Preparing dental graduates to provide care for frail and care-dependent older patients: An educational intervention

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Abstract

Introduction: Australia's population is living longer and retaining more of their dentition. While the demand for oral health services in residential aged-care facilities increases, there is a call for further inclusion of gerodontology in the undergraduate dental curriculum. This qualitative study explored the attitude of dental students to providing oral health care to older people using a pilot gerodontology curriculum as an intervention during a final-year clinical placement in Hobart, Tasmania.

Methods: Focus groups with undergraduate dental students on clinical placement were conducted in 2018 prior to and after implementation of a pilot gerodontology curriculum. The qualitative data was thematically analysed.

Results: Two focus groups were conducted with a total of 18 dental students. The main themes included: applied practical learning in aged care, unpreparedness for managing frail older patients, lack of confidence with the process of gaining consent from people with dementia, barriers to providing care to older people and interactions with residents and staff of residential aged-care facilities.

Conclusions: This study highlighted the barriers for dental students providing care to older people. There is a need to evaluate how gerodontology is currently taught in the undergraduate dental curriculum to better prepare the dental workforce to respond effectively and more confidently to the growing population of dentate older people in residential aged-care facilities.

Keywords: gerodontology; aged care; oral health; dental; curriculum; education

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Introduction

Australia's population is living longer and retaining more of their dentition (Australian Institute of Health and Welfare, 2018; United Nations Department of Economic and Social Affairs, Population Division, 2019, 2020). The prevalence of frailty increases with age, and frailty has been recognised as a condition in which a person is at increased risk of poor health outcomes (Morley et al., 2013). While experts have failed to reach consensus on a definition of frailty (Rodríguez-Mañas et al., 2013), it has been acknowledged that early stages of frailty are more common in older people living in residential facilities (Gobbens et al., 2010). With a growing population of frail and care-dependent people in residential aged-care facilities (RACFs) (Hearn & Slack-Smith, 2015; Hopcraft et al., 2008), it has become an imperative to better prepare dental professionals for managing the oral health care of residents.

Gerodontology is the branch of dentistry that deals with the oral health of older people. There are varying definitions of an older person. The Australian Institute of Health and Welfare's (2018) definition is a person with the chronological age of 65 years or older, however there is a need to recognise that individuals who reside in a RACF may be biologically older than their chronological age. With the demand for oral health services in RACFs increasing, there is a call globally for further inclusion of gerodontology in the undergraduate dental curriculum, with the World Health Organisation (WHO) emphasising a need to strengthen education and training to improve the oral health of older people (Petersen & Yamamoto, 2005). There are content and structural differences in the gerodontology curricula of dental schools, with a wide variation of clinical exposure to older patients (Nilsson et al., 2018). Although most European dental schools teach gerodontology at the undergraduate level, the European College of Gerodontology and the European Geriatric Medicine Society recognise that an educational action plan—involving dental and non-dental professionals—with an emphasis on more training opportunities offered for the care of frail older adults is still needed (Kossioni et al., 2018).

A greater emphasis on gerodontological learning experiences during clinical placements has the potential to positively impact on future practice. Internationally, graduates who received gerodontology education have been found more likely to consider working with aged-care communities (Abbey et al., 2006; Budd et al., 2015). However, Nilsson et al. (2018) identified a paucity of research in this area for the undergraduate dental curricula in Australia and found that clinical exposure to aged-care oral health at an undergraduate level could positively influence student learning outcomes. By exploring dental students' perceptions of a pilot gerodontology curriculum, this research aimed to identify areas where students needed development in knowledge, skills and attitudes to enable dental education providers to extend social accountability into aged-care oral health. Embedding a gerodontology curriculum into the undergraduate dental school curriculum also addresses standards set as a result of the Royal Commission into Aged Care Quality and

Standards, including providing a workforce able to perform their roles for older people (Aged Care Quality and Safety Commission, 2020). This is the first study to investigate a gerodontology curriculum as part of an undergraduate clinical placement for dental students in Australia.

The aims of this study were to: (1) identify curricular areas in current aged-care dentistry education where students perceive they need more development, (2) create and pilot an aged-care oral health curriculum framework that supports social accountability by students and (3) highlight future educational research opportunities in aged care for dental students.

Methods and analysis

Study design

A pilot aged-care curriculum for final-year dental students was designed using Kern's (1998) six-step curriculum design (Figure 1) (Table 1). This was an appropriate method of design for health professional education, as Kern's six-step curriculum helps to foster the development of a dental graduate who has the ability to continue their learning through self-directed, reflective practice (Bordage & Harris, 2011; Oliver et al., 2008). Insights into the previous knowledge and experience of undergraduate students was gained from the James Cook University (JCU) gerodontology subject coordinator, who also identified areas where dental students required further development. Focus groups exploring final-year student perceptions of gerodontology education, barriers and enablers to providing oral health care to older people and attitudes to frail and care-dependent older people were conducted in 2018, with an average time for discussion of 30 minutes. The first focus group included nine dental students who were not exposed to the pilot curriculum. The second group of participants consisted of nine dental students who had completed the pilot curriculum prior to the focus group discussion. The interviewer acknowledged her positional reflexivity as a practising dentist and postgraduate student to allow the focus group participants to guide the discussion and to enable her to listen from the perspective of a researcher.

The project was divided into five phases, with a narrative literature review forming the first phase. The remaining phases were structured around the curricular development model as outlined by Kern (1998). Kern's model was used to design the aged care curriculum (see Figure 1), with data being collected in phases 2 and 5 during the focus groups (Table 2). The data taken from the focus group interviews form phase 5 of the project (Table 2), and the thematic analysis framework described by Clarke and Braun (2017) was used. Focus groups were audio-recorded for both the pre-curriculum and post-curriculum group as part of the final phase. Triangulation of analysis was achieved for all interviews through data checks of the coding, theme definitions and thematic analysis by two qualitative researchers, and any opposing opinions on coding were discussed using an iterative approach (Carter et al., 2014).

Figure 1

Kern's (1998) Curriculum Cycle

Table 1

Kern's (1998) Six-Step Curriculum Design

Kern's Six Steps	Description of the Step
Step 1: Problem identification and general needs assessment	Identification of the problem, the current approach and ideal approach
Step 2: Needs assessment for targeted learners	Identification of the needs of the learners and assessment of the learning environment
Step 3: Goals and objectives	Identification of broad goals of the curriculum and measurable objectives
Step 4: Educational strategies	What strategies are used for the content and method of education?
Step 5: Implementation	Gain political support and resources, address barriers, introduce and deliver the curriculum
Step 6: Assessment and evaluation	Individual learner feedback and feedback of the program

Table 2

Phases of the Project

Phase 1	Narrative literature review performed. Findings from the review used to inform Phase 2 and identify areas for development in a pilot gerodontology curriculum. The first stages of Kern's six-step curriculum design were conducted: general needs assessment (Kern's step 1), targeted learner needs assessment (Kern's step 2).
Phase 2	Focus groups were held with dental students to explore attitudes to aged-care curriculum and brainstorm development of new curriculum ideas for gerodontology.
Phase 3	Goals and outcomes outlined (Kern's step 3).
Phase 4	Educational strategies were developed and curriculum design completed (Kern's step 4).
Phase 5	The pilot aged-care curriculum was implemented with JCU final-year dental students on clinical placement (Kern's step 5). Focus groups explored dental students' attitudes towards aged-care dentistry after the implementation of curriculum (Kern's step 6).

Curriculum design

The pilot gerodontology curriculum included seven sessions with a group of nine students. The first six sessions were 30–45 minutes long and were delivered weekly by the supervisor (interviewer) during the students' clinical placement and their final RACF half-day visit. Sessions took place at the end of the clinical day, aside from the RACF visit, which took place on the fifth day of the week, when students did not have clinical sessions. The first session in the curriculum reviewed the gerodontology content the students had received during the foundation years of their degree. This enabled all students to review and revise their theoretical knowledge in preparation for the remaining sessions. The second and third sessions incorporated case discussion and brainstorming sessions, which enabled students to more actively participate in their learning. In response to people living with dementia having an increased risk of complex oral diseases (Chalmers & Pearson, 2005; Wright, 2015), session four included a video of communication techniques with patients living with dementia, which prepared participants for role-playing in the fifth session. The surgery was set up with barriers to provision of care for students to identify, such as a loud radio and an actor in the waiting room providing an authentic simulation of an older person with dementia. The sixth session was constructed as a case-based learning discussion to consolidate the participants' knowledge from the previous sessions. The final session involved a visit to a RACF, with students providing RACF staff with an oral health presentation that they had designed. The RACF chosen for this applied session was selected for its convenient location and provision of varying levels of care.

Setting

The setting for the project was at an Oral Health Services Tasmania (OHST) dental clinic in Hobart, where general dental services are provided to members of the public with

healthcare cards. OHST provides extended clinical placements in north, north-western and southern Tasmania to final-year Bachelor of Dental Surgery students from James Cook University (JCU). The undergraduate dental students are primarily school leavers who are in the fifth year of their degree and who have minimal previous experience with frail or medically-compromised elderly people. The students attended clinic in two cohorts for a period of 16–18 weeks, providing comprehensive dental care to patients of all ages. They saw, on average, six patients a day for 4 days of the week.

Ethical considerations

Ethics approval was obtained by the JCU Human Research Ethics Committee (ethics approval number H7422). Consideration of the relationship between the principal investigator and the students was needed due to the existing power differential, as the researcher was also their clinical supervisor. Focus group discussions, and therefore data collection, occurred after the principal investigator ceased to be a clinical supervisor to the students.

Recruitment

The participants were purposively sampled according to the following inclusion criteria (Patton, 2015). The sample consisted of all of the cohort of 18 final-year dental students who attended clinical placement in Hobart in 2018. The first semester group of nine students consisted of five female and four male participants and formed the pre-curriculum focus group. The second semester group of nine students also consisted of five female and four male participants. All students participated voluntarily in the aged-care curriculum designed for this project. The post-curriculum focus group was carried out at the end of the clinical placement and after all sessions of the curriculum were delivered.

All final-year JCU dental students at the Hobart clinical placement were invited to take part in interviews and focus groups during their clinical placement in 2018. Each focus group was recorded using a digital recording device and transcribed by hand. The principal investigator conducted the education sessions and the interviews at the end of the day, when the clinical sessions had ended (Table 1). The students were informed this project was being undertaken by the researcher for her Master of Health Professional Education qualification, and an administrative member of staff at OHST recruited participants. Focus groups were conducted after completion of all clinical placements and assessments, thereby removing the power differential of educator–student that existed since the interviewer was also the students' clinical supervisor.

The participants were given an informed consent form and information sheet, and they were advised that taking part in the study was completely voluntary and that participants were able to stop taking part at any time without explanation or prejudice. Their decision to participate in the study or not in no way influenced their current or future employment nor their academic status or enrolment in their Bachelor of Dental Surgery. The students'

responses and contact details were treated with strict confidentiality, and all information was de-identified.

Data collection and analysis

Data was obtained via focus groups with the students before and after delivery of the gerodontology curriculum. Transcripts were made available for participants to cross-check to ensure trustworthiness and accurate representation of data (Carter et al., 2014). The data from the transcripts were analysed by hand, using indexing, management and interpretation before identifying key themes for a summary report using thematic analysis (Clarke & Braun, 2017) (Table 3). The Clarke and Braun (2017) method for thematic analysis uses a six-step approach with an emphasis on themes being developed across the content of what participants say rather than questions they have been asked. The analysis involved an inductive process with coding and theme development guided by the content of the data, using constant comparison. All three authors involved in the data analysis were experienced in health professional education, and two of the coders were also involved in the training of dental students. Thematic analysis is a method of qualitative data analysis that enables insight into patterned meaning across a data set. This method was chosen because it would allow interpretation of collective and shared experiences. The results were used to drive the design of the curriculum. In reporting the results, illustrative quotations have been included, with students identified by a letter of the alphabet (e.g., Student A).

Table 3

Themes From Pre- and Post-Curriculum Groups

Pre-curriculum group	Post-curriculum group
Preference for practical learning in aged care	Preference for practical learning
Unpreparedness for managing older patients	Barriers to providing care to older people
Lack of confidence with the process of gaining consent from people living with dementia	Interactions with residents and staff of RACFs.

Results

The data obtained through the focus groups revealed that an aged-care curriculum delivered during a clinical placement can influence dental students' perceived barriers to providing care for older patients and enabled them to develop a sense of capability. The main themes arising from the pre- and post-curriculum groups are displayed in Table 3.

Pre-curriculum thematic analysis

This focus group was conducted at the end of the students' clinical placement at OHST. These participants did not have an aged-care curriculum during their placement. The

three main themes that emerged from the discussion included a preference for practical learning, unpreparedness for managing older patients and a lack of confidence with the process of gaining consent from people with dementia.

Theme 1: Situated learning in aged care

Theme 1 highlights the students' desire for more hands-on experiential learning and opportunities to observe clinicians in real clinical scenarios. They thought this would enable them to retain information better than through didactic forms of teaching.

> *If I see it first-hand with experience, I learn more than from lectures.* (Student U)

Theme 2: Academic preparation

Theme 2 outlines the way students felt about managing older patients. There were uncertain about how to manage communication, access and treatment with older patients, particularly in a domiciliary setting. They gravitated to discussions around a need to gain more knowledge and experience in restorative treatment of older patients and acknowledged that although they had received didactic lectures on the subject, they lacked confidence to translate the theory into practice. They felt confronted by the barriers faced in communication with older patients and were unsure if they could remember their didactic teaching of techniques for improving access to non-communicative patients.

> *We haven't had a lot of exposure in aged care and into nursing homes as well.* (Student U)

Theme 3: Confidence in gaining consent

Theme 3 focuses on the students' lack of confidence with the process of gaining consent from people living with dementia. There was agreement amongst the students that there was a need for greater emphasis on teaching the consent processes. They recognised that although didactic lectures were delivered at the dental school, they were unable to accurately recall information.

> *We do have lectures on it, but we memorise a list and then you forget it.* (Student A)

Summary of pre-curriculum themes

The students had a strong preference for learning through experience through hands-on approaches, with active, authentic learning perceived as the most effective way to retain knowledge. Although the students acknowledged the comprehensiveness of the lectures delivered to them in their foundation studies, they felt unprepared for managing older patients in a domiciliary setting during their senior clinical program. This was reflected in the discussion surrounding gaining consent from people living with dementia. Participants understood that obtaining consent from older patients can be complex, and

there was a sense of confusion and wariness when discussing their past experiences with cases where there was impaired decision-making capacity.

Post-curriculum thematic analysis

The participants of this focus group engaged in the aged-care curriculum designed for our project, which took place during their clinical placement at OHST. The major themes emerging from this group included a preference for practical learning, barriers to providing care to older people and interactions with residents and staff of RACFs.

Theme 1: Learning

Theme 1 focuses on the students' preference for active learning, especially when there is the opportunity to participate in clinical scenarios. The students believed that observing other clinicians working with older patients and having information given to them in short segments would lead to better retention of information and greater preparedness for management of an older patient.

> *I'm a "doer" learner instead of reading something.* (Student Y)

Theme 2: Barriers to provisiown of care

The second theme illustrates that, as well as having insight into the difficulties they would face as clinicians, the students had awareness of other barriers to provision of care, including issues with dental assistants, RACF staff and the residents. They had been confronted with negative attitudes of RACF staff and assistants, which led to concerns over whether they could successfully provide care for residents.

> *I would love to do it, but it just seems so difficult.* (Student Q)

Theme 3: Interactions with residents and staff

Theme 3 focuses on the experience of going into an aged-care facility and the context this gave for the information the students were given. There was an awareness of a need to spend time with the staff and residents to build relationships. Being able to visit the facilities and have contact with the staff and residents embedded knowledge and enabled more fluidity in their interactions. The students felt awkward communicating with staff initially, but their confidence improved after developing relationships with the staff and talking to both staff and residents. As Student L stated, "The carers there I felt … sort of had the attitude …, oh you don't really understand what it's like for us."

> *Just going there gave it a bit of context and you could see.* (Student Q)

Summary of post-curriculum themes

The students expressed a strong interest in gaining more experience in aged-care dentistry and thought that service-based learning with mentoring would be beneficial. They were

aware of multiple barriers in providing care to older people and acknowledged a need to build relationships with staff and residents to decrease these barriers. Learning through role-play and active learning sessions, rather than traditional didactic methods, reduced the students' feelings of awkwardness when providing care in real-life clinical scenarios. The inclusion of an aged-care curriculum as part of the final-year placement influenced one student's job search decisions. These findings have implications for teaching students gerodontology.

Discussion

This research project sought to provide insight into the need for greater inclusion of gerodontology content in the Australian dental curriculum and to investigate attitudes of selected dental students on clinical placements before and after delivery of an innovative aged-care curriculum. The main outcome revealed that inclusion of an aged-care curriculum as part of a clinical placement may help students feel more prepared for gerodontology and reduce the perceived barriers to provision of oral health care to older people. The results from the pilot curriculum indicated that a clinical placement setting is a suitable learning environment for the delivery of an aged-care curriculum, as the group size is smaller than in traditional didactic learning settings and authentic real-life scenarios can be provided for better learning outcomes. This situated learning has been recognised as an important process in gaining professional skills (Lave & Wenger, 1991), with evidence that it may positively enhance student attitudes and knowledge (Annear et al., 2016; Nochajski et al., 2011). Including pre-placement programs may better prepare students for the RACF environment (Wallace et al., 2014).

As this is the first study of Australian dental students and gerodontology, it was not possible to directly compare any previous findings. A common theme in both pre and post focus groups was a clear preference for experiential learning and the capacity to involve service-based learning for management of the oral health of frail older people. Students acknowledged that although comprehensive didactic lectures on gerodontology were given during the undergraduate curriculum, the information was difficult to retain. They suggested that they were more likely to achieve deep learning if there was an active component to the sessions. Deep learning relates to a learner's capacity to relate to a topic and think critically about newly learned information while understanding the meaning behind the material (Biggs & Tang, 2011). The preference for active learning is reflected in findings by Annear et al. (2016), who found that experiential learning aided retention of knowledge, and the value of service-learning in RACFs was found to be beneficial for preparing students (Wallace et al., 2014).

Modern pedagogy indicates that it is useful for academic material to be set with tasks requiring higher order skills and the application of previous knowledge in order to ensure constructive alignment (Biggs & Tang, 2011). This means the learner is not simply memorising but understanding information and is able to use the knowledge to problem-

solve, create and analyse. This was taken into account during the development of the pilot gerodontology curriculum, as part of a general needs assessment as described in Kern's (1998) method of curriculum development, to ensure appropriate educational strategies were developed. The logistics of teaching large groups will inevitably create challenges for undergraduate dental curricula, and the use of traditional forms of teaching, such as large group didactic lectures, may support the scaffolding of knowledge (Clapper, 2010; Knowles, 1980) and more complex cognitive processes (Biggs & Collis, 1982). This is reflected in the first session of the pilot curriculum, where information was used from the second-year lectures received at JCU. The ability to deliver the pilot curriculum to a small group allowed incorporation of discussion and brainstorming during the early didactic sessions, enabling a more student-centred and active approach to learning.

All components of the pilot curriculum were designed to be no more than 30-minute PowerPoint presentations, with the remaining portion of the sessions incorporating participatory learning elements. These included role-play, case study discussion and visiting a RACF. The group of students participating in the pilot appreciated the shorter sessions and felt that it was easier to understand the information given. This is consistent with findings recognising the benefit of learning in smaller segments (Exeter et al., 2010).

Both focus groups identified barriers to providing care to older people, with the intervention group showing awareness of the problems faced when developing relationships with RACF staff and residents. Health professional education has a clear need to build on communities of practice for the best learning outcomes (Lave & Wenger, 1991), and in order for graduates to develop knowledge of gerodontology, involvement of experienced dentists needs to be incorporated into the curriculum to decrease the gap between academic knowledge and management of the older patient in practice.

The pre-curriculum focus group focused on the uncertainty they felt around management of older people, describing a gap in the transition from knowledge to practical provision of care. This was reflected as a barrier in the post-curriculum group, with concerns around the logistics of being able to provide domiciliary services. The significance of both groups describing the difficulties of providing care to older people and the findings from a previously published literature review (Nilsson et al., 2018) show a clear need to support undergraduate learning to bridge the gap between possessing theoretical knowledge of gerodontology and becoming a competent clinician. Comparison of the two focus groups suggests the pilot curriculum may have influenced the group who were able to visit the RACF, as there was positive discussion surrounding the need to build relationships with staff and residents in order to reduce the awkwardness of communication, which was enabled through practising interactions with RACF staff.

A limitation of the study was the sample size, which was dictated by the number of students attending the clinical placement. It would have been beneficial to have provided the curriculum to both groups and obtained data from each group before and after the

curriculum implementation. However, to ameliorate ethical concerns, the interviews were conducted after placement, as the investigator was also the clinical supervisor for the students. In contrast, the investigator being the clinical supervisor and, therefore, the need to obtain data at the end of the 9-week placement was also a strength of the study, with the students and supervisor able to build positive relationships during the placement, which enabled rich exploration of their attitudes to gerodontology and managing older patients.

Further research, including longitudinal studies, is needed to explore the relationship between inclusion of a gerodontology curriculum and workplace decisions after graduation. A comparison of attitudes and knowledge of dental students from different institutions in relation to gerodontology content would be useful to discern varying pedagogical methods and the success of these educational approaches.

Conclusion

This is the first study to assess a gerodontology curriculum in Australia for final-year dental students and also the first qualitative study of Australian dental students' attitudes to aged-care oral health. The current literature and results from implementation of the pilot aged-care curriculum indicate that clinical exposure to aged-care oral health at an undergraduate level may positively influence student learning outcomes. Educational interventions may help decrease the barriers to provision of care and help students feel more prepared for providing oral health care to older patients. Despite this, inclusion of a gerodontology curriculum in dental schools is inconsistent, and there is a wide range of clinical exposure to older patients among dental schools.

The pilot curriculum influenced the students' knowledge, attitudes and preparedness, with evidence from the focus groups showing that inclusion of this curriculum affected workplace decisions on graduation. There was a clear preference for active learning components in the curriculum, with acknowledgment that traditional didactic learning is not conducive to deep retention of information. To enable current evidence-based practice and the use of quality pedagogical methods, a regular action cycle of design, development, implementation and evaluation should be incorporated into any curriculum.

With the Royal Commission into Aged Care Quality and Safety currently in progress (Nilsson, 2019), it is timely to review how Australian dental schools educate the future workforce. Social accountability in health professional education to improve health equity for older people necessitates an evaluation of how gerodontology is taught in the undergraduate curriculum of dental schools. If we are to prepare the dental workforce to adequately support the needs of frail and care-dependent people, there is a clear need to bridge the gap between theoretical knowledge and the capability of clinicians to provide care to older people.

Acknowledgements

We would like to thank Oral Health Services Tasmania and Respect Aged Care for their participation and contribution to this study. We acknowledge the time and expertise contributed by A/Prof Andrew Lee.

Funding and conflicts of interest

The authors have no funding or conflicts of interest to declare.

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