, students should learn how to care for their older patients
2253 from older adults in the community. The Senior Mentor programme, a community-based educational
2254 initiative which pairs students with community-dwelling older patients, offers a cost-effective model to
2255 improve student learning, as well as improve patient-centredness.

2256 One major conclusion from this study highlighted the need for regular curriculum review and the benefits
2257 of the curriculum mapping process. The views of patients, as recipients and stakeholders of health services,
2258 are relevant to health policies and health professions education, and should thus be included in the processes
2259 of policy making and curriculum development. The curriculum review board should therefore include
2260 community representatives. The results of the study has implications for policy, education and research.

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REFERENCES

- 2263
- 2264
- 2265 1. Kalula SZ. The quality of health care for older persons in South Africa : is there quality care? :
2266 conference paper. *ESR Review : Economic and Social Rights in South Africa*. 2011;12(1):22-
2267 5.<https://hdl.handle.net/10520/EJC33376>
- 2268 2. Lloyd-Sherlock P. Primary Health Care and Older People in the South: A Forgotten Issue. *The*
2269 *European Journal of Development Research*. 2004;16(2):283-
2270 300.<https://doi.org/10.1080/0957881042000220822>
- 2271 3. Peltzer K, Phaswana-Mafuya N, Pengpid S. Rural–urban health disparities among older adults in
2272 South Africa. 2019. 2019;11(1).10.4102/phcfm.v11i1.1890
- 2273 4. Govender T, Barnes J. The Health Status and Unmet Health Needs of Old-Age Pensioners Living
2274 in Selected Urban Poor Communities in Cape Town, South Africa. *Journal of Community Health*.
2275 2014;39(6):1063-70.10.1007/s10900-014-9851-9
- 2276 5. Coovadia H, Jewkes R, Barron P, Sanders D, McIntyre D. The health and health system of South
2277 Africa: historical roots of current public health challenges. *The Lancet*. 2009;374(9692):817-34,
2278 [https://www.thelancet.com/journals/lancet/article/PIIS0140-6736\(09\)60951-X/fulltext](https://www.thelancet.com/journals/lancet/article/PIIS0140-6736(09)60951-X/fulltext)
- 2279 6. Mayosi BM, Benatar SR. Health and health care in South Africa—20 years after Mandela. *New*
2280 *England Journal of Medicine*. 2014;371(14):1344-53,
2281 <https://www.nejm.org/doi/pdf/10.1056/NEJMSr1405012?articleTools=true>
- 2282 7. Aboderin I. Understanding and advancing the health of older populations in sub-Saharan Africa:
2283 policy perspectives and evidence needs. *Public Health Reviews*. 2010;32(2):357,
- 2284 8. Goepfel C, Frenz P, Tinnemann P, Grabenhenrich L. Universal health coverage for elderly
2285 people with non-communicable diseases in low-income and middle-income countries: a cross-sectional
2286 analysis. *The Lancet*. 2014;384:S6.[https://doi.org/10.1016/S0140-6736\(14\)61869-9](https://doi.org/10.1016/S0140-6736(14)61869-9)
- 2287 9. Peltzer K, Phaswana-Mafuya N. Patient experiences and health system responsiveness among
2288 older adults in South Africa. *Global Health Action*. 2012;5(1).<https://doi.org/10.3402/gha.v5i0.18545>
- 2289 10. Kelly G, Mrengqwa L, Geffen L. “They don’t care about us”: older people’s experiences of
2290 primary healthcare in Cape Town, South Africa. *BMC geriatrics*. 2019;19(1):98,
2291 https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6449977/pdf/12877_2019_Article_1116.pdf
- 2292 11. Peltzer K, Phaswana-Mafuya N. Patient experiences and health system responsiveness among
2293 older adults in South Africa. *Glob Health Action*. 2012;5:1-11.10.3402/gha.v5i0.18545
- 2294 12. Saka SA, Oosthuizen F, Nloto M. Potential inappropriate prescribing and associated factors
2295 among older persons in Nigeria and South Africa. *Int J Clin Pharm*. 2019;41(1):207-14.10.1007/s11096-
2296 018-0770-1
- 2297 13. Ralston M, Schatz E, Naidoo N, Kowal P. Including Older Adults in Development Goals: Is
2298 Subjective Wellbeing the Answer? A Case Study of Older South Africans. *Journal of Development*
2299 *Studies*. 2018;54(4):702-18.10.1080/00220388.2017.1311406
- 2300 14. UNFPA H. Ageing in the twenty-first century: a celebration and a challenge. London: United
2301 Nations Population Fund. UNFPA), New York, and HelpAge International; 2012.
- 2302 15. Frost L, Liddie Navarro A, Lynch M, Campbell M, Orcutt M, Trelfa A. Care of the elderly:
2303 survey of teaching in an aging sub-Saharan Africa. *Gerontol Geriatr Educ*.
2304 2015;36.<https://www.tandfonline.com/doi/pdf/10.1080/02701960.2014.925886>

- 2305 16. Chopra M, Lawn JE, Sanders D, Barron P, Karim SSA, Bradshaw D, et al. Achieving the health
2306 Millennium Development Goals for South Africa: challenges and priorities. *The Lancet*.
2307 2009;374(9694):1023-31, [https://doi.org/10.1016/S0140-6736\(09\)61122-3](https://doi.org/10.1016/S0140-6736(09)61122-3)
- 2308 17. Health SANDo. White Paper: National Health Insurance Policy – Towards Universal Health
2309 Coverage. . Pretoria: NDoH2017.
- 2310 18. Mofolo N, Heunis C, Kigozi GN. Towards national health insurance: Alignment of strategic
2311 human resources in South Africa. *African journal of primary health care & family medicine*.
2312 2019;11(1):1-7. <http://dx.doi.org/10.4102/phcfm.v11i1.1928>
- 2313 19. Shisana O, Rehle T, Simbayi L. South African national HIV prevalence, HIV incidence,
2314 behaviour and communication survey, 2005: HSRC press; 2005.
- 2315 20. Ned L, Cloete L, Mji G. The experiences and challenges faced by rehabilitation community
2316 service therapists within the South African Primary Healthcare health system. *African Journal of*
2317 *Disability (Online)*. 2017;6:1-11. <http://dx.doi.org/10.4102/ajod.v6i0.311>
- 2318 21. Kautzky K, Tollman SM. A perspective on Primary Health Care in South Africa: Primary Health
2319 Care: in context. 2008. Report No.: 1025-1715 Contract No.: 1.
- 2320 22. Rabie T, Klopper HC. Guidelines to facilitate self-care among older persons in South Africa.
2321 *Health SA Gesondheid Health SA Gesondheid*. 2015;20(1):33-44. <https://doi.org/10.4102/hsag.v20i1.918>
- 2322 23. Marengoni A, Angleman S, Melis R, Mangialasche F, Karp A, Garmen A, et al. Aging with
2323 multimorbidity: a systematic review of the literature. *Ageing research reviews*. 2011;10(4):430-
2324 9. <https://doi.org/10.1016/j.arr.2011.03.003>
- 2325 24. Mahomed OH, Asmall S. Professional nurses' perceptions and experiences with the
2326 implementation of an integrated chronic care model at primary healthcare clinics in South Africa.
2327 *Curationis*. 2017;40:1-6, [http://www.scielo.org.za/scielo.php?script=sci_arttext&pid=S2223-
2328 62792017000100006&nrm=iso](http://www.scielo.org.za/scielo.php?script=sci_arttext&pid=S2223-62792017000100006&nrm=iso)
- 2329 25. Chang AY, Gómez-Olivé FX, Payne C, Rohr JK, Manne-Goehler J, Wade AN, et al. Chronic
2330 multimorbidity among older adults in rural South Africa. *BMJ global health*. 2019;4(4):e001386,
2331 <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6688670/pdf/bmjgh-2018-001386.pdf>
- 2332 26. Abudu-Birresborn D, McCleary L, Puts M, Yakong V, Cranley L. Preparing nurses and nursing
2333 students to care for older adults in lower and middle-income countries: A scoping review. *International*
2334 *Journal of Nursing Studies*. 2019;92:121-34. <https://doi.org/10.1016/j.ijnurstu.2019.01.018>
- 2335 27. Collaborative IE. Core competencies for interprofessional collaborative practice: 2016 update.
2336 Washington, DC: Interprofessional Education Collaborative. 2016:1-9
- 2337 28. Zeiss AM, Steffen AM. Interdisciplinary health care teams: The basic unit of geriatric care. 1996,
- 2338 29. Sunguya BF, Hinthong W, Jimba M, Yasuoka J. Interprofessional education for whom?—
2339 challenges and lessons learned from its implementation in developed countries and their application to
2340 developing countries: a systematic review. *PloS one*.
2341 2014;9(5). <https://doi.org/10.1371/journal.pone.0096724>
- 2342 30. Beard JR, Officer A, de Carvalho IA, Sadana R, Pot AM, Michel J-P, et al. The World report on
2343 ageing and health: a policy framework for healthy ageing. *The Lancet*. 2016;387(10033):2145-54,
2344 <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4848186/pdf/nihms-737759.pdf>
- 2345 31. de Carvalho IA, Epping-Jordan J, Pot AM, Kelley E, Toro N, Thiyagarajan JA, et al. Organizing
2346 integrated health-care services to meet older people's needs. *Bulletin of the World Health Organization*.
2347 2017;95(11):756,

- 2348 32. Kirk H. Geriatric medicine and the categorisation of old age; the historical linkage. *Ageing &*
2349 *Society*. 1992;12(4):483-97.<https://doi.org/10.1017/S0144686X00005286>
- 2350 33. Robbins TD, Crocker-Buque T, Forrester-Paton C, Cantlay A, Gladman JR, Gordon AL.
2351 Geriatrics is rewarding but lacks earning potential and prestige: responses from the national medical
2352 student survey of attitudes to and perceptions of geriatric medicine. *Age and ageing*. 2011;40(3):405-8,
2353 <https://academic.oup.com/ageing/article/40/3/405/21597>
- 2354 34. Hughes NJ, Soiza RL, Chua M, Hoyle GE, MacDonald A, Primrose WR, et al. Medical student
2355 attitudes toward older people and willingness to consider a career in geriatric medicine. *Journal of the*
2356 *American Geriatrics Society*. 2008;56(2):334-8, [https://onlinelibrary.wiley.com/doi/abs/10.1111/j.1532-](https://onlinelibrary.wiley.com/doi/abs/10.1111/j.1532-5415.2007.01552.x)
2357 [5415.2007.01552.x](https://onlinelibrary.wiley.com/doi/abs/10.1111/j.1532-5415.2007.01552.x)
- 2358 35. Hafferty FW. Beyond curriculum reform: confronting medicine's hidden curriculum. *Academic*
2359 *medicine: journal of the Association of American Medical Colleges*. 1998;73(4):403-7,
- 2360 36. Meiboom A, Diedrich C, Vries HD, Hertogh C, Scheele F. The Hidden Curriculum of the
2361 Medical Care for Elderly Patients in Medical Education: A Qualitative Study. *Gerontology & Geriatrics*
2362 *Education*. 2015;36(1):30-44.<https://www.tandfonline.com/doi/pdf/10.1080/02701960.2014.966902>
- 2363 37. Mateos-Nozal J, Cruz-Jentoft A, Casado JR. A systematic review of surveys on undergraduate
2364 teaching of Geriatrics in medical schools in the XXI century. *European Geriatric Medicine*.
2365 2014;5(2):119-24.<https://doi.org/10.1016/j.eurger.2013.12.006>
- 2366 38. Dotchin CL, Akinyemi RO, Gray WK, Walker RW. Geriatric medicine: services and training in
2367 Africa. *Age and ageing*. 2013;42(1):124-8.doi: 10.1093/ageing/afs119
- 2368 39. Keller I, Makipaa A, Kalenscher T, Kalache A. Global survey on geriatrics in the medical
2369 curriculum. Geneva: World health organization. 2002:59
- 2370 40. Greysen SR, Dovlo D, Olapade-Olaopa EO, Jacobs M, Sewankambo N, Mullan F. Medical
2371 education in sub-Saharan Africa: a literature review. *Medical education*. 2011;45(10):973-86,
2372 <https://onlinelibrary.wiley.com/doi/pdf/10.1111/j.1365-2923.2011.04039.x>
- 2373 41. Tyler RW. Basic principles of curriculum and instruction.,(University of Chicago Press: Chicago,
2374 IL). IL; 1949.
- 2375 42. NDoH. National Health Insurance for South Africa - White Paper. In: National Department of
2376 Health SA, editor. 2017.
- 2377 43. Mahomed OH, Asmall S. Development and implementation of an integrated chronic disease
2378 model in South Africa: lessons in the management of change through improving the quality of clinical
2379 practice. *International journal of integrated care*. 2015;15.<https://dx.doi.org/10.5334%2Fijic.1454>
- 2380 44. Woollard B, Boelen C. Seeking impact of medical schools on health: meeting the challenges of
2381 social accountability. *Medical education*. 2012;46(1):21-7.[https://doi.org/10.1111/j.1365-](https://doi.org/10.1111/j.1365-2923.2011.04081.x)
2382 [2923.2011.04081.x](https://doi.org/10.1111/j.1365-2923.2011.04081.x)
- 2383 45. Morgan DL. Paradigms lost and pragmatism regained: Methodological implications of combining
2384 qualitative and quantitative methods. *Journal of mixed methods research*. 2007;1(1):48-76,
- 2385 46. Schwab JJ, Harper WR. The practical: A language for curriculum. 1970,
- 2386 47. Booth WC. Critical understanding: The powers and limits of pluralism: University of Chicago
2387 Press; 1982.
- 2388 48. Cornish F, Gillespie A. A pragmatist approach to the problem of knowledge in health
2389 psychology. *Journal of health psychology*. 2009;14(6):800-9,
2390 <https://journals.sagepub.com/doi/abs/10.1177/1359105309338974>

- 2391 49. Thomas PA, Kern DE, Hughes MT, Chen BY. Curriculum development for medical education: a
2392 six-step approach: JHU Press; 2016.
- 2393 50. Dewey J, editor Experience and education. The Educational Forum; 1986: Taylor & Francis.
- 2394 51. Nations U. World population ageing 1950-2050. United Nations, Department of Economic and
2395 Social Affairs, Population Division. 2016.
- 2396 52. Nations U. World Population Prospects: The 2015 Revision, Key Findings and Advance Tables.
2397 New York: United Nations, Department of Economic and Social Affairs. 2015.
- 2398 53. Union A. Africa Health Strategy 2016–2030. 2016.
- 2399 54. Aboderin IA, Beard JR. Older people's health in sub-Saharan Africa. *The Lancet*.
2400 2015;385(9968):e9-e11. [https://doi.org/10.1016/S0140-6736\(14\)61602-0](https://doi.org/10.1016/S0140-6736(14)61602-0)
- 2401 55. Day C, Gray A. Health and related indicators. *South African health review*. 2017;2017(1):217-
2402 339,
- 2403 56. Beard JR, Officer A, Carvalho IA, Sadana R, Pot AM, Michel J-P. The world report on ageing
2404 and health: a policy framework for healthy ageing. *Lancet*. 2016;387.10.1016/s0140-6736(15)00516-4
- 2405 57. Mathers CD, Stevens GA, Boerma T, White RA, Tobias MI. Causes of international increases in
2406 older age life expectancy. *The Lancet*. 2015;385(9967):540-8,
2407 <https://www.sciencedirect.com/science/article/pii/S0140673614605699?via%3Dihub>
- 2408 58. Fabbri E, Zoli M, Gonzalez-Freire M, Salive ME, Studenski SA, Ferrucci L. Aging and
2409 multimorbidity: new tasks, priorities, and frontiers for integrated gerontological and clinical research.
2410 *Journal of the American Medical Directors Association*. 2015;16(8):640-7,
2411 <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5125299/pdf/nihms830792.pdf>
- 2412 59. Ntuli M, Madiba S. The Burden of Caring: An Exploratory Study of the Older Persons Caring for
2413 Adult Children with AIDS-Related Illnesses in Rural Communities in South Africa. *International journal*
2414 *of environmental research and public health*. 2019;16(17):3162,
- 2415 60. Mashegoane S, Mohale N. Parenting AIDS-orphaned grandchildren: experiences from Lephalale,
2416 South Africa. *Gender and Behaviour*. 2016;14(1):6931-43,
- 2417 61. Madrid I. International plan of action on ageing (MIPAA). New York: United Nations. 2002,
- 2418 62. Saka S, Oosthuizen F, Nlooto M. National Policies and Older People's Healthcare in Sub-Saharan
2419 Africa: A Scoping Review. *Annals of global health*. 2019;85(1).<https://doi.org/10.5334/aogh.2401>
- 2420 63. Chang AY, Skirbekk VF, Tyrovolas S, Kassebaum NJ, Dieleman JL. Measuring population
2421 ageing: an analysis of the Global Burden of Disease Study 2017. *The Lancet Public Health*.
2422 2019;4(3):e159-e67, <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6472541/pdf/main.pdf>
- 2423 64. Velkoff V, Kowal P. Population ageing in sub-Saharan Africa: Demographic dimensions 2006.
2424 US Census Bureau, Current Population Reports. P 95/07-1. Washington, DC: US Government Printing
2425 Office; 2007.
- 2426 65. Waterhouse P, van der Wielen N, Banda PC, Channon AA. The impact of multi-morbidity on
2427 disability among older adults in South Africa: do hypertension and socio-demographic characteristics
2428 matter? *Int J Equity Health*. 2017;16(1):62. <https://doi.org/10.1186/s12939-017-0537-7>
- 2429 66. Schemes CfM. Annual Report of the Council for Medical Schemes 2013/14. 2014,
- 2430 67. Kowal P, Byles J. A summary of current aging research in sub-Saharan Africa. *Innovation in*
2431 *aging*. 2017;1:724-,

- 2432 68. Hoffman J. African Research on Ageing Network (AFRAN)—Advances, challenges and
2433 prospects. *Innovation in Aging*. 2017:724-
- 2434 69. Aboderin I. *Coming into its own? Developments and challenges for research on aging in Africa*.
2435 Oxford University Press US; 2017.
- 2436 70. Mayosi BM, Flisher AJ, Lalloo UG, Sitas F, Tollman SM, Bradshaw D. The burden of non-
2437 communicable diseases in South Africa. *The Lancet*. 2009;374(9693):934-
2438 47.[http://dx.doi.org/10.1016/S0140-6736\(09\)61087-4](http://dx.doi.org/10.1016/S0140-6736(09)61087-4)
- 2439 71. Ibanez-Gonzalez DL, Norris SA. Chronic non-communicable disease and healthcare access in
2440 middle-aged and older women living in Soweto, South Africa. *PloS one*. 2013;8(10),
- 2441 72. Goudge J, Gilson L, Russell S, Gumede T, Mills A. The household costs of health care in rural
2442 South Africa with free public primary care and hospital exemptions for the poor. *Tropical medicine &*
2443 *international health*. 2009;14(4):458-67,
- 2444 73. Ameh S, Gómez-Olivé FX, Kahn K, Tollman SM, Klipstein-Grobusch K. Predictors of health
2445 care use by adults 50 years and over in a rural South African setting. *Global health action*.
2446 2014;7(1):24771.<https://doi.org/10.3402/gha.v7.24771>
- 2447 74. Kadam UT, Croft PR. Clinical multimorbidity and physical function in older adults: a record and
2448 health status linkage study in general practice. *Family Practice*. 2007;24(5):412-
2449 9.10.1093/fampra/cmm049
- 2450 75. Fortin M, Lapointe L, Hudon C, Vanasse A, Ntetu AL, Maltais D. Multimorbidity and quality of
2451 life in primary care: a systematic review. *Health and Quality of life Outcomes*. 2004;2(1):51,
- 2452 76. Saka S, Oosthuizen F, Nlotoo M. Interventions towards reducing adverse drug reactions among
2453 geriatric population in Africa: a scoping review of the literature from 1990–2016. *PULA: Botswana*
2454 *Journal of African Studies*. 2017;31(1):180-94,
- 2455 77. WHO. *Age-friendly Primary Health Care Centre Toolkit*. . In: Organisation WH, editor. WHO.
2456 Geneva: WHO; 2008.
- 2457 78. Palmer K, Marengoni A, Forjaz MJ, Jureviciene E, Laatikainen T, Mammarella F, et al.
2458 Multimorbidity care model: Recommendations from the consensus meeting of the Joint Action on
2459 Chronic Diseases and Promoting Healthy Ageing across the Life Cycle (JA-CHRODIS). *Health Policy*.
2460 2018;122(1):4-11,
2461 <https://www.sciencedirect.com/science/article/abs/pii/S0168851017302348?via%3Dihub>
- 2462 79. Ajwang M, Nankinga Z, Muliira JK. Continuing education in geriatrics for rural health care
2463 providers in Uganda : a needs assessment. *African Journal of Health Professions Education*. 2010;2(2):3-
2464 8,
- 2465 80. Posner GJ. *Analyzing the curriculum*: McGraw-Hill Humanities Social; 1995.
- 2466 81. Prideaux D. Curriculum design. *Bmj*. 2003;326(7383):268-70,
- 2467 82. Teater B. *An introduction to applying social work theories and methods*: McGraw-Hill Education
2468 (UK); 2014.
- 2469 83. Kelly AV. *The curriculum: Theory and practice*: Sage; 2009.
- 2470 84. English F. *Curriculum Mapping and Management*. 1984,
- 2471 85. Harden R, M. AMEE Guide No. 21: Curriculum mapping: a tool for transparent and authentic
2472 teaching and learning. *Medical teacher*. 2001;23(2):123-37,
2473 <https://www.tandfonline.com/doi/abs/10.1080/01421590120036547>

- 2474 86. Song MM, Jones BG, Casanova RA. Auditing sex-and gender-based medicine (SGBM) content
2475 in medical school curriculum: a student scholar model. *Biology of sex differences*. 2016;7(1):40,
- 2476 87. Sanson-Fisher R, Hobden B, Waller A, Dodd N, Boyd L. Methodological quality of teaching
2477 communication skills to undergraduate medical students: a mapping review. *BMC medical education*.
2478 2018;18(1):151,
2479 https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6020352/pdf/12909_2018_Article_1265.pdf
- 2480 88. Wilson M, Cullen W, Goodair C, Klimas J. Off the record: Substance-related disorders in the
2481 undergraduate medical curricula in Ireland. *Journal of Substance Use*. 2016;21(6):598-600,
- 2482 89. Steven K, Howden S, Mires G, Rowe I, Lafferty N, Arnold A, et al. Toward interprofessional
2483 learning and education: Mapping common outcomes for prequalifying healthcare professional programs
2484 in the United Kingdom. 2017;39(7):720-44,
2485 <https://www.tandfonline.com/doi/pdf/10.1080/0142159X.2017.1309372?needAccess=true>
- 2486 90. Harden R, Grant J, Buckley G, Hart I. Best evidence medical education. *Advances in Health
2487 Sciences Education*. 2000;5(1):71-90,
- 2488 91. Hafner K. As population ages, where are the geriatricians. *New York Times*. 2016,
- 2489 92. Masud T, Blundell A, Gordon AL, Mulpeter K, Roller R, Singler K. European undergraduate
2490 curriculum in geriatric medicine developed using an international modified Delphi technique. *Age
2491 Ageing*. 2014;43.10.1093/ageing/afu019
- 2492 93. Geriatrics IAoGa. Geriatrics medicine: Basic contents for undergraduate medical students. *IAGG
2493 Newsletter*. 2007;18(1):2,
- 2494 94. Blundell A, Gordon A, Gladman J, Masud T. Undergraduate Teaching in Geriatric Medicine: The
2495 Role of National Curricula. *Gerontology & Geriatrics Education*. 2009;30(1):75-
2496 88.10.1080/02701960802690324
- 2497 95. Gordon AL, Blundell A, Dhesei JK, Forrester-Paton C, Forrester-Paton J, Mitchell HK, et al. UK
2498 medical teaching about ageing is improving but there is still work to be done: the Second National Survey
2499 of Undergraduate Teaching in Ageing and Geriatric Medicine. *Age Ageing*. 2014;43(2):293-
2500 7.10.1093/ageing/aft207
- 2501 96. Leipzig RM, Granville L, Simpson D, Anderson MB, Sauvigne K, Soriano RP. Keeping granny
2502 safe on July 1: a consensus on minimum geriatrics competencies for graduating medical students. *Acad
2503 Med*. 2009;84(5):604-10.10.1097/ACM.0b013e31819fab70
- 2504 97. Frank JR, Danoff D. The CanMEDS initiative: implementing an outcomes-based framework of
2505 physician competencies. *Medical teacher*. 2007;29(7):642-7,
- 2506 98. Parmar J. Core competencies in the care of older persons for Canadian medical students. *Can J
2507 Geriatr*. 2009;12(2):70-3,
- 2508 99. Naganathan V. Australian Society for Geriatric Medicine. Position Statement No. 4. Education
2509 and Training in Geriatric Medicine for Medical Students *Aust J Ageing*. 2006;25:218,
- 2510 100. Ajwang M, Muliira JK, Nankinga Z. Continuing education in geriatrics for rural health care
2511 providers in Uganda: A needs assessment. *African Journal of Health Professions Education*. 2010;2(2):3-
2512 8,
- 2513 101. Ka O, Leye M, Gaye A, Sow P, Diop S, Sow A. Towards a geriatrics policy integrated to the
2514 primary health cares in Africa (the case of Senegal). *Journal of Gerontology & Geriatric Research*. 2016,

- 2515 102. Ssensamba JT, Mukuru M, Nakafeero M, Ssenyonga R, Kiwanuka SN. Health systems readiness
 2516 to provide geriatric friendly care services in Uganda: a cross-sectional study. BMC geriatrics.
 2517 2019;19(1):256.<https://doi.org/10.1186/s12877-019-1272-2>
- 2518 103. Cassim B. Formal Geriatric Training in South Africa and beyond: Developments and challenges.
 2519 Innovation in aging. 2017:724-
- 2520 104. Mullan F, Frehywot S, Omaswa F. Medical schools in sub-Saharan Africa. Lancet.
 2521 2011;377.[https://doi.org/10.1016/S0140-6736\(10\)61961-7](https://doi.org/10.1016/S0140-6736(10)61961-7)
- 2522 105. Celletti F, Reynolds TA, Wright A, Stoertz A, Dayrit M. Educating a new generation of doctors
 2523 to improve the health of populations in low-and middle-income countries. PLoS medicine.
 2524 2011;8(10).<https://doi.org/10.1371/journal.pmed.1001108>
- 2525 106. Gukas ID. Global paradigm shift in medical education: issues of concern for Africa. Medical
 2526 teacher. 2007;29(9-10):887-92,
- 2527 107. Seggie JL. MB ChB curriculum modernisation in South Africa - growing doctors for Africa.
 2528 African Journal of Health Professions Education. 2010;2(1):8-14,
- 2529 108. Boelen C, Heck JE, Organization WH. Defining and measuring the social accountability of
 2530 medical schools. Geneva: World Health Organization; 1995.
- 2531 109. Ferreira M. Geriatric Medicine in South Africa - a Cinderella subspecialty? : CPD. South African
 2532 Family Practice. 2006;48(5):18,
- 2533 110. Wicht C. Future geriatric needs in South Africa-hospital and teaching aspects. South African
 2534 Medical Journal. 1977;51(13):440-2,
- 2535 111. Drickamer MA, Levy B, Irwin KS, Rohrbaugh RM. Perceived needs for geriatric education by
 2536 medical students, internal medicine residents and faculty. Journal of general internal medicine.
 2537 2006;21(12):1230-4,
- 2538 112. Michaels DC, Reid SJ, Naidu CS. Peer review for social accountability of health sciences
 2539 education: A model from South Africa. Education for Health. 2014;27(2):127,
 2540 [http://www.educationforhealth.net/article.asp?issn=1357-](http://www.educationforhealth.net/article.asp?issn=1357-6283;year=2014;volume=27;issue=2;spage=127;epage=131;aulast=Michaels)
 2541 [6283;year=2014;volume=27;issue=2;spage=127;epage=131;aulast=Michaels](http://www.educationforhealth.net/article.asp?issn=1357-6283;year=2014;volume=27;issue=2;spage=127;epage=131;aulast=Michaels)
- 2542 113. Chen C, Buch E, Wassermann T, Frehywot S, Mullan F, Omaswa F, et al. A survey of Sub-
 2543 Saharan African medical schools. Human resources for health. 2012;10(1):4,
- 2544 114. Frenk J, Chen L, Bhutta ZA, Cohen J, Crisp N, Evans T, et al. Health professionals for a new
 2545 century: transforming education to strengthen health systems in an interdependent world. The lancet.
 2546 2010;376(9756):1923-58.[https://doi.org/10.1016/S0140-6736\(10\)61854-5](https://doi.org/10.1016/S0140-6736(10)61854-5)
- 2547 115. Mateos-Nozal J, Beard JR. Global approaches to geriatrics in medical education. European
 2548 Geriatric Medicine. 2011;2(2):87-92.<https://doi.org/10.1016/j.eurger.2011.01.001>
- 2549 116. Mateos-Nozal J, Farré-Mercadé M, Cruz-Jentoft A, Ribera JC. Ten recommendations to improve
 2550 undergraduate training in Geriatric Medicine. Revista espanola de geriatria y gerontologia.
 2551 2019;<https://doi.org/10.1016/j.regg.2018.12.005>.<https://doi.org/10.1016/j.regg.2018.12.005>
- 2552 117. Harden RM. AMEE Guide No. 14: Outcome-based education: Part 1-An introduction to
 2553 outcome-based education. Medical teacher. 1999;21(1):7-14,
- 2554 118. Fisher JM, Gordon AL, MacLulich AM, Tullo E, Davis DH, Blundell A, et al. Towards an
 2555 understanding of why undergraduate teaching about delirium does not guarantee gold-standard practice--
 2556 results from a UK national survey. Age Ageing. 2015;44(1):166-70.10.1093/ageing/afu154

- 2557 119. Harden RM, Sowden S, Dunn WR. Educational strategies in curriculum development: the
2558 SPICES model. *Medical education*. 1984;18(4):284-97,
2559 <https://onlinelibrary.wiley.com/doi/abs/10.1111/j.1365-2923.1984.tb01024.x?sid=nlm%3Apubmed>
- 2560 120. Brauer DG, Ferguson KJMt. The integrated curriculum in medical education: AMEE Guide No.
2561 96. 2015;37(4):312-22, <https://www.tandfonline.com/doi/full/10.3109/0142159X.2014.970998>
- 2562 121. Adelman RD, Capello CF, LoFaso V, Greene MG, Konopasek L, Marzuk PM. Introduction to the
2563 older patient: a "first exposure" to geriatrics for medical students. *J Am Geriatr Soc*. 2007;55(9):1445-
2564 50.10.1111/j.1532-5415.2007.01301.x
- 2565 122. Laks J, Wilson LA, Khandelwal C, Footman E, Jamison M, Roberts E. Service-Learning in
2566 Communities of Elders (SLICE): Development and Evaluation of an Introductory Geriatrics Course for
2567 Medical Students. *Teach Learn Med*. 2016;28(2):210-8.10.1080/10401334.2016.1146602
- 2568 123. Martinez IL, Mora JC. A community-based approach for integrating geriatrics and gerontology
2569 into undergraduate medical education. *Gerontol Geriatr Educ*. 2012;33(2):152-
2570 65.10.1080/02701960.2012.641691
- 2571 124. Salter EK, Waldron M, Paniagua MA. Early exposure to geriatric care: developing an
2572 undergraduate internship in ethics and geriatric practice. *Int J Med Educ*. 2014;5:15-
2573 7.10.5116/ijme.52c6.da5e
- 2574 125. Lucchetti AL, Lucchetti G, de Oliveira IN, Moreira-Almeida A, da Silva Ezequiel O.
2575 Experiencing aging or demystifying myths? - impact of different "geriatrics and gerontology" teaching
2576 strategies in first year medical students. *BMC Med Educ*. 2017;17(1):35.10.1186/s12909-017-0872-9
- 2577 126. Supiano MA, Fitzgerald JT, Hall KE, Halter JB. A vertically integrated geriatric curriculum
2578 improves medical student knowledge and clinical skills. *Journal of the American Geriatrics Society*.
2579 2007;55(10):1650-5, [https://deepblue.lib.umich.edu/bitstream/handle/2027.42/65145/j.1532-
2580 5415.2007.01309.x.pdf?sequence=1](https://deepblue.lib.umich.edu/bitstream/handle/2027.42/65145/j.1532-5415.2007.01309.x.pdf?sequence=1)
- 2581 127. Wieland D, Eleazer GP, Bachman DL, Corbin D, Oldendick R, Boland R, et al. Does it stick?
2582 Effects of an integrated vertical undergraduate aging curriculum on medical and surgical residents. *J Am
2583 Geriatr Soc*. 2008;56(1):132-8.10.1111/j.1532-5415.2007.01476.x
- 2584 128. Diachun L, Van Bussel L, Hansen KT, Charise A, Rieder MJ. "But I see old people everywhere":
2585 dispelling the myth that eldercare is learned in nongeriatric clerkships. *Acad Med*. 2010;85(7):1221-
2586 8.10.1097/ACM.0b013e3181e0054f
- 2587 129. Visvanathan R, Silakong T, Yu S. Dedicated teaching block for undergraduate geriatric medicine
2588 improves knowledge. *Australas J Ageing*. 2011;30(4):234-8.10.1111/j.1741-6612.2011.00505.x
- 2589 130. Fisher AL, O'Keefe EA, Hanlon JT, Studenski SA, Hennon JG, Resnick NM. A brief, intensive,
2590 clinically focused geriatrics course during the third year of medical school. *J Am Geriatr Soc*.
2591 2009;57(3):524-9.10.1111/j.1532-5415.2008.02135.x
- 2592 131. Barrows HS, Tamblyn RM. *Problem-based learning: An approach to medical education*: Springer
2593 Publishing Company; 1980.
- 2594 132. Yanamadala M, Kaprielian VS, O'Connor Grochowski C, Reed T, Heflin MT. A problem-based
2595 learning curriculum in geriatrics for medical students. *Gerontology & geriatrics education*. 2016:1-10
- 2596 133. Thompson S, Metcalfe K, Boncey K, Merriman C, Flynn LC, Alg GS, et al. Interprofessional
2597 education in geriatric medicine: towards best practice. A controlled before-after study of medical and
2598 nursing students. *BMJ open*. 2020;10(1).doi: 10.1136/bmjopen-2017-018041

2599 134. Yanamadala M, Kaprielian VS, O'Connor Grochowski C, Reed T, Heflin MT. A problem-based
2600 learning curriculum in geriatrics for medical students. *Gerontology & geriatrics education*.
2601 2018;39(2):122-31. <https://doi.org/10.1080/02701960.2016.1152268>

2602 135. Keijsers CJPW, Dreher R, Tanner S, Forde-Johnston C, Thompson S. Interprofessional education
2603 in geriatric medicine. *European Geriatric Medicine*. 2016;7(4):306-
2604 14. <https://doi.org/10.1016/j.eurger.2016.01.011>

2605 136. Balogun SA, Rose K, Thomas S, Owen J, Brashers V. Innovative interprofessional geriatric
2606 education for medical and nursing students: focus on transitions in care. *QJM: An International Journal of*
2607 *Medicine*. 2014;108(6):465-71. doi:10.1093/qjmed/hcu226

2608 137. Koh GC-H, Khoo HE, Wong ML, Koh D. The effects of problem-based learning during medical
2609 school on physician competency: a systematic review. *Cmaj*. 2008;178(1):34-41,
2610 <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2151117/pdf/20080101s00018p34.pdf>

2611 138. Turpie ID, Blumberg P. Integrating geriatrics into medical school through problem-based
2612 learning. *Gerontology & Geriatrics Education*. 1995;15(4):29-43,

2613 139. Eleazer GP, Wieland D, Roberts E, Richeson N, Thornhill JT. Preparing medical students to care
2614 for older adults: the impact of a Senior Mentor Program. *Acad Med*. 2006;81(4):393-8,
2615 <http://ovidsp.tx.ovid.com/ovftpdfs/FPDDNCFBAAJBPM00/fs046/ovft/live/gv025/00001888/00001888-200604000-00015.pdf>
2616

2617 140. Samra R, Griffiths A, Cox T, Conroy S, Knight A. Changes in medical student and doctor
2618 attitudes toward older adults after an intervention: a systematic review. *Journal of the American Geriatrics*
2619 *Society*. 2013;61(7):1188-96, <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3808566/pdf/jgs0061-1188.pdf>
2620

2621 141. Samra R, Cox T, Gordon AL, Conroy SP, Lucassen MF, Griffiths A. Factors related to medical
2622 students' and doctors' attitudes towards older patients: a systematic review. *Age and ageing*.
2623 2017;46(6):911-9, <https://academic.oup.com/ageing/article/46/6/911/3787763>

2624 142. Mendoza De La Garza M, Tieu C, Schroeder D, Lowe K, Tung E. Evaluation of the Impact of a
2625 senior mentor program on medical students' geriatric knowledge and attitudes toward older adults.
2626 *Gerontol Geriatr Educ*. 2018;39(3):316-25. 10.1080/02701960.2018.1484736

2627 143. Waters LH, McIntyre M. The Senior Mentoring Program at VCU's School of Medicine. *Age in*
2628 *Action*. 2019;34(1):1,

2629 144. Roberts E, Richeson N, Thornhill JT, Corwin SJ, Eleazer GP. The Senior Mentor Program at the
2630 University of South Carolina School of Medicine: an innovative geriatric longitudinal curriculum.
2631 *Gerontol Geriatr Educ*. 2006;27(2):11-23. 10.1300/J021v27n02_03

2632 145. Stewart TJ, Eleazer GP, Boland R, Wieland GD. The middle of the road: Results from the aging
2633 semantic differential with four cohorts of medical students. *Journal of the American Geriatrics Society*.
2634 2007;55(8):1275-80, <https://onlinelibrary.wiley.com/doi/abs/10.1111/j.1532-5415.2007.01319.x>

2635 146. Hoffman KG, Gray P, Hosokawa MC, Zweig SC. Evaluating the effectiveness of a senior mentor
2636 program: The University of Missouri-Columbia School of Medicine. *Gerontology & geriatrics education*.
2637 2006;27(2):37-47,

2638 147. Eleazer GP, Stewart TJ, Wieland GD, Anderson MB, Simpson D, Programs SCotNEoSM. The
2639 national evaluation of senior mentor programs: older adults in medical education. *Journal of the American*
2640 *Geriatrics Society*. 2009;57(2):321-6, <https://onlinelibrary.wiley.com/doi/abs/10.1111/j.1532-5415.2008.02100.x>
2641

- 2642 148. Alford CL, Miles T, Palmer R, Espino D. An introduction to geriatrics for first-year medical
2643 students. *J Am Geriatr Soc.* 2001;49(6):782-7, [https://onlinelibrary.wiley.com/doi/pdf/10.1046/j.1532-](https://onlinelibrary.wiley.com/doi/pdf/10.1046/j.1532-5415.2001.49156.x)
2644 [5415.2001.49156.x](https://onlinelibrary.wiley.com/doi/pdf/10.1046/j.1532-5415.2001.49156.x)
- 2645 149. Barton A, Mulley G. History of the development of geriatric medicine in the UK. *Postgraduate*
2646 *Medical Journal.* 2003;79(930):229-34,
- 2647 150. Thistlethwaite J. Interprofessional education: a review of context, learning and the research
2648 agenda. *Medical education.* 2012;46(1):58-70, [https://onlinelibrary.wiley.com/doi/abs/10.1111/j.1365-](https://onlinelibrary.wiley.com/doi/abs/10.1111/j.1365-2923.2011.04143.x)
2649 [2923.2011.04143.x](https://onlinelibrary.wiley.com/doi/abs/10.1111/j.1365-2923.2011.04143.x)
- 2650 151. Organization WH. Framework for Action on Interprofessional Education and Collaborative
2651 Practice.: World Health Organization; 2010 [Available from: [http:// whqlibdoc.who.int/hq/2010/WHO](http://whqlibdoc.who.int/hq/2010/WHO)
2652 [HRH HPN 10.3 eng.pdf, http:// whqlibdoc.who.int/hq/2010/WHO](http://whqlibdoc.who.int/hq/2010/WHO) HRH HPN 10.3 eng.pdf
- 2653 152. Schapmire TJ, Head BA, Nash WA, Yankeelov PA, Furman CD, Wright RB, et al. Overcoming
2654 barriers to interprofessional education in gerontology: The interprofessional curriculum for the care of
2655 older adults. *Advances in medical education and practice.* 2018;9:109,
2656 <https://www.dovepress.com/getfile.php?fileID=40538>
- 2657 153. Darlow B, Gray B, McKinlay E, Naser H, Stanley J, Coleman K, et al. The positive impact of
2658 interprofessional education: a controlled trial to evaluate a programme for health professional students.
2659 *BMC medical education.* 2015;15(1):98,
- 2660 154. Chang E-S, Kanno S, Levy S, Wang S-Y, Lee JE, Levy BR. Global reach of ageism on older
2661 persons' health: A systematic review. *PloS one.*
2662 2020;15(1):e0220857. <https://doi.org/10.1371/journal.pone.0220857>
- 2663 155. Maximiano-Barreto MA, Luchesi BM, Chagas MHN. Implicit attitudes toward the elderly among
2664 health professionals and undergraduate students in the health field: a systematic review. *Trends in*
2665 *Psychiatry and Psychotherapy.* 2019;41:415-21,
2666 http://www.scielo.br/scielo.php?script=sci_arttext&pid=S2237-60892019000400415&nrm=iso
2667 <http://www.scielo.br/pdf/trends/v41n4/2238-0019-trends-2237-6089-2018-0108.pdf>
- 2668 156. Tullo E, Allan L. What should we be teaching medical students about dementia? *Int*
2669 *Psychogeriatr.* 2011;23(7):1044-50.10.1017/s1041610211000536
- 2670 157. De Biasio JC, Parkas V, Soriano RP. Longitudinal assessment of medical student attitudes toward
2671 older people. *Medical teacher.* 2016;38(8):823-8,
2672 <https://www.tandfonline.com/doi/full/10.3109/0142159X.2015.1112891>
- 2673 158. Mezirow J. Transformative learning: Theory to practice. *New directions for adult and continuing*
2674 *education.* 1997;1997(74):5-12,
- 2675 159. Corcoran AM, True G, Charles N, Margo KL. Geriatric palliative care: do medical students'
2676 narrative reflections after a hospice clinical experience link to geriatric competencies? *Gerontol Geriatr*
2677 *Educ.* 2013;34(4):329-41.10.1080/02701960.2013.815180
- 2678 160. Brown PP, Niles-Yokum K. Kate's Journey: Introducing Students to the Human Side of Aging
2679 Services and Supports. *Gerontol Geriatr Educ.* 2016;37(3):232-
2680 54. <https://doi.org/10.1080/02701960.2016.1193017>
- 2681 161. Brand G, Osborne A, Carroll M, Carr SE, Etherton-Ber C. Do photographs, older adults'
2682 narratives and collaborative dialogue foster anticipatory reflection ("prelection") in medical students?
2683 *BMC Med Educ.* 2016;16(1):289. <https://doi.org/10.1186/s12909-016-0802-2>

- 2684 162. Pacala JT, Boulton C, Hepburn K. Ten years' experience conducting the Aging Game workshop:
 2685 was it worth it? *Journal of the American Geriatrics Society*. 2006;54(1):144-9,
 2686 <https://onlinelibrary.wiley.com/doi/abs/10.1111/j.1532-5415.2005.00531.x>
- 2687 163. Chen I, Forbes C. Reflective writing and its impact on empathy in medical education: systematic
 2688 review. *Journal of educational evaluation for health professions*. 2014;11:20,
 2689 <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4309942/pdf/jeehp-11-20.pdf>
- 2690 164. Duca DD, Duque G. A reflection on aging: A portfolio of change in attitudes toward geriatric
 2691 patients during a clerkship rotation. *Educational Gerontology*. 2006;32(8):605-10,
- 2692 165. Dharamsi S, Richards M, Louie D, Murray D, Berland A, Whitfield M, et al. Enhancing medical
 2693 students' conceptions of the CanMEDS Health Advocate Role through international service-learning and
 2694 critical reflection: A phenomenological study. *Medical Teacher*. 2010;32(12):977-82,
 2695 <http://www.tandfonline.com/doi/full/10.3109/01421590903394579>
- 2696 166. Mead N, Bower P. Patient-centredness: a conceptual framework and review of the empirical
 2697 literature. *Social science & medicine*. 2000;51(7):1087-110,
- 2698 167. Meiboom AA, de Vries H, Scheele F, Hertogh C. Raising enthusiasm for the medical care of
 2699 elderly patients: a concept mapping study to find elements for an elderly friendly medical curriculum.
 2700 *Bmc Medical Education*. 2018;18.<https://doi.org/10.1186/s12909-018-1344-6>
- 2701 168. Balint M, Ball DH, Hare ML. Training medical students in patient-centered medicine.
 2702 *Comprehensive psychiatry*. 1969,
- 2703 169. Archer E, Meyer I. Interventions aimed towards the development of patient-centredness in
 2704 undergraduate medical curricula: A scoping review. *African Journal of Health Professions Education*.
 2705 2018;10(3):171-5.<https://doi.org/10.7196/AJHPE.2018.v10i3.1040>
- 2706 170. Cockbain BC, Thompson S, Salisbury H, Mitter P, Martos L. A collaborative strategy to improve
 2707 geriatric medical education. *Age Ageing*. 2015;44(6):1036-9.[10.1093/ageing/afv100](https://doi.org/10.1093/ageing/afv100)
- 2708 171. Kantor B, Myers M. From aging . . . to saging- the Ohio State Senior Partners Program:
 2709 longitudinal and experiential geriatrics education. *Gerontol Geriatr Educ*. 2006;27(2):69-
 2710 74.[10.1300/J021v27n02_08](https://doi.org/10.1300/J021v27n02_08)
- 2711 172. Thomas PA. Curriculum development for medical education: a six-step approach: JHU Press;
 2712 2015.
- 2713 173. Phillips DC, Phillips DC, Burbules NC. Postpositivism and educational research: Rowman &
 2714 Littlefield; 2000.
- 2715 174. Creswell JW, Klassen AC, Plano Clark VL, Smith KC. Best practices for mixed methods research
 2716 in the health sciences. Bethesda (Maryland): National Institutes of Health. 2011;2013:541-5,
- 2717 175. Johnson RB, Onwuegbuzie AJ, Turner LA. Toward a definition of mixed methods research.
 2718 *Journal of mixed methods research*. 2007;1(2):112-33,
- 2719 176. Palmore E. Facts on Aging: A short quiz1977. 315-20 p.
- 2720 177. Lee M, Wilkerson L, Reuben DB, Ferrell BA. Development and validation of a geriatric
 2721 knowledge test for medical students. *J Am Geriatr Soc*. 2004;52(6):983-8.[10.1111/j.1532-
 2722 5415.2004.52269.x](https://doi.org/10.1111/j.1532-5415.2004.52269.x)
- 2723 178. Balzer F, Hautz WE, Spies C, Bietenbeck A, Dittmar M, Sugiharto F, et al. Development and
 2724 alignment of undergraduate medical curricula in a web-based, dynamic Learning Opportunities,
 2725 Objectives and Outcome Platform (LOOOP). *Medical teacher*. 2016;38(4):369-77,
 2726 <https://www.tandfonline.com/doi/full/10.3109/0142159X.2015.1035054>

- 2727 179. Finlay L. "Outing" the researcher: The provenance, process, and practice of reflexivity.
 2728 Qualitative health research. 2002;12(4):531-45,
 2729 <https://journals.sagepub.com/doi/abs/10.1177/104973202129120052>
- 2730 180. Boelen C, Woollard B. Social accountability and accreditation: a new frontier for educational
 2731 institutions. Medical education. 2009;43(9):887-94,
 2732 <https://onlinelibrary.wiley.com/doi/pdf/10.1111/j.1365-2923.2009.03413.x>
- 2733 181. Samra R. Medical students' and doctors' attitudes toward older patients and their care: what do we
 2734 know and where do we go from here? : University of Nottingham; 2013.
- 2735 182. Gove D, Small N, Downs M, Vernooij-Dassen M. General practitioners' perceptions of the
 2736 stigma of dementia and the role of reciprocity. Dementia. 2016;1471301215625657
- 2737 183. Wolff JK, Warner LM, Ziegelmann JP, Wurm S. What do targeting positive views on ageing add
 2738 to a physical activity intervention in older adults? Results from a randomised controlled trial. Psychology
 2739 & Health. 2014;29(8):915-32,
- 2740 184. Nelson TD. Promoting healthy aging by confronting ageism. American Psychologist.
 2741 2016;71(4):276,
- 2742 185. Fitzgerald JT, Wray LA, Halter JB, Williams BC, Supiano MA. Relating medical students'
 2743 knowledge, attitudes, and experience to an interest in geriatric medicine. Gerontologist.
 2744 2003;43.10.1093/geront/43.6.849
- 2745 186. Diachun LL, Dumbrell AC, Byrne K, Esbaugh J. . . . But does it stick? Evaluating the durability
 2746 of improved knowledge following an undergraduate experiential geriatrics learning session. J Am Geriatr
 2747 Soc. 2006;54(4):696-701.10.1111/j.1532-5415.2006.00656.x
- 2748 187. Biggs J. Enhancing teaching through constructive alignment. Higher education. 1996;32(3):347-
 2749 64,
- 2750 188. Biggs J, Tang C, editors. Applying constructive alignment to outcomes-based teaching and
 2751 learning. Training material for "quality teaching for learning in higher education" workshop for master
 2752 trainers, Ministry of Higher Education, Kuala Lumpur; 2010.
- 2753 189. Evans JM, Kiran PR, Bhattacharyya OK. Activating the knowledge-to-action cycle for geriatric
 2754 care in India. Health research policy and systems. 2011;9(1):42,
- 2755 190. Samra R, Griffiths A, Cox T, Conroy S, Gordon A, Gladman JR. Medical students' and doctors'
 2756 attitudes towards older patients and their care in hospital settings: a conceptualisation. Age and ageing.
 2757 2015;44(5):776-83, <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4547928/pdf/afv082.pdf>
- 2758 191. Silverman J. Teaching clinical communication: a mainstream activity or just a minority sport?
 2759 Patient education and counseling. 2009;76(3):361-7.<https://doi.org/10.1016/j.pec.2009.06.011>
- 2760 192. Bombeke K, Symons L, Vermeire E, Debaene L, Schol S, De Winter B, et al. Patient-centredness
 2761 from education to practice: the 'lived' impact of communication skills training. Medical teacher.
 2762 2012;34(5):e338-e48,
 2763 <https://www.tandfonline.com/doi/pdf/10.3109/0142159X.2012.670320?needAccess=true>
- 2764 193. de Carvalho IA, Epping-Jordan J, Beard JR. Integrated Care for Older People. Prevention of
 2765 Chronic Diseases and Age-Related Disability: Springer; 2019. p. 185-95.
- 2766 194. Corwin SJ, Bates T, Cohan M, Bragg DS, Roberts E. Two models for implementing senior
 2767 mentor programs in academic medical settings. Educational Gerontology. 2007;33(5):383-
 2768 93.10.1080/03601270701252849

- 2769 195. Goliath C, Dudley L, Zunza M, Willems B, Mukinda F. Equipping medical graduates to address
2770 health systems challenges in South Africa: an expressed need for curriculum change: supplement 1-
2771 research. *African Journal of Health Professions Education*. 2015;7(1):86-91,
- 2772 196. Duku SK, van Dullemen CE, Fenenga C. Does Health Insurance Premium Exemption Policy for
2773 Older People Increase Access to Health Care? Evidence from Ghana. *J Aging Soc Policy*.
2774 2015;27(4):331-47.10.1080/08959420.2015.1056650
- 2775 197. Tanyi PL, Pelsler A. The missing link: Finding space for gerontology content into university
2776 curricula in South Africa. *Gerontology & geriatrics education*.
2777 2018;<https://doi.org/10.1080/02701960.2018.1428579>;
2778 [17.https://doi.org/10.1080/02701960.2018.1428579](https://doi.org/10.1080/02701960.2018.1428579)
- 2779 198. Nel C, Nel M, Bezuidenhout M. Quality assurance in undergraduate medical education: standards
2780 for accreditation: research in higher education. *South African Journal of Higher Education*.
2781 2004;18(1):221-7,
- 2782 199. Van Heerden B. Effectively addressing the health needs of South Africa's population: The role of
2783 health professions education in the 21st century. *SAMJ: South African Medical Journal*. 2013;103(1):21-
2784 2.<https://doi.org/10.7196/AJHPE.2019.v11i1.1073>
- 2785 200. Rose S. Medical student education in the time of COVID-19. *Jama*. 2020,
- 2786 201. Sub-Saharan Africa-FAIMER Regional Institute (SAFRI). The Sub-Saharan Africa-FAIMER
2787 Regional Institute (SAFRI) [cited 2020 June]. Available from: <https://safri.faimerfri.org/>,
2788 <https://safri.faimerfri.org/>
- 2789 202. Duque G, Gold S, Bergman H. Early clinical exposure to geriatric medicine in second-year
2790 medical school students--the McGill experience. *J Am Geriatr Soc*. 2003;51(4):544-
2791 8.<https://doi.org/10.1046/j.1532-5415.2003.51166.x>
- 2792 203. Sharma M, Murphy R, Doody GA. Do we need a core curriculum for medical students? A
2793 scoping review. *BMJ open*. 2019;9(8):e027369,
2794 <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6720253/pdf/bmjopen-2018-027369.pdf>
- 2795 204. Jenkins L, Mash B, Derese A. Development of a portfolio of learning for postgraduate family
2796 medicine training in South Africa: a Delphi study. *BMC family practice*.
2797 2012;13(1):11.<https://doi.org/10.1186/1471-2296-13-11>
- 2798 205. Lloyd-Sherlock P, Amoakoh-Coleman M. A critical review of intervention and policy effects on
2799 the health of older people in sub-Saharan Africa. *Social Science & Medicine*.
2800 2020;<https://doi.org/10.1016/j.socscimed.2020.112887>;<https://doi.org/10.1016/j.socscimed.2020.112887>
- 2801 [112887](https://doi.org/10.1016/j.socscimed.2020.112887)
- 2802 206. Naidoo K, van Wyk J. Protocol for a scoping review of age-related health conditions among
2803 geriatric populations in sub-Saharan Africa. *Systematic Reviews*.
2804 2019;8(1):133.https://doi.org/10.1007/978-3-319-96529-1_19
- 2805
- 2806

2807 **Supplementary file A: Protocol for a scoping review of age-**
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PROTOCOL

Open Access

Protocol for a scoping review of age-related health conditions among geriatric populations in sub-Saharan Africa



Keshena Naidoo^{1*} and Jacqueline van Wyk²

Background

Sub-Saharan Africa has the most rapidly growing older population compared to any other region in the world [1]. Although the chronological age of 65 years is used to define geriatric populations in high-income countries, the United Nations agreed to the use of age 60 years to refer to geriatric populations in Africa [2]. In this scoping review, “older adults” or “geriatric population” refers to those aged 60 years and above. The geriatric population in sub-Saharan Africa (SSA) is predicted to increase from 42.6 million in 2010 to 160 million in 2050 [1]. Healthcare services for this population are delivered predominantly through the public health system at primary care level [3]. Despite the expected increase in geriatric patients that will require primary care, most primary care providers in SSA receive little to no training on geriatrics [4]. Very few countries in SSA have specialist geriatricians and there is little inclusion of geriatrics in medical curricula [5]. As a result, there has been little awareness of age-related health conditions in older adults. Most of the health care responses to geriatric health needs are based on evidence collected from populations in the high-income countries (HIC).

Advancing age is associated with physiological decline and increased risk for non-communicable diseases [6]. Geriatric syndromes, such as falls, frailty, dementia and incontinence, are complex age-related conditions that are associated with significant morbidity and poor outcomes [7]. Dementia is particularly problematic as it frequently results in disabilities and care-dependencies [8]. These age-related health conditions increase health costs and adversely affect the quality of life. The management and outcomes of health conditions in the aged are influenced by multiple factors, such as environment and management of co-morbidities [9]. People in SSA are subject to resource-poor health care systems and a dynamic social and political landscape. Since

the scale-up of anti-retroviral therapy in SSA in the mid-1990s, more HIV-positive people are surviving into old age [10]. HIV infection itself is an independent risk factor for the development of geriatric syndromes, such as frailty [11]. It is unclear what effect communicable diseases, such as HIV, and limited access to healthcare have had on the health of older adults in SSA.

The World Health Organization calls for the alignment of health systems with the needs of older populations in the Global Strategy Plan on Ageing and Health [12]. This has been echoed on the African continent in the African Union Policy Framework and Plan on Ageing (AU plan) [13]. However, due to limited data on the health and well-being of the aged on the continent, public health systems in SSA have been unable to plan adequately for the needs of ageing populations. National Health Insurance Schemes (NHIS), such as the one implemented in Ghana, aim to provide Universal Health Coverage (UHC) to all, but do not consider the increased burden of age-related health conditions by older adults [14]. National Health Insurance Schemes focus on primary health care as the foundation for UHC, but do not provide coverage for most age-related health conditions such as disabilities, visual and auditory impairments [15]. Less than one in five people over the age of 60 years in SSA receives a pension or benefits from social security [16]. The failure of health systems to address the needs of older adults can lead to catastrophic out-of-pocket expenditure and neglect of treatable age-related health conditions.

The main objective for the proposed scoping review is to identify, explore and map literature on age-related health conditions and associated factors in older adults accessing primary care in sub-Saharan Africa. It is anticipated that the results of a scoping review will inform governments and policymakers of the geriatric health services required by older adults in sub-Saharan Africa and identify gaps for further research. The results will also ensure that health professions educators are aware

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of the appropriate geriatric competencies that need to be included in local medical curricula.

Methodology

Scoping review

This protocol is for a systematic scoping review of literature reporting on age-related health conditions in geriatric populations (i.e. people 60 years and older) in sub-Saharan Africa. A scoping review method was selected as it aims to outline different types of evidence on the area of interest and the gaps for further research. The proposed review will be guided by the methodological framework proposed by Arksey and O'Malley [17]. Thus, the following five steps will be followed in this scoping review: (i) identifying the research question, (ii) identifying relevant studies, (iii) selection of eligible studies, (iv) charting the data, and (v) collating and summarising the results. Quality appraisal will not be done as this review aims to map all research activities in this field.

Identifying the research question

The main research question is “what are the age-related health conditions reported on in people aged 60 years and older who access primary care services in sub-Saharan Africa?”

The research sub-questions are:

1. What are the different age-related health conditions reported on in people aged 60 years and older in SSA at primary care level?
2. What are the factors associated with age-related conditions in people aged 60 years and older in SSA?
3. How can primary care services address age-related health conditions in people aged 60 years and older in SSA?

This study will use the PEO format (Table 1) to align the study selection with the research question.

Identifying relevant studies

A search will be conducted for published and unpublished (grey) literature on the research area in the following electronic databases: Cochrane Library, World of Science, PubMed and WorldCat. Studies published prior

Table 1 A PEO framework for eligibility of studies

Criteria	Determinants
P-Population	Adults 60 years and older in SSA
E-Exposure	Ageing
O-Outcomes	<ul style="list-style-type: none"> • Geriatric syndromes • Chronic illnesses • Functional status • Primary healthcare needs

to June 2019 that have the keywords or Medical Subject Headings (MeSH) terms “older adults” or “aged”, “primary care” or “health” and “sub-Saharan Africa” will be identified. The search strategy will be piloted to check the appropriateness of keywords and databases. Keywords may be refined to include specific geriatric syndromes such as “dementia”, “falls” and “functional impairment”. A hand search will be also conducted of the references of the included studies and websites such as the World Health Organization (WHO) and the Directory of Research on Ageing in Africa to identify potential relevant literature. Potentially relevant grey literature will be identified through targeted searches of dissertations/theses (ProQuest Dissertations & Theses Global) and conference abstracts (EMBASE Conference Abstracts, Conference Proceedings Citation Index—Science and Social Science & Humanities).

Selection of eligible studies

Title and abstract screening will be guided by the PEO framework (Table 1). Further eligibility criteria will ensure that the content of the included studies is relevant to the research question.

Inclusion criteria

For studies to be included, they must meet the following criteria:

- Focus on people or populations aged 60 years or older
- Report on health or primary care services provided to older adults
- Include participants from SSA
- Published prior to June 2019
- Qualitative and quantitative studies

Exclusion criteria

Studies will be excluded if they have any of the following characteristics.

- Studies that do not include participants or studies from SSA
- Studies looking at geriatric in-patients or specialised services for geriatrics
- Studies where full-text article could not be obtained

The search strategy will be piloted to check the appropriateness of keywords and databases. The electronic database search will be recorded in a table. A draft is provided in Table 2.

All eligible articles will be uploaded into Endnote X9 software, and duplicates identified and removed. Between July and August 2019, the authors plan to conduct title and abstract screening of all eligible articles to

Table 2 Electronic database searches

Date of search	Electronic database	Keywords searched	Number of studies retrieved	Number of studies selected
01/07/2019	World of Science	"older adults" or "aged", AND "primary care" or "health" AND "sub-Saharan Africa"		

determine whether the study should be included in the review or not. All attempts will be made to obtain full texts of selected articles, by searching the web, engaging with the UKZN librarian or contacting the author if necessary. Both authors will conduct full-text screening of the selected studies. A third reviewer will be employed if there are significant discrepancies that cannot be resolved by discussion and consensus. The degree of agreement between reviewers will be calculated and reported.

The selection process will follow the recommendations in the Preferred Reporting Items for Systematic Reviews and Meta-Analyses Extension for Scoping Reviews (PRISMA-ScR) checklist [18] and be mapped using the PRISMA-P chart [19]. Selection of studies to be included in the review is expected to be completed within 6 weeks.

Charting the data

A data charting form will be used to electronically capture relevant information from each included study. This is planned for September 2019. The extracted data will include the following fields (Table 3).

Table 3 Data charting form

Author and date	
Title of study	
Publication	
Aim of study	
Study setting	
Study population	
Sampling method	
Study design	
Data collection methods	
Data analysis	
Conclusion	
Outcome	Study findings relevant to study objectives
Most relevant findings	Identification of age-related health condition, and associated factors, primary care service provision for age-related health condition
Comment	

Collating, summarising and reporting the results

A narrative report will be produced to summarise the extracted data around the following outcomes: region of study, category of age-related health condition, prevalence, associated factors for age-related health conditions and primary care services for older adults. These results will be described in relation to the research question and in the context of the overall study purpose. Gap identification will detect areas, such as countries in SSA that lack data on the health of older adults, and if there is a paucity of data on significant geriatric health conditions.

Discussion

The proposed scoping review aims to identify and describe age-related health conditions in geriatric populations in sub-Saharan Africa. It will also highlight gaps regarding knowledge of geriatric health in SSA.

This review will be the first part of a study to develop guidelines for health professions education in geriatric primary care. An understanding of the primary health-care needs of older adults in SSA will assist health professions educators to design and implement age-friendly medical training programmes. This will capacitate medical graduates to suitably care for older adults at primary care level. This review also has the potential to create greater awareness into the growing health care needs of older adults in the region and will provide evidence to assist health policymakers and stakeholders to address the needs of this vulnerable population.

A limitation of this review is that it may omit studies that include participants of all ages, including those aged 60 years and older. Studies that define older adults as 50 years and older may be omitted from the review if data on people aged 60 years and older cannot be isolated from the results. This may result in the exclusion of important studies such as the World Health Organization's multi-country Study on global AGEing and adult health (WHO SAGE) [20]. Also, since the quality of the studies will not be assessed, the reliability of data extracted from selected studies cannot be commented on.

Abbreviations

AU: African Union; HIV: Human immunodeficiency virus; MeSH: Medical Subject Headings; NHIS: National Health Insurance Schemes; PRISMA: Preferred Reporting Items for Systematic Reviews and Meta-Analyses; PRISMA-ScR: Preferred Reporting Items for Systematic Reviews and Meta-Analyses Extension for Scoping Reviews; SSA: Sub-Saharan Africa; UHC: Universal Health Coverage; WHO: World Health Organization

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Authors' contributions

KN conceptualised the study and prepared the draft protocol under the supervision of JWW. Both KN and JWW contributed to the development of the background, design of the study and planned output of the research. KN

prepared the manuscript and JWV reviewed it. Both authors read and approved the final manuscript.

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Availability of data and materials

All data generated or analysed during this study will be included in the published scoping review article.

Ethics approval and consent to participate

This study will not include humans or animals as participants. Data will be sourced from published literature.

Consent for publication

Not applicable

Competing interests

The authors declare that they have no competing interests.

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References

- Aboderin IA, Beard JR. Older people's health in sub-Saharan Africa. *Lancet*. 2015;385(9968):e9–e11.
- Kowal PR, Wolfson LJ, JE D. Creating a minimum data set on ageing in sub-Saharan Africa. *South Afr J Gerontol*. 2009;9:18–23.
- Aboderin I. Understanding and advancing the health of older populations in sub-Saharan Africa: policy perspectives and evidence needs. *Public Health Rev*. 2010;32(2):357.
- Frost L, Liddie Navarro A, Lynch M, Campbell M, Orcutt M, Trelfa A, et al. Care of the elderly: survey of teaching in an aging sub-Saharan Africa. *Gerontol Geriatr Educ*. 2015;36(1):14–29.
- Dotchin CL, Akinymiri RO, Gray WK, Walker RW. Geriatric medicine: services and training in Africa. *Age Ageing*. 2013;42(1):124–8.
- Chatterji S, Byles J, Cutler D, Seeman T, Verdes E. Health, functioning, and disability in older adults—present status and future implications. *Lancet*. 2015;385(9967):563–75.
- Inouye SK, Studenski S, Tinetti ME, Kuchel GA. Geriatric syndromes: clinical, research, and policy implications of a core geriatric concept: (see editorial comments by Dr. William Hazzard on pp 794–796). *J Am Geriatr Soc*. 2007;55(5):780–91.
- Prince M, Acosta D, Chiu H, Sczufca M, Varghese M. Dementia diagnosis in developing countries: a cross-cultural validation study. *Lancet*. 2003;361(9361):909–17.
- Tinetti ME, Inouye SK, Gill TM, Doucette JT. Shared risk factors for falls, incontinence, and functional dependence: unifying the approach to geriatric syndromes. *Jama*. 1995;273(17):1348–53.
- Deeks SG, Lewin SR, Havlir DV. The end of AIDS: HIV infection as a chronic disease. *Lancet*. 2013;382(9903):1525–33.
- Pathai S, Gilbert C, Weiss HA, Cook C, Wood R, Bekker L-G, et al. Frailty in HIV-infected adults in South Africa. *J Acquir Immune Defic Syndr*. 2013;62(1):43.
- Beard JR, Officer A, de Carvalho IA, Sadana R, Pot AM, Michel J-P, et al. The world report on ageing and health: a policy framework for healthy ageing. *Lancet*. 2016;387(10033):2145–54.
- Union A. Africa Health Strategy 2016–2030. p. 2016.
- Peltzer K, Williams JS, Kowal P, Negin J, Snodgrass JJ, Yawson A, et al. Universal health coverage in emerging economies: findings on health care utilization by older adults in China, Ghana, India, Mexico, the Russian Federation, and South Africa. *Glob Health Action*. 2014;7:25314.
- McIntyre D, Garshong B, Mtei G, Meheus F, Thiede M, Akazili J, et al. Beyond fragmentation and towards universal coverage: insights from Ghana, South Africa and the United Republic of Tanzania. *Bull World Health Organ*. 2008;86(11):871–6.

- Bloom DE, Canning D, Lubet AJD. Global population aging: facts, challenges, solutions & perspectives. *Daedalus*. 2015;144(2):80–92.
- Arksey H, O'Malley L. Scoping studies: towards a methodological framework. *Int J Soc Res Methodol*. 2005;8(1):19–32.
- Tricco AC, Lillie E, Zarin W, O'Brien KK, Colquhoun H, Levac D, et al. PRISMA extension for scoping reviews (PRISMA-ScR): checklist and explanation. *Ann Int Med*. 2018;169(7):467–73.
- Moher D, Shamseer L, Clarke M, Ghersi D, Liberati A, Petticrew M, et al. Preferred reporting items for systematic review and meta-analysis protocols (PRISMA-P) 2015 statement. *Syst Rev*. 2015;4(1):1.
- Arokiasamy P, Kowal P, Capistrant BD, Gildner TE, Thiele E, Birritwum RB, Yawson AE, Mensah G, Maximova T, Wu F, Guo Y. Chronic noncommunicable diseases in 6 low-and middle-income countries: findings from wave 1 of the World Health Organization's study on global Ageing and adult health (SAGE). *Am J Epidemiol*. 2017 Feb 18;185(6):414–28.

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Supplementary file B – Scientific report

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2820 **A review of geriatric care training in the undergraduate nursing and medical** 2821 **curricula at the University of KwaZulu-Natal, South Africa**

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2827 Durban, South Africa

2828 **Background**

2829 The lack of attention to geriatric care training in health professions curricula is concerning given
2830 the rapid increase in the number of people aged 60 years and older in South Africa (SA).^[1] Most
2831 older adults in SA access health services at primary care level. Nursing and medical graduates
2832 who are at the forefront of primary care services must be prepared to care for the increasing
2833 number of older adults needing care for chronic and age-related health conditions. However,
2834 studies indicate that the level of primary care provided to older adults in SA is lacking due to
2835 inadequate training of health professionals.^[2, 3]

2836 Older adults are prone to multiple health conditions and thus require coordinated care to preserve
2837 function and improve their quality of life.^[4] Reports of polypharmacy and adverse drug reactions
2838 in elderly patients are ascribed to fragmented and inappropriate management of older adults.^[5]

2839 The World Health Organisation (WHO) highlights the need for greater interdisciplinary team
2840 skills among primary care providers to improve the care of older adults.^[6] While
2841 interprofessional collaboration and care are inherent in general nursing practice, there is little
2842 inclusion of interprofessional education (IPE) within nursing education to prepare graduates to
2843 provide coordinated care to older adults.^[7] It is thus critical that geriatric care training be
2844 included in all undergraduate (UG) health professions curricula, and that training includes
2845 interprofessional education. Interprofessional education (IPE) occurs “when two or more

2846 professions learn about, from and with each other to enable effective collaboration and improve
2847 health outcomes”.^[8] Such a collaborative approach has the potential to reduce health care costs
2848 and care dependencies in the aged.

2849 Despite the evident need for geriatric care training of nurses in SA, the South African Nursing
2850 Council (SANC) has removed specialist gerontology from nursing curricula. Gerontology and
2851 geriatrics has also been neglected in undergraduate health professions education worldwide, and
2852 in sub-Saharan Africa, in particular.^[9] Furthermore, nursing and medical undergraduate curricula
2853 in SA are developed and implemented independently of each other. It is therefore unclear
2854 whether these programmes adequately equip graduates to care for older adults as part of a
2855 multidisciplinary team in primary care.

2856 A situational analysis was thus required to identify the strengths, weaknesses, opportunities and
2857 threats of current nursing and medical curricula at the UKZN in preparing graduates to care for
2858 older adults. The aim of this study was to analyse teaching and assessment of geriatric topics in
2859 the UG nursing and medical curricula at the UKZN and explore potential opportunities to
2860 enhance IPE relevant to the care of older adults.

2861 **Methods**

2862 This mixed methods study was conducted through document review of module handbooks, study
2863 guides and an electronic curriculum platform used for the undergraduate medical programme. In
2864 addition semi-structured interviews were conducted with key informants (n=5) involved in
2865 teaching and curriculum development. Data relating to the geriatric curriculum were analysed
2866 according to geriatric content, teaching methods, and assessment per year of study (Appendix A).
2867 Content and thematic analyses was conducted. Ethical approval was obtained from the X
2868 Biomedical Research Ethics Committee (BE287/18) prior to data collection between July and
2869 September 2019.

2870 Both undergraduate nursing and medical degrees are offered in the College of Health Sciences at
2871 the UKZN. The programme for the nursing degree (BN) is four years and the medical degree
2872 (MBChB) six years.

2873 **Findings**

2874 Health professions educators representing both curricula were cognizant of the increasing
2875 number of older adults requiring primary healthcare services and agreed on the importance of
2876 training students to care for older adults. However, they expressed concerns about increasing the
2877 teaching on geriatric care due to time constraints of the programme and other priorities such as
2878 maternal and child health that have to be accommodated in the curriculum. Two main themes
2879 relevant to geriatric care training emerged from interviews with participants. These were; patient
2880 centredness and exposure of students to patients in authentic settings. Patient-centredness refers
2881 to understanding the whole person rather than a person with an illness.^[10] Patient centredness
2882 was explicitly addressed in the nursing but not the medical curriculum.

2883 *“We have to teach them to be patient centred. However, compassion fatigue is so common.”*
2884 Nurse educator, more than 10 years.

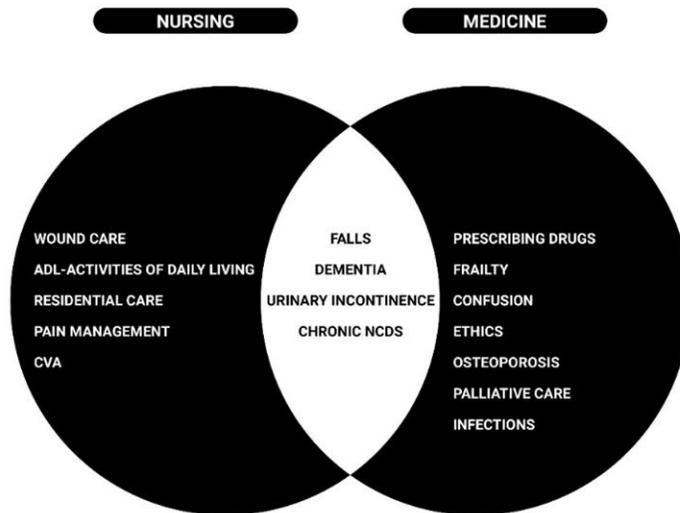
2885 *“They also do preventive and promotive health with the elderly, talking to them about diet,*
2886 *exercise, loneliness.”* Nursing educator, more than 20 years.

2887 Participants representing both programmes reflected that patient centred care for older adults
2888 could be undermined by the negative influence of role models during clinical training.

2889 *“I think that they see from other sisters or doctors that the old are left in the corners to die.”*
2890 Nurse educator, more than 15 years.

2891 An analysis of curriculum documents revealed that geriatric teaching in both disciplines involved
2892 a problem-based learning (PBL) approach (Appendix A). There is early exposure of students to
2893 paper-based cases followed up with classroom and bedside teaching in the latter years. Both the
2894 nursing and medical curricula include teaching on a wide range of geriatric topics, of which four
2895 were common to both programmes i.e. falls, dementia, urinary incontinence and chronic non-
2896 communicable conditions. (Figure A).

FIGURE A: DOMAINS OF GERIATRIC CARE IN CURRICULUM



2897

2898 Nursing students had clinical exposure to geriatric patients in multiple settings such as in the
2899 community, primary care, residential facilities and hospitals whereas medical students saw
2900 geriatric patients mainly in the hospital and community clinics. The limited exposure of medical
2901 students to older adults in the community was acknowledged as a limitation of the medical
2902 curriculum.

2903 *“They need to see more ambulatory patients, with multiple conditions, and to be able to*
2904 *communicate with these patients.”* Medical educator, more than 20 years.

2905 Teaching and assessment of geriatric content in both programmes was integrated into other
2906 modules, with no sub-minima applied in the assessment of geriatric topics. Interprofessional
2907 education (IPE) was not included in either programme. Participants perceived that the large
2908 numbers of students enrolled on the already crowded curricula would hinder the implementation
2909 of IPE.

2910 *“Being problem-based, and with big classes we can’t address everything”* Nurse educator, more
2911 than 15 years.

2912 Health professions educators in both programmes expressed that they were not only inadequately
2913 prepared, but also inadequately resourced to implement IPE or expand current geriatric teaching.

2914 **Discussion**

2915 This study highlighted the strengths and weaknesses of current geriatric training of nursing and
2916 medical students. Both curricula include teaching and learning on a range of geriatric topics,
2917 unlike many other training institutions in sub-Saharan Africa.^[11] However, there were
2918 discrepancies between the geriatric topics covered in each curriculum. A notable finding of the
2919 study was the absence of collaboration with other health disciplines in the delivery of geriatric
2920 care training. Not only does the lack of collaboration and a common foundation of geriatric
2921 conditions raise concerns about possible curricular gaps, but also about the ability of nursing and
2922 medical graduates to co-manage elderly patients in a patient centred and efficient manner. There
2923 is an evident need for relevant stakeholders, including community representatives, to reach a
2924 consensus on the minimum core competencies in geriatric care for health professionals.

2925 The problem-based learning (PBL) approach used in both curricula provides an effective means
2926 of educating students on core geriatric topics, and to address psychosocial and teamwork issues
2927 relevant to the care of older adults. Multiple common geriatric topics were identified in this study
2928 that involve management by a multi-disciplinary team, such as dementia care. However, teaching
2929 on these topics did not include input from other disciplines. Models of IPE that include case-
2930 based PBL taught by educators with nursing and medical backgrounds are feasible options to
2931 introduce IPE in this institution.^[12] However, health professions educators in both disciplines
2932 would need faculty development in order to effectively develop and implement IPE for geriatric
2933 care training.

2934 Although there is some exposure to older adults in the community, the programme would benefit
2935 from greater exposure to community-dwelling older adults, as this has been shown to improve
2936 patient centeredness and attitudes of students towards older adults.^[13] Most older adults in SA
2937 are cared for at primary care level or in the community, and require professional health services
2938 that include preventative and promotive health services. Training should thus occur in these
2939 authentic settings to prepare graduates to care for the majority of older adults in South Africa.

2940 The lack of independent assessment of geriatric topics makes it difficult to ascertain whether
2941 graduates actually possess the necessary knowledge, skills and attitudes to care for older adults.
2942 Further investigation is required into graduate competencies in geriatric care.

2943 Threats to geriatric care training in both programmes included the time constraints and lack of
2944 confidence of educators to implement IPE. One suggestion to improve the geriatric care
2945 competencies of students was to maximize the learning opportunities in facilities where
2946 interprofessional collaboration was practiced. Unfortunately, this model of care was not
2947 practiced at most of the clinical training sites. This study highlighted the need to expand current
2948 teaching and assessment relevant to the care of older adults in each discipline, and to ensure
2949 greater concordance between nursing and medical training programmes regarding primary care
2950 for older adults. This will enable graduates to work together in functional teams at primary care
2951 level to provide coordinated and quality care to older adults. Further investigation is required
2952 into the geriatric curricula of other health professions programmes in our college such as
2953 occupational therapists and physiotherapists.

2954 **Conclusion**

2955 There are opportunities to maximise student learning and readiness to co-manage older patients
2956 in primary health care facilities by ensuring that students learn together in interprofessional
2957 teams. However, faculty development is required to upskill educators on IPE. Variable coverage
2958 of geriatric topics in each programme highlight the need for consensus on the minimum geriatric
2959 core competencies for health professionals.

2960 **Keywords:** older adult - geriatric – nursing education – interprofessional education - curriculum

2961 **References**

- 2962 1. Day C, Ndlovu N, Gray A. Health and related indicators 2018. South African Health Review.
2963 2018;2018(1):139-250,
- 2964 2. Kalula SZ. The quality of health care for older persons in South Africa : is there quality care? :
2965 conference paper. ESR Review : Economic and Social Rights in South Africa. 2011;12(1):22-
2966 5.<https://hdl.handle.net/10520/EJC33376>
- 2967 3. Abudu-Birresborn D, McCleary L, Puts M, Yakong V, Cranley L. Preparing nurses and nursing
2968 students to care for older adults in lower and middle-income countries: A scoping review. International
2969 Journal of Nursing Studies. 2019;92:121-34.<https://doi.org/10.1016/j.ijnurstu.2019.01.018>
- 2970 4. Aboderin IA, Beard JR. Older people's health in sub-Saharan Africa. The Lancet.
2971 2015;385(9968):e9-e11.[https://doi.org/10.1016/S0140-6736\(14\)61602-0](https://doi.org/10.1016/S0140-6736(14)61602-0)
- 2972 5. Saka SA, Oosthuizen F, Nlooto M, Odusan O. The knowledge, awareness, and perception of
2973 healthcare professionals about appropriate prescribing in the elderly: Findings from Nigeria and South
2974 Africa. Journal of Evaluation in Clinical Practice. 2020,

- 2975 6. World Health O. Interprofessional collaborative practice in primary health care: nursing and
2976 midwifery perspectives. Geneva: World Health Organization; 2013 2013.
- 2977 7. Maree C, van Wyk H. Interprofessional health education to improve collaboration in the South
2978 African context: A realist view. Trends in Nursing. 2016;3(1).<https://doi.org/10.14804/3-1-41>
- 2979 8. Organization WH. Framework for Action on Interprofessional Education and Collaborative
2980 Practice.: World Health Organization; 2010 [Available from: [http:// whqlibdoc.who.int/hq/2010/WHO](http://whqlibdoc.who.int/hq/2010/WHO)
2981 HRH HPN 10.3 eng.pdf, [http:// whqlibdoc.who.int/hq/2010/WHO](http://whqlibdoc.who.int/hq/2010/WHO) HRH HPN 10.3 eng.pdf
- 2982 9. Tanyi PL, Pelsler A. The missing link: Finding space for gerontology content into university
2983 curricula in South Africa. Gerontology & geriatrics education.
2984 2018;[https://doi.org/10.1080/02701960.2018.1428579:1-](https://doi.org/10.1080/02701960.2018.1428579:1-17)
2985 [17.https://doi.org/10.1080/02701960.2018.1428579](https://doi.org/10.1080/02701960.2018.1428579)
- 2986 10. Balint E. The possibilities of patient-centered medicine. The Journal of the Royal College of
2987 General Practitioners. 1969;17(82):269,
- 2988 11. Frost L, Liddie Navarro A, Lynch M, Campbell M, Orcutt M, Trelfa A. Care of the elderly:
2989 survey of teaching in an aging sub-Saharan Africa. Gerontol Geriatr Educ.
2990 2015;36.<https://www.tandfonline.com/doi/pdf/10.1080/02701960.2014.925886>
- 2991 12. Thompson S, Metcalfe K, Boncey K, Merriman C, Flynn LC, Alg GS, et al. Interprofessional
2992 education in geriatric medicine: towards best practice. A controlled before–after study of medical and
2993 nursing students. BMJ open. 2020;10(1). doi: 10.1136/bmjopen-2017-018041
- 2994 13. Mendoza De La Garza M, Tieu C, Schroeder D, Lowe K, Tung E. Evaluation of the Impact of a
2995 senior mentor program on medical students' geriatric knowledge and attitudes toward older adults.
2996 Gerontol Geriatr Educ. 2018;39(3):316-25.10.1080/02701960.2018.1484736
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Data set for scientific report3000 **Table - Geriatric teaching and learning in undergraduate nursing programme**

Year of study	Curriculum components	Details	Assessment
1	Case-based discussions with PBL approach	4 x Patient studies covering falls, nutrition, wound care, urinary incontinence, bereavement and palliative care, pain management. Activities of daily living	Written tests- short questions
	Residential care nursing	1 week allocation to residential care. History taking and basic nursing care.	Written tests
2	Community evaluation	No geriatric component	
3	Clinical geriatric experience	Allocation to wards. Skills and procedures.	+Triple jump, ** OSCE, written test
4	Psycho-geriatrics	6 weeks of mental health block is spent with residential and ambulatory geriatric patients with mental health conditions.	Reflective journals, Written cases,
	Primary health care	40 hrs in clinics- exposure to older patients with chronic illnesses	+triple jump, ** OSCE

3001

3002 **Table 2. Geriatric teaching and learning in undergraduate medical programme**

Year of study	Curriculum components	Details	Assessment
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1	Principles of geriatrics	1 hour lecture	*MCQs
3	Lecture + Case-based discussions with PBL approach	12 lectures + case discussions covering prescribing for the elderly, legal and ethical issues of ageing, physiological changes of ageing, dementia, comprehensive geriatric assessment, urinary incontinence, falls, infections, frailty, confusion, syncope and osteoporosis	*MCQ + **OSPE
4	Lectures + ward rotations	Lectures + clinical tutorials over 12 weeks– covering dementia, comprehensive geriatric assessment, falls, urinary incontinence, infections, frailty, confusion, syncope and osteoporosis.	Portfolio, ***DOSCE
5	Ward rotations	6 weeks of clinical experience with in-patients, one week of hospice attachment. Bedside teaching	*MCQ, + Long case
6	Ward rotations	7 weeks of clinical experience with in-patients.	*MCQ, ***DOSCE, Portfolio, + long case

3003

3004 +Triple jump - three stage method of assessment used in problem-based learning

3005 *MCQ-multiple choice questions

3006 **OSPE/OSCE – Objective structured clinical/practical examination

3007 ***DOSCE- Clinical assessment: directly observed

3008 # (p) – Portfolio of evidence for assessment

3009 + Long case – Clinical assessment: Long clinical case

3010

Appendices

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Appendix 1 – FGD Information sheet

STUDY TITLE: Geriatric patients’ perceptions and expectations of primary care services

Dear medical student,

I, Dr. Keshena Naidoo, am doing research on the health needs and expectations of patients over 60yrs who use primary care services in KZN. Research is just the process to learn the answer to a question. In this study we want to know what you need and expect from health professionals providing primary care services. This will help us to know what health professionals should learn in order to care for geriatric patients

We are inviting you to participate in a research study to enable us to improve the training of health professionals to care for patients over 60 years in primary care.

What is involved in the study:

The study will be conducted in at the clinic in a private area. If you agree to take part in this Medical education research, you will be asked to participate in a group discussion with 6-9 other participants. This discussion will be audiotaped and is expected to take 30-45 minutes. Please respect the privacy of other participants by not discussing details of the group discussion with anyone. If you agree to take part in this research study you will have to sign a form to confirm you are willing to participate and understand what this entails. You details will not be shared with anyone.

Risks and/or discomforts: You may become anxious or uncomfortable when discussing your experiences. You do not have to answer any questions you don’t want to answer.

Benefits: You may get no direct benefit from being in this study, but you may get some personal satisfaction from being part of a research study on health professions education. You or others may benefit in the future from information learned in this study.

Cots to you: There is no cost to you for taking part in this study. Refreshments will be provided.

Compensation: There is no financial compensation for you. Refreshments will be provided during the discussion to all participants.

3051 **Appendix 2- FGD Information sheet (isiZulu)**

3052 **STUDY TITLE: Geriatric patients' perceptions and expectations of primary care services**

3053 **Sawubona,**

3054 Ngingu Dokotela Keshena Naidoo, ngenza ucwaningo olubheka izidingo zempilo zabantu
3055 abaneminyaka engaphezu kwewu60 abathola usizo lwezempilo emtholampilo eKwaZulu Natal.
3056 Ucwaningo indlela yokufunda kabanzi. Kulolucwaningo sifisa ukwazi kabanzi ngezidingo zakho
3057 la emtholampilo. Lokhu kuzosisiza ukuthi sazi ukuthi abazempilo kufanele bafundiswe kanjani
3058 ukuze bakwazi ukunakekela abantu abanezidingo ezifana nezakho.

3059 Sikumema ukuba ube yingxenywe yalolucwaningo ukuze sithole ulwazi olubanzi mayelana
3060 nokufundisa odokotela ukuze bakwazi ukubaqeqesha kangcono ukuze bakwazi ukunakekela
3061 abantu asebekhulile ngezininga eliphezulu.

3062 Inhloso yalolucwaningo ukuqondisisa izidingo zempilo zabantu abaneminyaka engaphezu
3063 kwewu60 abathola usizo lwezempilo emtholampilo.

3064 **Uhlelo locwaningo:** Ucwaningo luzokwenzelwa emtholampilo endaweni engasese. Sizocela
3065 imizuzu elinganiselwe kwewu30 kuya kwewu45. Uma uvuma ukuba yingxenywe yalolucwaningo,
3066 uzocelwa ukuba usayine ifomu lesivumelwano. Imininingwane yakho ngeke idalulwe.

3067 **Ukuhlukumezeka noma ukuphatheka kabi:** Kungenzeka uzizwe uphatheke kabi emoyeni uma
3068 uphendula imibuzo ekukhumbuzwa izinto ezikuphatha kabi. Awuphoqiwe ukuyipendula
3069 leyomibuzo. Ungakhetha ukuphuma engxoxweni noma ngabe inini.

3070 **Inzuzo:** Ayikho inzuzo ongalindela ukuyithola ngokuzibandakanya kulolucwaningo. Ayikho
3071 inkokhelo oyoyithola ngokunikela ngesikhathi sakho, futhi ayikho imali ekumele uyikhokhe.
3072 Kodwa uzothola ithuba lokuba ubeke imibono yakho mayelana nokufundiswa iziqu
3073 zobudokotela. Wena kanye nabanye ningathola ukuzuza ngemininingwane etholwe
3074 kulolucwaningo esikhathini esizayo.

3075 **CONFIDENTIALITY**

3076 Uma uvuma ukuzibandakanya nalolucwaningo, yonke imininingwane yakho, kanye
3077 nezimpendulo zakho kuyogcinwa kuyimfihlo. Okuqoshiwe kuzovalelwa kwicomputer
3078 esetshenziswa abocwaningo kuphela. Ayizukudalula imininingwane yakho eyimfihlo njengegama
3079 nesibongo sakho, umazisi wakho, kanye nezinombolo zakho zocingo. Kuzocelwa ukuba
3080 okuxoxwa kulolucwaningo kugcine kulolucwaningo.

3081 Izindlela zokuxhumana nomcwaningi: Dr. Keshena Naidoo, UKZN Department of Family Medicine,
3082 031-2601899
3083
3084 Imininingwane yenyuvesi:
3085 Biomedical Research Ethics, Research Office, UKZN, Private Bag X54001, Durban 4000
3086 Telephone: +27 (0)31 2604769/2601074
3087 Fax: +27 (0)31 2604609
3088 Email: BREC@ukzn.ac.za
3089

3090 **Appendix 3- FGD Informed consent form**

3091 **Geriatric patients' perceptions and expectations of primary care services**

3092
3093 **Dear participant**

3094 You are invited to participate in a research study entitled "Preparing medical graduates to care for
3095 older adults." The purpose of this research study is to understand the health needs and expectations
3096 of people over 60 years who attend clinics.

3097
3098 **YOUR PARTICIPATION IS VOLUNTARY. THE STUDY HAS BEEN APPROVED BY UKZN's**
3099 **BREC.**

3100
3101 **PROCEDURES**

3102 If you agree to take part in this Medical education research, you will be asked to participate in a
3103 group discussion with 6-9 other participants. This discussion will be audiotaped and is expected
3104 to take 30-45 minutes. Please respect the privacy of other participants by not discussing details
3105 of the group discussion with anyone.

3106
3107 **RISKS AND/OR DISCOMFORTS**

3108 You may become anxious or uncomfortable when talking about your experiences and needs. You do
3109 not have to answer any questions you don't want to answer.

3110
3111 **BENEFITS**

3112 You may get no direct benefit from being in this study, but you may get some personal satisfaction
3113 from being part of a research study on medical education. You or others may benefit in the future from
3114 information learned in this study.

3115
3116 **COSTS TO YOU AND COMPENSATION**

3117 There is no cost to you for taking part in this study.
3118 There is no financial compensation for you. Refreshments will be provided to all participants.

3119
3120 **CONFIDENTIALITY**

3121 We will not share your details with anyone. The recording and transcripts of the discussion will be
3122 stored on a password-protected computer that only the researcher will be able to access. No names
3123 will be mentioned. All participants are advised to respect each other's privacy.

3124 You have been informed about the study by Dr. Keshena Naidoo. You may contact Dr. Keshena
3125 Naidoo on 031-2601899 during office hours if you have any questions about the research.

3126
3127 You may contact the Biomedical Research Ethics Office on 031-2604769 or 2601074 or email
3128 BREC@ukzn.ac.za if you have any questions about your rights as a research participant.

3129
3130 **PARTICIPANT AGREEMENT**

3131 The research study, including the above information, has been described to me orally. I understand
3132 what my involvement in the study means and I voluntarily agree to participate. I have been given an
3133 opportunity to ask any questions that I might have about participation in the study.

3134
3135
3136 _____
3137 Signature of participant

3134
3135
3136 _____
3137 Signature of Witness

3138
3139 Date : _____

3140 **Appendix 4 – FGD Informed Consent form (isiZulu)**

3141 IFOMU LESIVUMELWANO

3142
3143 **Sawubona,**

3144
3145 Igama lami uKeshena Naidoo, ngingumfundi wasenyuvesi yaKwaZulu Natali. Ngifundela iziqu
3146 zobudokotela. Uyacelwa ukuba ube yingxenye yalolucwaningo olubizwa “Preparing medical
3147 graduates for primary care of geriatric patients in sub-Saharan Africa”. Inhloso yalolucwaningo
3148 ukuqondisisa izidingo zempilo zabantu abaneminyaka engaphezu kwewu60 abathola usizo
3149 lwezempilo emtholampilo. Ulwazi esizolithola kulolucwaningo luzosiza izikhungo ezifundisa
3150 odokotela ukuze bakwazi ukubaqeqesha kangcono ukuze bakwazi ukunakekela abantu asebekhulile
3151 ngezinga eliphezulu.

3152
3153 **AWUPHOQIWE UKUTHI UBE YINGXENYE YALOLUCWANINGO, LOKHO KUYISINQUMO SAKHO.**
3154 **IMVUME YOKWENZA LOLUCWANINGO SIYINIKWE ABASE NYUVESI YAKWAZULU NATALI.**

3155
3156 Uma uvuma ukuba yingxenye yalolucwaningo, uzocelwa ukuba ube yingxenye yengxoxo nabanye
3157 abangu 7 abavume njengawe ukuzibandakanya. Ingxoxo izoqoshwa ithathe imizuzu elinganiselwe
3158 kwewu30 kuya kwewu45.

3159
3160 Kungenzeka uzizwe uphatheke kabi emoyeni uma uphendula imibuzo ekukhumbuza izinto
3161 ezikuphatha kabi. Awuphoqiwe ukuyipendula leyomibuzo. Ungakhetha ukuphuma engxoxweni noma
3162 ngabe inini.

3163
3164 Ayikho inzuzo ongalindela ukuyithola ngokuzibandakanya kulolucwaningo. Ayikho inkokhelo
3165 oyoyithola ngokunikela ngesikhathi sakho, futhi ayikho imali ekumele uyikhokhe. Kodwa uzothola
3166 ithuba lokuba ubeke imibono yakho mayelana nokufundiswa iziqu zobudokotela. Wena kanye
3167 nabanye ningathola ukuzuza ngemininingwane etholwe kulolucwaningo esikhathini esizayo.

3168
3169 Uma uvuma ukuzibandakanya nalolucwaningo, yonke imininingwane yakho, kanye nezimpendulo
3170 zakho kuyogcinwa kuyimfihlo. Okuqoshiwe kuzovalelwa kwicomputer esetshenziswa abocwaningo
3171 kuphela. Ayizukudalula imininingwane yakho eyimfihlo njengegama nesibongo sakho, umazisi
3172 wakho, kanye nezinombolo zakho zocingo. Kuzocelwa ukuba okuxoxwa kulolucwaningo kugcine
3173 kulolucwaningo.

3174
3175
3176 ISIVUMELWANO

3177 Mina u _____ (igama) ngichazelwe ngokwanele mayelana nocwaningo
3178 olubizwa “Preparing medical graduates for primary care of geriatrics in KwaZulu Natal
3179 olwenziwa uKeshena Naidoo.

3180 Ngiyaluqonda uhlelo kanye nenhloso yocwaningo.

3181 Nginikeziwe ithuba lokubuza imibuzo ngocwaningo, kanti imibuzo ebengiyo iphendulekile
3182 ngokugculisayo.

3183 Nginyaqiniseka ukuthi angiphoqekile ukuthi ngizibandakanye kulolucwaningo kanti futhi
3184 ngingelungelo lokuhoxisa ngaphandle kokunikeza isizathu. Ukungazibandakanyi kwami
3185 kulolucwaningo aluzukuphazamisa usizo engiluthola eMtholampilo.

3186 Uma nginemibuzo mayelana nocwaningo ngiyaqonda ukuthi ngingaxhumana nomcwaningi
3187 kulenombolo 031-2601899 noma naidook7@ukzn.ac.za

3188 Uma unemibuzo noma inking mayelana nalolucwaningo ungaxhumana nalaba abalandelayo:
3189

3190 BIOMEDICAL RESEARCH ETHICS ADMINISTRATION

3191 Research Office, Westville Campus

3192 Govan Mbeki Building

3193 Private Bag X 54001

3194 Durban

3195 4000

3196 KwaZulu-Natal, SOUTH AFRICA

3197 Tel: 27 31 2604769 - Fax: 27 31 2604609

3198

3199

3200 **Isignisha yozibandakanyayo**

Usuku

3201

3202

3203

3204 **Isignisha kafakazi**

Usuku

3205 **(Uma kudingeka)**

3206

3207

3208

3209 **Isignisha katolika**

Usuka

3210 **(Uma kudingeka)**

3211 **Appendix 5. FGD - Discussion guide**

3212

3213 **Sample:** Participants in the FGDs will be patients over 60 years who access care at
3214 primary care facilities. After obtaining consent from the facility, information about the study
3215 will be provided both verbally and in writing to patients attending the out-patient service
3216 at the facility. Interested participants will be screened for eligibility and written informed
3217 consent taken. Verbal consent and thumbprint will be taken for patients with illiteracy or
3218 visual impairment. Non-probability convenience sampling will be applied. Eight
3219 participants will be enrolled per focus group.

3220 **Number of focus groups:** Four groups - Each focus group will consist of between 6 and
3221 9 participants.

3222

3223

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3233

3260 **Consent forms:** (to be signed first).

3261 **FOCUS GROUP QUESTIONS**

3262 **Let's get started.....**

3263 **1. First, let's get to know you a little bit.....**

- 3264 • *How did you get to the clinic today? Did anyone come with you?*
- 3265 • *How would you describe yourself in one word?*

3266

3267 **2. Let's talk about your own ideas about your health.**

- 3268 • *How would you rate your health on a scale of 1-10 (1=poor, 10=excellent)?*
- 3269 • *What does getting older mean to you?*
- 3270 • *What are some of things that affect your health?*

3271

3272

3273 **3. Now, let's talk about some of the expectations, hopes and concerns you**
3274 **have when you see the nurse/doctor?**

- 3275 • *What were your reasons for coming to the clinic today?*
- 3276 • *How do you expect/hope that the clinic staff can help you?*
- 3277 • *How do these compare to your actual experience at the clinic? (**probe***
3278 ***further**)*
- 3279 • *What concerns do you have about your health? How are these concerns*
3280 *addressed at the clinic?*

3281

3282 **Summarize & confirm**

3283

3284 **4. Please comment on your overall experience at the clinic.**

- 3285 • *What were the good things you experienced*
- 3286 • *What were the bad things you experienced?*

3287

3288 **5. I would like us to discuss what you would like from the primary care health**
3289 **service.**

- 3290 • *Interaction with staff? (**probe further**)*
- 3291 • *Physical examination & investigations? (**probe further**)*
- 3292 • *Medication? (**probe further**)*
- 3293 • *Explanation of condition? (**probe further**)*

3294

- *Other*

3295 **Conclude and thank participants**

3296

3297 **Appendix 6 – Student survey – Informed consent form**

3298 **“Medical students’ geriatric knowledge and attitudes towards the elderly.”**

3299

3300 ***Dear student,***

3301 You are invited to participate in a research study entitled ” Measuring medical students geriatric
3302 knowledge and attitudes towards the elderly”. The purpose of this research study is to measure the
3303 knowledge and attitudes of medical students’ regarding the elderly. The results will inform health
3304 professions educators at UKZN of the effect of current geriatric teaching on students; knowledge and
3305 attitudes towards caring for the elderly.

3306

3307 **YOUR PARTICIPATION IS VOLUNTARY.**

3308

3309 **PROCEDURES**

3310 If you agree to take part in this Medical education research, you will be provided with a
3311 questionnaire that you will fill in yourself. All responses are anonymous.

3312

3313 **RISKS AND/OR DISCOMFORTS**

3314 Nil

3315 **BENEFITS**

3316 You may get no direct benefit from being in this study, but you may get some personal satisfaction
3317 from being part of a research study on medical education. You or others may benefit in the future from
3318 information learned in this study.

3319

3320 **COSTS TO YOU AND COMPENSATION**

3321 There is no cost to you for taking part in this study.

3322 There is no financial compensation for you. Refreshments will be provided to all participants.

3323

3324 **CONFIDENTIALITY**

3325 All information you share with us will be kept confidential. No names will be recorded and all
3326 completed forms will be stored in a locked file cabinet and only the researchers in this study will be
3327 If results are published, anonymity shall be maintained.

3328 You have been informed about the study by Dr. Keshena Naidoo.

3329 You may contact Dr. Keshena Naidoo on 031-2601899 during office hours if you have any questions
3330 about the research. You may contact the Biomedical Research Ethics Office on 031-2604769 or
3331 2601074 or email BRC@ukzn.ac.za if you have any questions about your rights as a research
3332 participant.

3333

3334 **PARTICIPANT AGREEMENT**

3335 The research study, including the above information, has been described to me orally. I understand
3336 what my involvement in the study means and I voluntarily agree to participate. I have been given an
3337 opportunity to ask any questions that I might have about participation in the study.

3338

3339

3340

3341 _____
Signature of participant

3342

3343

3344 Date : _____

3345

Signature of Witness

3346
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Appendix 7: Student Survey



**UNIVERSITY OF
KWAZULU-NATAL**

**INYUVESI
YAKWAZULU-NATALI**

**MEASURING MEDICAL STUDENTS GERIATRIC ATTITUDES AND
KNOWLEDGE**

BE 479/19

**Please answer the following questions to help us improve our training
in geriatrics.**

1. Please tick ONE answer

Survey code		How old are you		
Gender	<input type="checkbox"/> Male	<input type="checkbox"/> Female		
Race	<input type="checkbox"/> White	<input type="checkbox"/> Black	<input type="checkbox"/> Indian	<input type="checkbox"/> Coloured
What year of MBChB are you?				

Have you had any exposure to care of the elderly outside medical school?	<input type="checkbox"/> No	<input type="checkbox"/> Yes Where? _____
Do you have any other qualifications or work experience?	<input type="checkbox"/> No	<input type="checkbox"/> Yes List: _____ _____

3369

3370 **2. Do you think that the current teaching in geriatrics is:**

3371

Too much	
Just enough	
Not enough	
Don't know	

3372

3. FACTS ON AGEING Quiz

3373 **T F** 1. The majority of old people (past 60 years) have Alzheimer's disease.

3374 **T F** 2. As people grow older, their intelligence declines significantly.

3375 **T F** 3. It is very difficult for older adults to learn new things.

3376 **T F** 4. Personality changes with age.

3377 **T F** 5. Memory loss is a normal part of ageing.

3378 **T F** 6. As adults grow older, reaction time increases.

3379 **T F** 7. Clinical depression occurs more frequently in older than younger people.

3380 **T F** 8. Older adults are at risk for HIV/AIDS.

3381 **T F** 9. Alcoholism and alcohol abuse re significantly greater problems in the adult
3382 population over 60 years than that under age 60.

3383 **T F** 10. Older adults have more trouble sleeping than younger adults do.

3384 **T F** 11. Older adults have the highest suicide rate of any age group.

3385 **T F** 12. High blood pressure increases with age.

3386 **T F** 13. Older people perspire less, so they are more likely to suffer from hypothermia.

3387 **T F** 14. All women develop osteoporosis as they age.

- 3388 **T F** 15. A person's height tends to decline in old age.
- 3389 **T F** 16. Physical strength declines in old age.
- 3390 **T F** 17. Most old people lose interest in and capacity for sexual relations.
- 3391 **T F** 18. Bladder capacity decreases with age, which leads to frequent urination.
- 3392 **T F** 19. Kidney function is not affected by age.
- 3393 **T F** 20. Increased problems with constipation represent a normal change as people get
3394 older.
- 3395 **T F** 21. All five senses tend to decline with age.
- 3396 **T F** 22. As people live longer, they face fewer acute conditions and more chronic
3397 health conditions.
- 3398 **T F** 23. Retirement is often detrimental to health- i.e. people frequently seem to
3399 become ill or die soon after retirement.
- 3400 **T F** 24. Older adults are less anxious about death than are younger and middle-aged
3401 adults.
- 3402 **T F** 25. People 60 years of age currently make up about 20% of the South African
3403 population.
- 3404 **T F** 26. Most older people are living in nursing homes.
- 3405 **T F** 27. The modern family no longer takes care of its elderly.
- 3406 **T F** 28. The life expectancy of men at age 60 is about the same as that of women.
- 3407 **T F** 29. Remaining life expectancy of blacks aged 80 is about the same as whites.
- 3408 **T F** 30. Government pension benefits automatically increase with inflation.
- 3409 **T F** 31. Living below or near the poverty level is no longer a significant problem for
3410 most South Africans.
- 3411 **T F** 32. Most older drivers are quite capable of safely operating a motor vehicle.
- 3412 **T F** 33. Older workers cannot work as effectively as younger workers.
- 3413 **T F** 34. Most old people are set in their ways and unable to change.
- 3414 **T F** 35. The majority of old people are bored.
- 3415 **T F** 36. In general, most old people are pretty much alike.
- 3416 **T F** 37. Older adults (60+) have higher rates of criminal victimization than adults under
3417 60 do

- 3418 **T F** 38. Older people tend to become more spiritual as they grow older.
- 3419 **T F** 39. Older adults (60+) are more fearful of crime than are persons under 60.
- 3420 **T F** 40. Older people do not adapt as well as younger age groups when they relocate
3421 to a new environment.
- 3422 **T F** 41. Participation in volunteering through organisations (eg. Church & clubs) tends
3423 to decline among older adults.
- 3424 **T F** 42. Older people are much happier if they are allowed to disengage from society.
- 3425 **T F** 43. Geriatrics is a speciality in South Africa.
- 3426 **T F** 44. All medical schools include courses in geriatrics and gerontology.
- 3427 **T F** 45. Abuse of older adults is not a significant problem in South Africa.
- 3428 **T F** 46. Grandparents today take less responsibility for rearing grandchildren than ever
3429 before.
- 3430 **T F** 47. Older persons take longer to recover from physical and psychological stress.
- 3431 **T F** 48. Most older adults consider their health to be good or excellent.
- 3432 **T F** 49. Older females exhibit better health practices than older males.
- 3433 **T F** 50. Research has shown that old age truly begins at 60.

3434

3435 **4. Geriatrics Attitudes Score**

3436

3437

		1	2	3	4	5
		Strongly disagree	Somewhat disagree	Neutral	Somewhat agree	Strongly agree
1	Most old people are pleasant to be with.					
2	The Department of Health should reallocate money from chronic care programmes to HIV or paediatric health services					

3	I would rather see younger patients than elderly ones.					
4	It is society's responsibility to provide care for the elderly.					
5	Health care for old people uses up too much human and other resources.					
6	As people grow older, they become less organized and more confused.					
7	Elderly patients tend to be more appreciative of the medical care I provide than younger patients					
8	Taking a medical history from elderly patients is frequently an ordeal.					
9	I tend to pay more attention and have more sympathy towards my elderly patients than my younger ones.					
10	Old people in general do not contribute much to society.					
11	Treatment of chronically ill patients is hopeless					
12	Old people don't contribute their fair share towards paying for their health care.					
13	In general, old people act too slow for modern society.					

14	It is interesting listening to old people's accounts of their past experiences.					
----	---	--	--	--	--	--

3438

3439

3440

THE END

3441 **Appendix 8- Informed consent form– Semi-structured interview with Health**
3442 **Professions Educators**

3443
3444 *Dear SIR/MADAM,*
3445

3446 My name is Keshena Naidoo, and I am a PhD student at the University of KwaZulu Natal. You are
3447 invited to participate in a research study entitled "Preparing medical graduates for primary care
3448 of geriatric patients in South Africa. " The purpose of this research study is to map current
3449 medical undergraduate training around geriatric care, and explore educational strategies to attain
3450 core competencies in geriatric care. This information will assist medical schools to improve
3451 training for doctors in geriatric care.

3452
3453 **YOUR PARTICIPATION IS VOLUNTARY. THE STUDY HAS BEEN APPROVED BY UKZN's BREC.**
3454

3455 If you agree to take part in this Medical education research, you will be asked to participate
3456 in a semi-structured interview about the study objective. This is expected to take up to 30
3457 minutes. The study will be conducted in a private area, and at a time convenient for you. If
3458 you agree to take part in this research study you will have to sign a form to confirm you are
3459 willing to participate and understand what this entails. Your details will not be shared with
3460 anyone.

3461 You may get no direct benefit from being in this study, but you may get some personal satisfaction
3462 from being part of a research study on medical education. You or others may benefit in the future
3463 from information learned in this study. There is no cost to you for taking part in this study. There
3464 is no financial compensation for you.
3465

3466 All information will be kept confidential. All documents regarding our interview will be stored
3467 on a password-protected computer or in a lockable cabinet that only the researcher will be
3468 able to access. No names will be disclosed.

3469
3470 **PARTICIPANT AGREEMENT**
3471

3472 I _____ (name) have been informed about the study entitled "Preparing
3473 medical graduates for primary care of geriatric patients in South Africa" by Keshena Naidoo.

3474 I understand what my involvement in the study means and I voluntarily agree to participate. I
3475 have been given an opportunity to ask any questions that I might have about participation in
3476 the study. I have been informed about any available compensation.

3477 If I have any questions or concerns about my rights as a study participant, or if I am concerned
3478 about an aspect of the study or the researchers then I may contact:
3479 Biomedical Research Ethics Office on 031-2604769 or 2601074 or email BREC@ukzn.ac.za if you
3480 have any questions about your rights as a research participant.

3481
3482
3483
3484
3485
3486
3487

Signature of participant

Date : _____

Signature of Witness

3488 **Appendix 9 - Discussion guide - Semi-structured interview with Health**
3489 **Professions Educators**

3490 **Preparing medical graduates for primary care of geriatric patients (BE287/18)**

3491

3492 **Let's get started.....**

3493 **First, let's get to know you a little bit.....**

- 3494
- *What is your current position and background?*
 - 3495 • *How are you involved in the geriatric curriculum?*
 - 3496 • *How important is the geriatric curriculum to you?*
- 3497

3498 **Please review the summary of current geriatric curriculum and comment.**

- 3499
- *Is this an accurate representation of the current teaching and assessment?*
 - 3500 • *Where does the practical/clinical teaching occur?*
 - 3501 • *Are there any other people involved in teaching?...*
 - 3502 • *Do you think that the current teaching is adequate/inadequate? Why? ...*
- 3503

3504 **What were/are some of the challenges in developing the geriatric curriculum**
3505 **further?**

- 3506
- *What were the challenges when first introducing geriatrics into the*
 - 3507 *curriculum? How do you deal with the challenges?*
 - 3508 • *What would facilitate development of the geriatric programme?*
- 3509

3510 **What has been the feedback of students regarding teaching and assessment of**
3511 **geriatric medicine?**

- 3512
- *What were the positives?*
 - 3513 • *What were the negatives?*
- 3514

3515 **How would you like to see geriatric teaching and assessment be implemented in the**
3516 **curriculum?**

- 3517
- *Development of national curriculum by consensus?*
 - 3518 • *Accreditation and support by HPSCA*
 - 3519 • *Improved student attitudes towards care of older adults.*

3520

- *Faculty development?*

3521

- *Other*

3522

Interprofessional education and self-reflection are two of the educational strategies suggested in teaching and learning geriatric medicine. What are your thoughts on them?

3523

3524

3525

Summarize and conclude.

3526

3527 **Appendix 10. Curriculum mapping data**

LEARNING OBJECTIVE	CMED1PC	CMED3MN	CMED4II	CMED4IM	CMED5IM	CMED6IM
Be able to discuss the requirements	LECTURE -1HR + MCQ					
Be able to explain prescribing and administration issues that occur in elderly patients & adverse drug		Lecture- 1 hr, 2 hr seminar MCQ & OSPE				
Remember and describe the legal and ethical issues of aging.		LECTURE-2hrs + 2-hr seminar MCQ & OSPE				
Be able to remember and define the definition and classification of dementia.		LECTURE-1HR MCQ & OSPE				
Be able to understand & defend the physiological changes that occur with ageing & impact of these		LECTURE-1HR MCQ & OSPE				
Be able to understand and explain the therapeutic modalities used in occupational therapy for dementia		LECTURE-1HR + 2HR SEMINAR MCQ & OSPE				
Dementia - remember and define the definition and classification		LECTURE-1HR +2 MCQ & OSPE	LECTURE-1HR			
To be able to understand and defend the physiological changes that occur		LECTURE-1HR + 2 MCQ & OSPE	LECTURE-1HR			
CGA -be able to discuss the theories of ageing and assessment			LECTURE-1HR PORTFOLIO	LECTURE-1HR DOSCE	PRACTICAL -1HR MCQ, LONG CASE	BEDSIDE MCQ, DO
Be able to discuss changes with ageing in the different organ systems						
Discuss medico-legal aspects related to ageing						
Urinary incontinence - discuss causes, treatment & Mx			LECTURE-1HR PORTFOLIO	LECTURE-1HR DOSCE	PRACTICAL -1HR MCQ, LONG CASE	BEDSIDE MCQ, DO
FALLS- be able to discuss causes, incidence, prevention, and			LECTURE-1HR PORTFOLIO	LECTURE-1HR DOSCE	PRACTICAL -1HR MCQ, LONG CASE	BEDSIDE MCQ, DO
INFECTIONS - be able to discuss risk factors, incidence and treatment			LECTURE-1HR PORTFOLIO	LECTURE-1HR DOSCE	PRACTICAL -1HR MCQ, LONG CASE	BEDSIDE MCQ, DO
DEMENTIA - be able to discuss incidence, risk factors, causes,			LECTURE-1HR PORTFOLIO	LECTURE-1HR DOSCE	PRACTICAL -1HR MCQ, LONG CASE	BEDSIDE MCQ, DO
FRAILITY - be able to discuss risk factors, incidence, assessment,			LECTURE-1HR PORTFOLIO	LECTURE-1HR DOSCE	PRACTICAL -1HR MCQ, LONG CASE	BEDSIDE MCQ, DO
CONFUSION - be able to discuss risk factors, assessment, causes,			LECTURE-1HR PORTFOLIO	LECTURE-1HR DOSCE	PRACTICAL -1HR MCQ, LONG CASE	BEDSIDE MCQ, DO
SYNCOPE - be able to discuss risk factors, assessment, causes &			LECTURE-1HR PORTFOLIO	LECTURE-1HR DOSCE	PRACTICAL -1HR MCQ, LONG CASE	BEDSIDE MCQ, DO
Be able to discuss comprehensive geriatric assessment, MMSE & mood			LECTURE-1HR PORTFOLIO	LECTURE-1HR DOSCE	PRACTICAL -1HR MCQ, LONG CASE	BEDSIDE MCQ, DO
Be able to discuss the causes, risk factors, diagnosis, epidemiology of			LECTURE-1HR PORTFOLIO	LECTURE-1HR DOSCE	PRACTICAL -1HR MCQ, LONG CASE	BEDSIDE MCQ, DO
Discuss the definition, aetiology, epidemiology and classification, risk			LECTURE-1HR PORTFOLIO			

3528

3529

3530

3531

3532

3533



Dr K Naidoo (913480831)
School of Nursing and Public Health
College of Health Sciences
Naidook7@ukzn.ac.za

Dear Dr Naidoo

Protocol: Preparing medical graduates for primary care of geriatric patients in sub-Saharan Africa.
Degree: PhD
BREC Ref No: BE267/18

EXPEDITED APPLICATION: APPROVAL LETTER

A sub-committee of the Biomedical Research Ethics Committee has considered and noted your application received on 12 February 2018.

The study was provisionally approved pending appropriate responses to queries raised. Your response received on 16 August 2018 to BREC letter dated 11 July 2018 have been noted by a sub-committee of the Biomedical Research Ethics Committee. The conditions have now been met and the study is given full ethics approval and may begin as from 21 August 2018. Please ensure that site permissions are obtained and forwarded to BREC for approval before commencing research at a site.

This approval is valid for one year from 21 August 2018. To ensure uninterrupted approval of this study beyond the approval expiry date, an application for recertification must be submitted to BREC on the appropriate BREC form 2-3 months before the expiry date.

Any amendments to this study, unless urgently required to ensure safety of participants, must be approved by BREC prior to implementation.

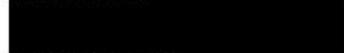
Your acceptance of this approval denotes your compliance with South African National Research Ethics Guidelines (2015), South African National Good Clinical Practice Guidelines (2006) (if applicable) and with UKZN BREC ethics requirements as contained in the UKZN BREC Terms of Reference and Standard Operating Procedures, all available at <http://research.ukzn.ac.za/Research-Ethics/Biomedical-Research-Ethics.aspx>.

BREC is registered with the South African National Health Research Ethics Council (REC-290406-009). BREC has US Office for Human Research Protections (OHRP) Federal-wide Assurance (FWA 678).

The sub-committee's decision will be noted by a full Committee at its next meeting taking place on 11 September 2018.

We wish you well with this study. We would appreciate receiving copies of all publications arising out of this study.

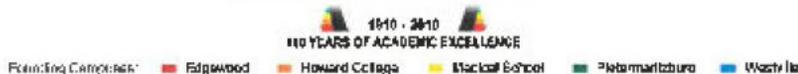
Yours sincerely



Prof V Rambiritch
Chair: Biomedical Research Ethics Committee

cc: postgraduate administrator: ramlal@ukzn.ac.za Supervisor: yajwys2@ukzn.ac.za

Biomedical Research Ethics Committee
Professor V Rambiritch (Chair)
Westville Campus, Govan Mbeki Building
Postal Address: Private Bag X54001, Durban 4001
Telephone: +27 (0) 31 260 2408 Facsimile: +27 (0) 31 260 1808 Email: brec@ukzn.ac.za
Website: <http://research.ukzn.ac.za/Research-Ethics/Biomedical-Research-Ethics.aspx>





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RESEARCH OFFICE
Biomedical Research Ethics Administration
Westville Campus, Govan Mbeki Building
Private Bag X 54001
Durban
4000
KwaZulu-Natal, SOUTH AFRICA
Tel: 27 31 2604769 - Fax: 27 31 2604609
Email: BREC@ukzn.ac.za

Website <http://research.ukzn.ac.za/Research-Ethics/Biomedical-Research-Ethics.aspx>

21 October 2019

Dr K Naidoo (913480831)
School of Nursing and Public Health
College of Health Sciences
Naidook7@ukzn.ac.za

Dear Dr Naidoo

Protocol: Preparing medical graduates for primary care of geriatric patients in sub-Saharan Africa.
Degree: PhD
BREC Ref No: BE287/18

RECERTIFICATION APPLICATION APPROVAL NOTICE

Approved: 21 August 2019
Expiration of Ethical Approval: 20 August 2020

I wish to advise you that your application for Recertification received on 10 October 2019 for the above protocol has been noted and approved by a sub-committee of the Biomedical Research Ethics Committee (BREC) for another approval period. The start and end dates of this period are indicated above.

If any modifications or adverse events occur in the project before your next scheduled review, you must submit them to BREC for review. Except in emergency situations, no change to the protocol may be implemented until you have received written BREC approval for the change.

The committee will be notified of the above approval at its next meeting to be held on 12 November 2019.

Yours sincerely

Prof V Rambiritch
Chair: Biomedical Research Ethics Committee

cc postgraduate administrator:

ramlalm@ukzn.ac.za

Supervisor:

vanwyk2@ukzn.ac.za



health
Department:
Health
PROVINCE OF KWAZULU-NATAL

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Postal Address: Private Bag X9051
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Email: hrkm@kznhealth.gov.za
www.kznhealth.gov.za

DIRECTORATE:
Health Research & Knowledge
Management

HRKM Ref: 210/18
NHRD Ref: KZ_201805_037

Dear Dr K. Naidoo
UKZN

Approval of research

1. The research proposal titled '**Preparing medical graduates for primary care of geriatric patients in sub-Saharan Africa**' was reviewed by the KwaZulu-Natal Department of Health.

The proposal is hereby **approved** for research to be undertaken at Wentworth Hospital and KwaMashu Community Health Centre.

2. You are requested to take note of the following:
 - a. Make the necessary arrangement with the identified facility before commencing with your research project.
 - b. Provide an interim progress report and final report (electronic and hard copies) when your research is complete.
3. Your final report must be posted to **HEALTH RESEARCH AND KNOWLEDGE MANAGEMENT, 10-102, PRIVATE BAG X9051, PIETERMARITZBURG, 3200** and e-mail an electronic copy to hrkm@kznhealth.gov.za

For any additional information please contact Mr X. Xaba on 033-395 2805.

Yours Sincerely

Dr E Lutge
Chairperson, Health Research Committee

Date: 09/07/18



health
Department:
Health
PROVINCE OF KWAZULU-NATAL

Physical Address: 4 Moodie Street, Harding / 680
Postal Address: Private Bag X1010, Harding, 4680
Tel: 039 4321865 Fax: 039 433 2419
Email: K.lumeba.lumeya@kznhealth.gov.za
www.kznhealth.gov.za

DIRECTORATE:
ST ANDREWS HOSPITAL
MEDICAL DEPARTMENT

Reference: Research protocol
Enquiries: Dr S.K. Lumeya
Date: 08/08/ 2018

Dr K. Naidoo
School of Nursing and Public Health
College of health sciences
Naidook7@ukzn.ac.za

RE : PREPARING MEDICAL GRADUATES FOR PRIMARY CARE OF GERIATRIC PATIENTS IN SUB- SAHARAN AFRICA

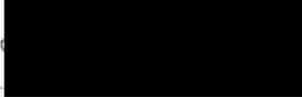
Dear Dr Naidoo

You have been granted the permission to conduct the above study in St. Andrews hospital.

Please be reminded that the permission is granted under below conditions:

1. Kindly adhere to all the policies, procedures, protocols and guidelines of the Department of health with regards to this research.
2. This research will only commence once this office has received confirmation from the provincial health research committee in the Kwazulu natal department of health.
3. Please inform this office before starting your research
4. The hospital will not provide any resources for this research.
5. You will be expected to provide feedback once your research is complete to the Chief Executive Officer of St. Andrews hospital

Yours Sincerely



DR S.K. LUMEYA
MEDICAL MANAGER/
ACTING CEO

Fighting Disease, Fighting Poverty, Giving Hope



7 Boshier Road, Jacobs 4026
Private Bag, Jacobs 4026
Tel: 031-460 5000 Fax: 031-4689854
www.kznhealth.gov.za

DIRECTORATE:

WENTWORTH HOSPITAL
PRIVATE BAG
JACOBS 4026

Reference : Research Protocol
Enquiries : Dr. S.B. Kader
Telephone : 031- 460 5001

E Mail: Suriya.Kader@kznhealth.gov.za

Date: 21ST JUNE 2018

Dr. K. Naidoo
School of Nursing and Public Health
College of Health Sciences

Naidook7@ukzn.ac.za

Dear Dr. Naidoo

RE: PREPARING MEDICAL GRADUATES FOR PRIMARY CARE OF GERIATRIC PATIENTS IN SUB-SAHARAN AFRICA.

I have pleasure informing you that permission has been granted to you to conduct the above study.

Kindly take note of the following information before you continue:-

1. Please adhere to all the policies, procedures, protocols and guidelines of the Department of Health with regards to this research.
2. This research will only commence once this office has received confirmation from the Provincial Health Research Committee in the KwaZulu Natal Department of Health.
3. Kindly ensure that this office is informed before you commence your research.
4. The hospital will not provide any resources for this research.
5. You will be expected to provide feedback once your research is complete to the Chief Executive Officer.

Yours faithfully

DR. S.B. KADER
CEO

3545 **Appendix 15 – Gatekeeper permission from UKZN Registrar**

3546



13 August 2019

Dr Keshena Naidoo
School of Clinical Medicine
College of Health Sciences
NRMSM Campus
UKZN
Email: naidoo7@ukzn.ac.za

Dear Dr Naidoo

RE: PERMISSION TO CONDUCT RESEARCH

Gatekeeper's permission is hereby granted for you to conduct research at the University of KwaZulu-Natal (UKZN), provided Ethical clearance has been obtained. We note the title of your research project is:

"Knowledge, attitudes and perceptions of medical students regarding care of elderly."

It is noted that you will be constituting your sample by handing out questionnaires to Final year MBChB students on the NRMSM campus.

Please ensure that the following appears on your notice/questionnaire:

- Ethical clearance number;
- Research title and details of the research, the researcher and the supervisor;
- Consent form is attached to the notice/questionnaire and to be signed by user before he/she fills in questionnaire;
- gatekeepers approval by the Registrar.

You are **not** authorized to contact staff and students using 'Microsoft Outlook' address book. Identity numbers and email addresses of individuals are not a matter of public record and are protected according to Section 14 of the South African Constitution, as well as the Protection of Public Information Act. For the release of such information over to yourself for research purposes, the University of KwaZulu-Natal will need express consent from the relevant data subjects. Data collected must be treated with due confidentiality and anonymity.

PP
[Redacted Signature] →
ERIC NJABULO ZUMA
DIRECTOR: GOVERNANCE & ADMINISTRATION
OFFICE OF THE REGISTRAR
UNIVERSITY OF KWAZULU-NATAL
UNIVERSITY ROAD
CHILTERN HILLS, WESTVILLE, 3629

Office of the Registrar
Postal Address: Private Bag X54001, Durban, South Africa
Telephone: +27 (0) 31 260 8005/2206 Facsimile: +27 (0) 31 260 7624/2204 Email: registrar@ukzn.ac.za
Website: www.ukzn.ac.za



3547 **Appendix 16 – Ethical approval UKZN BREC for sub-study**

3548



04 September 2019

Dr K Naidoo
 School of Clinical Medicine
 College of Health Sciences
Naidook7@ukzn.ac.za

Dr Naidoo

Protocol: Preparing medical graduates for primary care of geriatric patients in Sub-Saharan Africa
 Non-Degree
 BREC Ref No: BE479/19

EXPEDITED APPLICATION: APPROVAL LETTER

A sub-committee of the Biomedical Research Ethics Committee has considered and noted your application received on 22 July 2019.

The study was provisionally approved pending appropriate responses to queries raised. Your response received on 26 August 2019 to BREC letter dated 05 August 2019 has been noted by a sub-committee of the Biomedical Research Ethics Committee. The conditions have been met and the study is given full ethics approval and may begin as from 04 September 2019. Please ensure that outstanding site permissions are obtained and forwarded to BREC for approval before commencing research at a site.

This approval is valid for one year from 04 September 2019. To ensure uninterrupted approval of this study beyond the approval expiry date, an application for recertification must be submitted to BREC on the appropriate BREC form 7-3 months before the expiry date.

Any amendments to this study, unless urgently required to ensure safety of participants, must be approved by BREC prior to implementation.

Your acceptance of this approval denotes your compliance with South African National Research Ethics Guidelines (2015), South African National Good Clinical Practice Guidelines (2006) (if applicable) and with UKZN BREC ethics requirements as contained in the UKZN BREC Terms of Reference and Standard Operating Procedures, all available at <http://research.ukzn.ac.za/Research-Ethics/Biomedical-Research-Ethics.aspx>.

BREC is registered with the South African National Health Research Ethics Council (REC-290408-009). BREC has US Office for Human Research Protections (OHRP) Federal-wide Assurance (FWA 678).

The sub-committee's decision will be noted by a full Committee at its next meeting taking place on 08 October 2019.

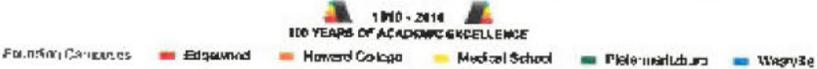
Yours sincerely



Professor V Rambiritch
 Chair: Biomedical Research Ethics Committee

cc: Post grad admin: jantjies@ukzn.ac.za Scmpgrad@ukzn.ac.za

Biomedical Research Ethics Committee
 Professor V Rambiritch (Chair)
 Westville Campus, Govan Mbeki Building
 Postal Address: Private Bag X54001, Durban 4001
 Telephone: +27 (0)31 260 2478 Facsimile: +27 (0)31 260 4808 Email: brec@ukzn.ac.za
 Website: <http://research.ukzn.ac.za/Research-Ethics/Biomedical-Research-Ethics.aspx>



3549 **Appendix 17 - Accepted journal article, African Journal of Primary Care and**
3550 **Family Medicine**

3551 *****

3552 Ref. No.: 2100

3553 Manuscript title: What the elderly experience and expect from primary care services in KwaZulu-Natal,
3554 South Africa

3555 Journal: African Journal of Primary Health Care & Family Medicine

3556 ISSN: 2071-2928, E-ISSN: 2071-2936

3557 *****

3558 Dear Dr Keshena Naidoo

3559

3560 The journal has a double-blinded peer review process and your manuscript was assessed by two expert
3561 independent reviewers. Read our peer review process https://aosis.co.za/policies#peer_review.

3562

3563 Thank you for your revised manuscript. We have reached a decision regarding your submission. I am
3564 pleased to inform you that your manuscript has now been accepted for publication.

3565

3566 The Editorial Office will contact you by 19 July 2019 to finalise your manuscript for the Finalisation and
3567 Publication Office. If you need any assistance, kindly contact the Editorial Office at
3568 submissions@phcfm.org with any questions or concerns.

3569

3570 We remind our authors that our publisher is a member of CrossChecks plagiarism detection initiative
3571 and endorses and applies the standards of the Committee on Publication Ethics which promotes
3572 integrity in peer-reviewed research publications. This journal also conforms to the accreditation
3573 requirements by both the Department of Higher Education and Training of South Africa and Scielo SA.
3574 Be assured that upon publication, your manuscript will be indexed in various international research
3575 repositories for further dissemination and reach in readership.

3576

3577 *****

3578 Please help us to improve your experience as an author by taking a few minutes to tell us about the
3579 service that you have received. We appreciate your participation and want to make sure we met your
3580 expectations, which will give us the opportunity to better serve the community.

3581

3582 Feedback:

3583 [https://forms.office.com/Pages/ResponsePage.aspx?id=mXfgHQ3TR0ix-](https://forms.office.com/Pages/ResponsePage.aspx?id=mXfgHQ3TR0ix-TiEIOAkzi4e5bmbRrhDux1_hEph7SZUQVZUWDNTR0tLQTVQODVUNIJTT001SzhHSC4u)

3584 [TiEIOAkzi4e5bmbRrhDux1_hEph7SZUQVZUWDNTR0tLQTVQODVUNIJTT001SzhHSC4u](https://forms.office.com/Pages/ResponsePage.aspx?id=mXfgHQ3TR0ix-TiEIOAkzi4e5bmbRrhDux1_hEph7SZUQVZUWDNTR0tLQTVQODVUNIJTT001SzhHSC4u)

3585 *****

3586

3587 Thank you for submitting your interesting and important work to the African Journal of Primary Health
3588 Care & Family Medicine. We value your contribution to the journal and for the active involvement in the
3589 development of the discipline.

3590

3591 Your manuscript will soon form part of this open access publication and your content will be licensed
3592 under the Creative Commons Attribution License. We look forward to your future contributions.

3593

3594 Kind regards,

3595 AOSIS: Chanell Barnard (on behalf of Prof. Sunanda Ray) Operations Coordinator Submissions and
3596 Review Unit Scholarly Journals Department AOSIS Publishing, Empowering Africa through access to
3597 knowledge Phone +270219752602 3ts.srsupport@phcfm.org
3598 Appendix 17 – Accepted journal article, African Journal of Health Professions Education
3599
3600
3601

3602 **Appendix 18 - Accepted journal article, South African Journal of Family**
3603 **Practice**

3604
3605 Dear Authors,

3606
3607 Ref. No.: 5081

3608
3609 We are pleased to confirm your manuscript was accepted for publication on
3610 21-02-2020, and has now been sent to our publishing department for
3611 finalisation.

3612
3613 Kindly note:

3614
3615 1. If you need to make contact with the publisher during the finalisation
3616 stage of your manuscript, kindly contact us per email or phone. Your new
3617 publisher contact will be Madeleine Coetzee, email: publishing@safpj.co.za
3618 and telephone extension: 504

3619 2. The finalisation procedure works as follows:
3620 (a) The first stage is the language editing that is returned to the
3621 corresponding author for review. This will be the final opportunity for the
3622 corresponding author to make text changes to the manuscript.

3623 (b) At a later stage, the editorial staff will send the corresponding author
3624 one set of galley proofs, at which time the author will have two working
3625 days to mark any typographical errors.

3626 3. Manuscript tracking is available on the submitting authors' journal
3627 profile. The submitting Author could visit their home page frequently to
3628 assess the stage of the manuscript.

3629
3630 Kind regards,
3631 Michelle King: AOSIS Submissions and Review
3632 Phone +27 021 975 2602
3633 Fax 086 1000 381
3634 Office hours: 08:00-16:30 (UCT +2:00) Mondays - Fridays

3635
3636

South African Family Practice journal
3637 <https://safpj.co.za>

3638
3639 If you require immediate assistance, please contact AOSIS Publishing:
3640 RSA Tel: 086 1000 381 | Fax to mail: 086 685 1577
3641 International Tel: +27 21 975 2602 | International Fax: +27 21 975 4635

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3643 Support email: publishing@aosis.co.za
3644 Business hours are weekdays between 8:00am-16:30pm

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3647 confidential and for use of the intended recipient. This email adheres to
3648 the email disclaimer described on www.aosis.co.za.
3649
3650
3651

3652 **Appendix 19 – Letter of acceptance from African Journal of Health**
3653 **Professions Education**

3654 **From:** em.ajhpe.0.6b8d8a.8995bb32@editorialmanager.com on behalf of AJHPE

3655 **To:** Keshena Naidoo

3656 **Subject:** Your Submission

3657 **Date:** Wednesday, 27 May 2020 11:57:58

3658 **CC:** "Jacqueline van Wyk" vanwykj2@ukzn.ac.za

3659 **Ref.:** AJHPE1331R1

3660 The knowledge and attitudes of final year medical students' regarding the care of older
3661 Patients

3662

3663 African Journal of Health Professions Education

3664 Dear Dr Naidoo,

3665 We are pleased to tell you that your work has now been accepted for publication in African
3666 Journal of Health Professions Education.

3667 Before we send to the production team however, please could you attend to the following
3668 technical issues:

3669 1. Tables: n and % columns to be merged, mean and sd columns to be merged

3670 2. References to follow Vancouver style and provide DOIs where possible. Journal titles to
3671 be in abbreviated form and do not include the month of publication. Please refer to the

3672 AJHPE author guidelines for details

3673 3. Figures to be provided in pdf format.

3674 4. Citations in text to be in superscript brackets

3675 5. Include the following sections after the conclusion of your article:

3676 - Acknowledgements

3677 - Author contributions

3678 - Funding

3679 - Conflicts of interest

3680 If there are none, then just add None.

3681 Please send your amended manuscript to claudian@samedical.org

3682 Please find payment form attached herewith. As soon as proof of payment and the
3683 completed form have been received, we will send your article into production. (Please note

3684 that we are unable to process American Express card payments). Please send proof of

3685 payment to claudian@samedical.org

3686 Thank you for submitting your work to the journal.

3687 Best wishes

3688 Gonzaga Mubuuke, PhD

3689 Associate Editor

3690 African Journal of Health Professions Education

3691 Reviewers' comments:

3692 Reviewer's Responses to Questions

3693 Relevance to HPE audience – Broad interest to all health professionals

3694 Reviewer #1: As I mention in first review this research is highly relevant to health
3695 professionals in Sub Sharan Africa. All over Africa the aging population is increasing but

3696 there are very few health professionals with training or experience in dealing with the

3697 elderly.

3698 Reviewer #2: As noted in the first review, I am of the opinion that this study falls within
3699 the scope of the journal and does address an important issue in health professions
3700 education namely preparing (medical) students to enter the workplace as health
3701 professionals with the required knowledge and attitudes to take care for the elderly.
3702 In the discussion, the author(s) not only presents a detailed argument on the need and
3703 importance of developing the geriatric knowledge and attributes of medical students but
3704 also sketch the daunting reality of the lack thereof. The lacuna was supported with relevant
3705 and current literature. The role and responsibilities of health educators in preparing
3706 students as health professionals are emphasized. The author(s) presents some practical
3707 solutions and numerous areas for further research to gain more insight into the
3708 complexities surrounding students' geriatric knowledge and attributes or the lack thereof,
3709 are discussed.

3710 Scientific rigour – Appropriate design, methods, instruments and data analysis procedures;
3711 explicit ethical review board approval; accurate, appropriate and complete results

3712 Reviewer #1: The authors have adequately addressed the points I raised in methodology
3713 specifically, data collection.

3714 Reviewer #2: Appropriate design, methods, instruments and data analysis procedures;
3715 explicit ethical review board approval; accurate, appropriate and complete results. This
3716 article touch on the interplay between geriatric care and the need for adequately prepared
3717 medical professionals to care for older patients. The study aimed to evaluate the
3718 knowledge and attitudes of final year medical students regarding the care of older patients
3719 and investigate the association between student knowledge and attitudes towards caring for
3720 older patients. All final year medical students were invited to partake in the study. Datacollection
3721 included a self-administered questionnaire focusing on final year medical
3722 students' geriatric knowledge and attitudes. Geriatric knowledge was assessed with a
3723 modified version of Palmore's Facts on Ageing Quiz, and attitudes by the UCLAGeriatric
3724 Attitude Scale.

3725 As part of the initial review, I highlighted certain areas of concern. From the second
3726 review I am satisfied that the author(s) did address these concerns satisfactory and made
3727 the suggested changes.

3728 Novel – Did you learn anything new?
3729 (New knowledge, new application, new method)

3730 Reviewer #1: Of course I learnt a lot from the literature review.

3731 Reviewer #2: As noted in the original review, I did.

3732 Quality of academic writing - Language, grammar, spelling

3733 Reviewer #1: These were adequately addressed in the revision. I am satisfied with the
3734 language, grammar etc

3735 Reviewer #2: It was difficult to review the revised version as I received it in Pdf format
3736 containing all the track changes. From what I could see, the quality is acceptable.

3737 Reviewer #1: The authors have addressed the points I had raised adequately.

3738 Reviewer #2: Dear Author(s)
3739 Thank you for an interesting study. Thank you for making the requested changes and if
3740 published, I look forward to the published version.

3741