

26 education for allied health professionals has merit in improving knowledge, confidence and
27 perceived preparedness for practice.

28 **KEYWORDS:** palliative care; allied health; interprofessional education; pre-registration;
29 speech-language therapy; dietetics

INTRODUCTION

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31 Palliative care has developed substantially since its beginnings in England in the 1960s.
32 Palliative care is appropriate for those with a diagnosis of a life-limiting, long-term condition (for
33 example, respiratory or cardiac conditions or progressive neurological conditions) and may cover
34 many years. End-of-life care is ‘an approach that improves the quality of life of patients and their
35 families facing problems associated with life-threatening illness, through the prevention and relief of
36 suffering by means of early identification and impeccable assessment and treatment of pain and other
37 problems, physical, psychosocial and spiritual’ (World Health Organisation, 2020). Consistent with
38 recent and extant research, The New Zealand Palliative Care strategy (2001) aimed to develop a
39 system that can support a person’s choice to die at home. Twenty years later, the wish to be cared for
40 and die at home remains common amongst early and end-stage patients (Nysaeter et al., 2022).

41 Speech-language therapists (SLTs) and dietitians (DTs) have an established role in palliative
42 care in terms of communication, swallowing and nutritional support (Krikheli et al., 2018; Pinto et al.,
43 2016). Dietitians have a role in nutritional assessment and planning and liaising with food services to
44 ensure optimal patient-centred meal choices (Pinto et al., 2016). SLTs have a role in supporting
45 communication skills, eating and drinking safety and enjoyment, upper-airway and oral health
46 (Krikheli et al., 2018). In the terminal phase, communicating one’s last thoughts, communicating pain
47 levels and comfort feeding are critical. Formalised competencies and palliative care education for
48 these allied health professionals has received minimal research attention. Yet, there remains
49 uncertainty for people within and outside of these professional groups about the role, skills and
50 knowledge that SLTs and DTs hold (Kelly et al., 2018).

51 A range of teaching approaches have been used to meet students’ needs with positive results
52 in terms of knowledge and attitudes (Donne et al., 2019). Education content comprises of theoretical
53 learning on medico-legal implications, end-of-life care, professional roles and responsibilities, grief
54 and loss. Education packages have included self-reflection on personal experiences of death and
55 personal cultural beliefs, and professional values of human dignity as well as self-care and resiliency.
56 Having difficult conversations has been taught explicitly through simulation (Gilliland, 2012), work

57 shadowing (Levine et al., 2017) and direct modelling (Kim et al., 2006). Other programmes have
58 included problem-based learning (McKee et al., 2013) and didactic teaching. Some student feedback
59 has suggested that in the first instance, self-directed learning opportunities are preferred over face-to-
60 face content to reduce the confronting nature of the topic (Mathisen et al., 2011). This has paved the
61 way for a range of distance-learning programmes worldwide including e-learning (Levine et al., 2017;
62 Mathisen et al., 2011), video conferencing (Ray et al., 2014), and personal learning portfolios
63 (Gwyther & Rawlinson, 2007).

64 Although the palliative care education evidence-base involves a range of services delivered
65 by a range of professionals, much of the work published focuses on doctors and nurses in hospital
66 settings, with little attention to the education of allied health professions, or in community settings. A
67 number of systematic reviews have summarised this literature over the years (Adriaansen & van
68 Achterberg, 2008; Bickel-Swenson, 2007; DeCoste-Lopez et al., 2015; Donne et al., 2019; Fitzpatrick
69 et al., 2017; Lloyd-Williams & MacLeod, 2004). By 2005, there were 31 efficacy studies in palliative
70 care education for nurses alone covering communication, attitude to death, empathy and pain/
71 symptom management (Adriaansen & van Achterberg, 2008). Another 126 studies were reported up
72 until 2015 in medical education (Fitzpatrick et al., 2017). Typically, programmes in the research
73 literature are mono-disciplinary.

74 A handful of studies have addressed health professional student preparedness for working
75 with people in palliative care and end-of-life as part of broader preparation for clinical practice (Chen
76 et al., 2015; Pieters et al., 2020). None of these studies included SLTs. Whilst preparedness is a
77 poorly-defined concept, it broadly encompasses a sense of sufficient knowledge, skills and confidence
78 to start something.

79 This four-year stakeholder-led implementation project was initiated in response to informal
80 new graduate feedback from SLTs and DTs who expressed a lack of preparedness for working with
81 people in palliative care on graduation. By gathering detailed feedback and reflections on the existing
82 curriculum, the team aimed to develop a new interprofessional palliative care education programme

83 and evaluate its effectiveness in preparing new graduates preparedness for working with people in
84 palliative care in their first year of work.

85 **METHODS**

86 This multi-stage, mixed methods implementation study gained national and locality ethics approval
87 (UOAHPEC 018920). All participants provided written informed consent. The educator team (three
88 SLTs and two DTs), who regularly provide interprofessional teaching to 2-year Masters level, pre-
89 registration SLT and DT students, worked together to improve the palliative care curriculum for
90 students. The project comprised three stages. In Stage I, consenting SLT and DT graduates were
91 interviewed 6-months after graduation to explore their perceptions of their preparedness for working
92 with people in palliative care. Stage II developed a new palliative care curriculum using the education
93 content reported in the literature and the gaps reported by interviewees in Stage I. Stage III
94 implemented and evaluated a new palliative care curriculum. Two years of students were surveyed
95 pre- and post- the new programme, and at 6-months post-graduation, to evaluate student response to
96 the new curriculum as well as their perceptions of their preparedness for working with people in
97 palliative care.

98 **Stage I. Perceptions of new graduates on their preparedness for working with people in** 99 **palliative care**

100 *Methods*

101 All Masters level SLT (n=20) and DT (n=10) students who graduated in 2016/2017 at The University
102 of Auckland were invited to interview. Consenting SLT and DT graduates were interviewed 6-months
103 after graduation by an independent researcher, who was not known to the participants or involved in
104 their education. Semi-structured interviews ranged from 20–60 minutes. Researcher asked questions
105 about the new graduates' positive and negative experience of working with people in palliative care as
106 a student and new graduate, supports available (such as supervision) and to reflect on learning to date,
107 including during their pre-qualifying studies. They did not specifically ask about previous curriculum.
108 All interviews were audio-taped and transcribed verbatim by the independent researcher. Interviews
109 were read between 2 and 5 times each by three researchers, coded and topics were developed using

110 inductive content analysis where the researchers allowed the data to determine the topics through the
111 coding process (Elo & Kyngas, 2008). Rigour and credibility was addressed through double-checking
112 and final consensus of the original transcripts and final coding by all researchers. Results are
113 presented under topics and sub-topics with illustrative quotes.

114 ***Results***

115 Five SLT and four DT graduates consented to be interviewed. Content analysis resulted in 8 topics,
116 divided into three overarching themes. Graduates described the learning experiences that they found
117 beneficial or desired given hindsight (Table 1.) Most students had received some palliative care
118 instruction, but it was not consistent across the participants. Graduates described the key points they
119 thought relevant to working in a palliative care situation (Table 2.). They discussed the insufficiency
120 of their entry-to-practice training as well as reflecting on clinical practicum opportunities where they
121 had valuable learnings.

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124 **Table 1. Aspects of learning students valued or wanted to retain or enhance**

Global topics	Sub-topics	Illustrative quotes
Clinical Education	1. More observational learning desired 2. Self-care, debrief and reflection are important	‘hearing the supervisor talking helped’ ‘I saw my supervisor and saw it doesn’t get easier with time’ ‘even though we have had lectures on it but you know some more practical’ ‘I needed more experience’

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‘self-care is important’ ‘make sure your looking after yourself um because it can be quite heart breaking’		
Classroom Education	3. Theoretical learning and reading was good 4. Patient experiences would be useful 5. Emotional aspects of palliative care	‘more education on what palliative care is’ ‘I wanted the lecturers to tell me what to do’ ‘hearing family experiences could be useful’ ‘workshops of people who have been in the situations share your different experiences’ ‘them [educators] talking about what the impact it has on them, very very big emotional loads hearing how they have gone through would probably normalize it’
Awareness of Supports	6. Legal protection 7. Supervision	‘knew who to talk to’ ‘how to get proper guidance’ ‘I would ask a bit more from my supervisor in ways that I could improve’

	8.Safety with protocols	'being patient centered and that's fine that is still ethical and that is practicing safely'
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128 **Table 2. Students self-reported key learnings from educational and professional**
 129 **experiences**

Global topics	Sub-topics	Illustrative quotes
Personal Strategies / Philosophy	Previous experience of death Personal Reflection Religion and culture	‘it is what it is. You shouldn’t need to creep around it’ ‘the medical approach helps’ ‘I had a little prayer afterwards’ ‘I think about death a whole lot more now’ ‘death happens’
Client-centred	Maintain pleasures Respecting client’s choices	‘small pleasures like have ice-cream if you like’ ‘I mean, let me eat, I say’
Team	Transition of care into community from hospital Different viewpoints Trust Family as part of the team	‘trust is needed’ ‘different viewpoints are good but communication is important’
Terminology / Definitions	Medical labels Advanced care planning	‘who are we talking about? what is it? Is it a specific thing? people are treated differently because of the word’ ‘taboo of being “on” palliative care’
Family	Family-focused care Taking time with family Focus on interaction rather than content	‘need to convince the family a student can be trusted’ ‘how do we say things to the family?’ ‘I learnt from my supervisor to <i>really</i> listen and reflect’
Roles	Client-centred care Interprofessional care Student role Changing role over time	‘I could have been more interdisciplinary and had more in-depth conversations with other professionals’ ‘careful you aren’t getting out of role’ ‘is it appropriate to intervene?’ ‘my professional role was more towards education and having that discussion around comfort feeding’
Feelings	Fear and pressure of incompetence Confidence Emotionality Discomfort Purposeful	‘as a student ... awkward would be the right word... sometimes lost’ ‘I never felt thrown in’ ‘always critiquing every little thing I do and maybe next time not being so negative or critical of myself’

		<p>‘too much for me at times’ ‘not sure if I made a difference’ ‘it was heart breaking’ ‘letting people down’ ‘do I know what I’m doing?’ ‘I felt I can’t do anything for them’ ‘privileged about making something positive happen for the patient and their family’ ‘I had clarity of purpose – giving pleasure in comparison to the risk adverse pathway’</p>
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133 **Stage II. Developing a new palliative care curriculum**

134 In 2018, the educator team conducted a literature review on approaches and content in palliative care
135 education for healthcare workers (see introduction). The educators developed a new palliative care
136 curriculum based on the feedback from the 2017 cohort and the findings of the literature review. Four
137 topics were considered critical to the palliative education programme: What is palliative care? Values/
138 assumption and experiences, Professional roles & responsibilities, and Clinical competency. Learning
139 objectives and teaching modality were mapped to these overarching topics ensuring that knowledge,
140 attitudes, and clinical skills could be effectively integrated into practice (Table 3).

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143 **Table 3. Overview of the Palliative Care Education Programme**

Phase of learning (Mathisen et al., 2011)	Education experience	Curriculum content	Learning objectives
Sensitization	Online education module	Introduction to palliative care Terminology in relation to death and dying	1. Gain knowledge of context, purpose and key terminology relating to palliative care
Personalization	Online education module	Values/ assumptions/ experiences	1. Reflect on own experiences of death and dying
Professionalism	Didactic talk from Expert in Field	Professional roles & responsibilities - legal, ethics	1. Gain knowledge of the diverse professionals involved. 2. Understand the principles of holistic assessment for symptom management 3. Acknowledge the importance of recognizing dying 4. Gather resources to support coping with grief and loss
Integration	Simulated-learning experience	Clinical/ Communication skills	1. Demonstrate therapeutic communication skills 2. Apply knowledge of the roles of different team members in an interprofessional team 3. Apply ethical, professional and culturally responsive practice in a

			simulated palliative care case.
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145 The education programme comprised two timetabled components – online self-directed, an
 146 interprofessional face-to-face day. It was included in semester 4 of the students 4-semester (2 year)
 147 courses. Prior to this, students had had clinical placements in a minimum of three practice settings
 148 which may or may not have included working with people in palliative care. Students began with up
 149 to 8-hours of asynchronous online learning from the Palliative Care Curriculum for Undergraduates
 150 (PCC4U) freely available resource (<http://www.pcc4u.org/>). Students were also directed to the New
 151 Zealand Ministry of Health Te-ara-whakapiri-principles-and-guidance-last-days-life document. The
 152 online content was available to students for 6-weeks prior to an interprofessional study day.

153 The study day began with a whole group welcome, then small group (maximum 8 people including
 154 one staff member) introductory task where students reflected on their current knowledge of palliative
 155 care, as well as their concerns and desires for learning. This was followed by a 2-hour talk from a
 156 Palliative Care Nurse Specialist from a local Hospice who covered the experience of death and dying
 157 and answered students' questions. In the afternoon, students worked in small interprofessional groups
 158 in a simulated learning environment. A summary of the simulation activity is presented in Table 4.

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161 **Table 4. Palliative care interprofessional simulation description**

Structure	Student activity	Focus / instructions
Pre-session	Provided with written information/top tips for successful family meetings to read.	Written information available as a guide through the scenario, if needed
Introduction to scenario patient	Watched a video of a patient – Kirsty with motor neurone disease describing her disease and her worries and reflections of her deteriorating condition and of dying.	
Introduction to simulated learning scenario	Introduced to the simulated learning environment – a interdisciplinary outpatient clinic and to the patient and her case history. It was explained that a family meeting is planned to discuss ‘Kirsty’s’ current situation.	Students informed that focus of simulation is not on clinical intervention and knowledge and rather on professional roles, communication and having difficult conversations.
Scenario – Phase 1 Interdisciplinary pre-meeting	Allocated professionals roles (SLT, DT, physiotherapist, occupational therapist). For each role, students were provided with brief written key information about their own character.	Students were asked to maintain role unless they felt distressed or uncomfortable, but if they needed, they could pause the scenario for support. The educator could pause the scenario at appropriate points for ‘pause and reflect’ opportunities to allow reflective group discussions before starting the scenario again.
Scenario – Phase 2 Family meeting introductions	Family (Kirsty, Kirsty’s husband, sister or mother) and professionals meet. For each role, students were provided with brief written key information about their own character.	
Scenario – Phase 3 Family meeting sharing information and developing consensus on treatment options	Swapped roles to give them the opportunity to see the situation from another lens.	Educators encourages reflection and then repeating a phase for experiential learning. Students were encouraged to ensure all voices were heard.
Scenario – Phase 4 Family meeting wrap up	Allocated new roles to give them the opportunity to see the situation from another lens.	Students encouraged to practice comfort, console and conclude and to ensure the family does not feel

		abandoned or with questions unanswered.
Debrief	Each student can reflect, and speak within the group.	Small group discussion includes self-care and cultural reflections. Students then encouraged to meet and share food and drink at cafe with the whole team.

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165 **Stage III. Implementation and evaluation of a new palliative care curriculum**

166 ***Methods***

167 All SLT and DT students who were in their final semester of 2-year Masters degree at The University
168 of Auckland in 2019 and 2020 were invited to participate (n= 40 SLT students & n= 38 DT students).

169 Consenting students completed the 30-item Frommelt Attitudes towards Care of the Dying Scale
170 (FATCOD) Form B, (Frommelt, 2003) a valid and reliable tool for evaluating attitudes towards end-
171 of-life before the education programme. Despite the potential for socially desirable responding, the
172 FATCOD allowed educators to be forewarned of students with recent experiences of death and caring
173 for a terminally ill person and attend to this appropriately. The FATCOD also provided demographic
174 information in regards to prior experience and beliefs about death and dying.

175 SLT and DT students completed an anonymous online survey pre- and post- the education programme
176 and again, 6-months after graduation (approximately 9 months after programme completion). Students
177 self-rated their knowledge of palliative care, death, grief, palliative care practices and roles on a 10-
178 point likert scale. Students also rated their confidence in working with children, adults and older
179 adults who are dying on a 10-point likert scale. Finally, students provided feedback on the education
180 programme and offered suggestions for future changes in curriculum. Findings were tallied and
181 tabulated.

182 ***Results***

183 Out of 78 students who were educated, 62 completed the FATCOD and pre-education survey, 42
184 completed the post-education survey and 15 completed the post-6 months education survey. Students
185 were predominantly in their 20s and female (4 males). Over 50% reported their religious beliefs were
186 an influence on their attitude towards death and dying and while 16% had previous education on
187 palliative care, many had experience of caring for a terminally ill person (Table 5).

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190 **Table 5. Phase 3 student demographics (n=62)**

Demographics and experience of death and dying		Responses (n=62)
Age (years)	18-22	13
	23-27	39
	28-35	8
	36-45	1
	56-65	1
Sex		4 Male (6%)
My religious beliefs...	Are a strong influence on my attitude towards death and dying	18 (29%)
	Are a minor influence on my attitude towards death and dying	15 (24%)
	Do not influence my attitude towards death and dying	31 (50%)
Profession	Speech-language Therapy	39 (63%)
	Dietitian	23 (37%)
Previous education on death and dying		10 Yes (16%)
Previous experience with terminally ill persons	I have cared for terminally ill persons and their family members	17 (27%)
Previous experience of loss	I have lost someone close to me within the past year	28 (45%)
Present experience	I am presently anticipating the loss of a loved one	9 (15%)

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194 Pre-programme FATCOD scores showed great variation in attitudes towards dying amongst students

195 but with most students believing giving care to a dying person would be a worthwhile experience

196 (Table 6).

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199 **Table 6. FATCOD scores for Phase 3 students (pre-programme n=68)**

FATCOD Question	n*	Strongly disagree		Disagree		Uncertain		Agree		Strongly Agree	
1. Giving care to the dying person is a worthwhile experience.	66	0		0		5	8%	15	23%	46	70%
2. Death is not the worst thing that can happen to a person.	63	0		12	19%	17	27%	22	35%	12	19%
3. I would be uncomfortable talking about impending death with the dying person.	67	3	4%	10	15%	20	30%	34	51%	0	
4. Caring for the patients' family should continue throughout the period of grief and bereavement.	68	0		1	1%	3	4%	18	26%	46	68%
5. I would not want to care for a dying person.	66	17	26%	34	52%	11	17%	4	6%	0	
6. The nonfamily caregivers should not be the one to talk about death with the dying person.	65	6	9%	35	54%	19	29%	2	3%	3	5%
7. The length of time required giving care to a dying person would frustrate me.	64	20	31%	32	50%	10	16%	1	2%	1	2%
8. I would be upset when the dying person I was caring for gave up hope of getting better.	66	5	8%	11	17%	28	42%	17	26%	5	8%
9. It is difficult to form a close relationship with the dying person.	66	19	29%	29	44%	15	23%	3	5%	0	
10. There are times when the dying person welcomes death.	66	0		0		3	5%	37	56%	26	39%

11. When a patient asks, "Am I dying?" I think it is best to change the subject to something cheerful.	66	26	39%	34	52%	6	9%	0		0	
12. The family should be involved in the physical care of the dying person.	64	2	3%	4	6%	28	44%	21	33%	9	14%
13. I would hope the person I'm caring for dies when I am not present.	66	5	8%	22	33%	31	47%	7	11%	1	2%
14. I am afraid to become friends with a dying person.	66	16	24%	32	48%	9	14%	9	14%		0%
15. I would feel like running away when the person actually died.	67	10	15%	23	34%	25	37%	7	10%	2	3%
16. Families need emotional support to accept the behaviour changes of the dying person.	65	0		0		2	3%	28	43%	35	54%
17. As a patient nears death, the nonfamily caregiver should withdraw from his/her involvement with the patient.	65	14	22%	35	54%	14	22%	1	2%	1	2%
18. Families should be concerned about helping their dying member make the best of his/her remaining life.	65	2	3%	5	8%	8	12%	35	54%	15	23%
19. The dying person should not be allowed to make decisions about his/her physical care.	65	35	54%	23	35%	4	6%	0		3	5%

20. Families should maintain as normal an environment as possible for their dying member.	64	0		2	3%	25	39%	26	41%	11	17%
21. It is beneficial for the dying person to verbalize his/her feelings.	66	0		0		5	8%	25	38%	36	55%
22. Care should extend to the family of the dying person.	65	0		0		3	5%	23	35%	39	60%
23. Caregivers should permit dying persons to have flexible visiting schedules.	34	0		0		9	26%	8	24%	17	50%
24. The dying person and his/her family should be the in-charge decision-makers.	66	0		3	5%	4	6%	34	52%	25	38%
25. Addiction to pain relieving medication should not be a concern when dealing with a dying person.	66	0		4	6%	26	39%	27	41%	9	14%
26. I would be uncomfortable if I entered the room of a terminally ill person and found him/her crying.	65	5	8%	22	34%	18	28%	18	28%	2	3%
27. Dying persons should be given honest answers about their condition.	66	0		0		4	6%	36	55%	26	39%
28. Educating families about death and dying is not a nonfamily caregiver responsibility.	65	18	28%	30	46%	12	18%	5	8%	0	
29. Family members who stay close to a dying person often interfere with the professional's job with the patient.	64	14	22%	29	45%	13	20%	6	9%	2	3%

30. It is possible for nonfamily caregivers to help patients prepare for death.	63	0		0		1	2%	38	60%	24	38%
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200 * note varying numbers per question as some students skipped some questions.

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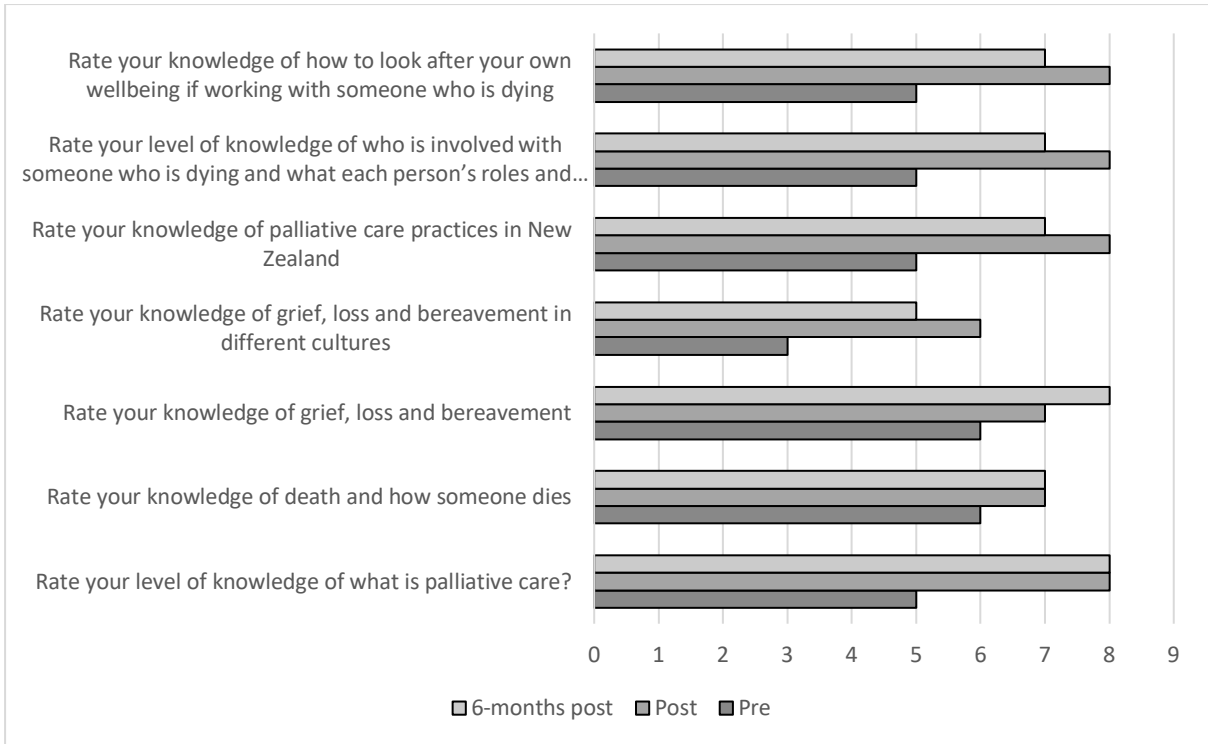
203 The education programme was well received by students and they gave positive and constructive
204 feedback on the programme that was useful for the educators (Table 7). After the first year of the
205 programme a social, non-educational, gathering at the university café at the end of the study day was
206 initiated, to allow students a place to wind down and diffuse prior to going home. Perceived
207 knowledge and confidence ratings shifted after the training from medians of 3-6 to 5-8 (1=none; 10;
208 excellent) across all domains. Positive shifts in ratings were maintained at 6-months post-graduation
209 (Figure 1).

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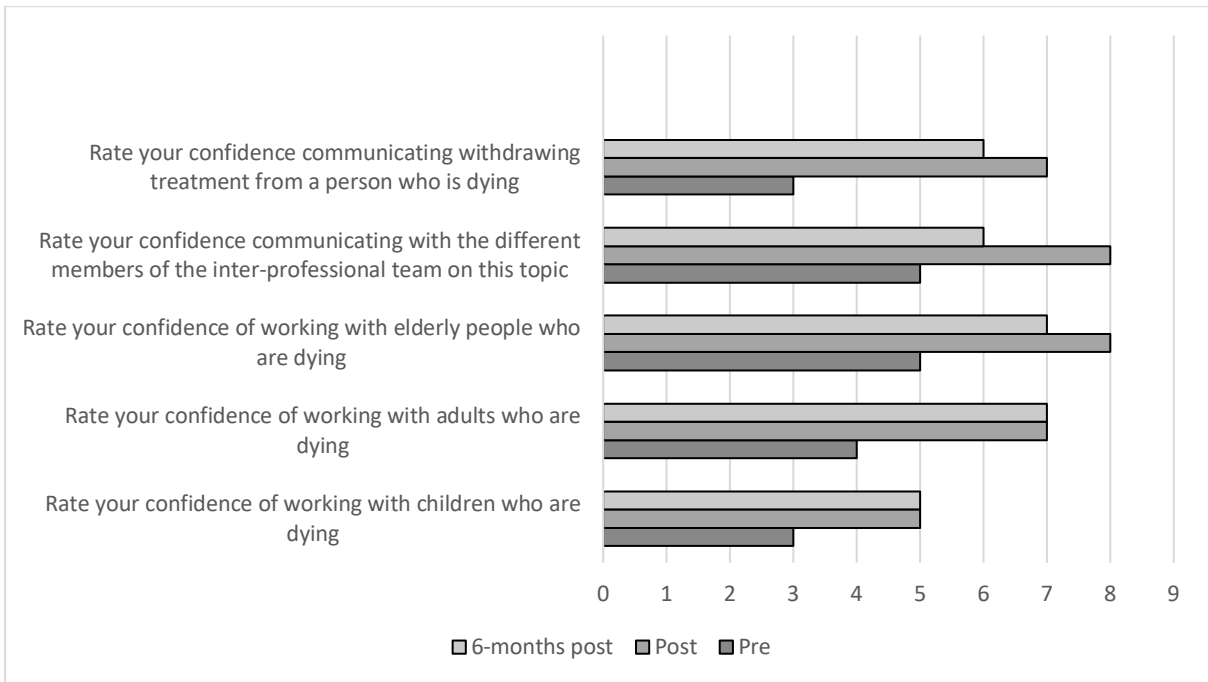
212 **Table 7. Education programme feedback from students**

Education content (1=do not agree, 5=agree)		Immediately post- (Median (Range))	6-months post-
This education programme was well organized		4 (3-5)	-
The content was appropriate		5 (2-5)	-
The overall standard of instruction was high		5 (3-5)	-
The course was highly realistic		4 (2-5)	-
The following components of the course were very useful	Online module	4 (1-5)	3.4 (1-5)
	Talk from Hospice	5 (2-5)	4.5 (3-5)
	Simulations/ role plays	5 (2-5)	4 (2-5)
	Simulation reflective discussions	5 (2-5)	4.5 (3-5)
How suitable do you think simulation training will be/ is for teaching how to work with someone who is dying? (1= not at all, 10=very much so)		8 (4-10)	8 (6-10)
Qualitative content	Illustrative quotes – immediately post	Illustrative quotes – 6 months post	
What did you like most about the day?	<p>‘the scenarios. I feel a lot more confident about how to approach this topic with clients’</p> <p>‘the talk from the hospice nurse as she has real experience’</p> <p>‘how the simulations got us to practice our skills (not be afraid to try things) due to the comfortable environment’</p> <p>‘taking theory and being able to practice and then reflect immediately’</p> <p>‘getting more comfortable talking about death and dying’</p>	<p>‘The simulations and conversations made it more real. No one is going to be fully confident due to the nature of the topic but the practical situations helped confidence’</p> <p>‘The role plays and that it was interdisciplinary’</p> <p>‘The supportive environment in which we learned the content in’</p> <p>‘. I liked that it included both self-reflection and an emphasis on MDT roles/approach. It was great having students from other disciplines join us.’</p>	
What did you like least about the day?	<p>‘the online prep modules took far too long and were unrealistic for Masters students who are busy’</p> <p>‘that out of necessity it had to touch on very raw emotions’</p> <p>‘I felt it could touch more on culture’</p> <p>‘not enough discussions around grief and bereavement’</p>	<p>‘online module – I have zero memory of the online memory’</p> <p>‘feeling vulnerable as it was a subject that meant my emotions were on the surface’</p> <p>‘I thought it was all great.’</p>	

<p>If you were to teach the course, what would you do differently?</p>	<p>‘I did not enjoy the nurse's te whare tapa wha demonstration. She warned that it would be really confronting and it was!! The exercise felt uncomfortable as I do not like to purposely imagine what if scenarios especially regarding my own death’ ‘since it was over a whole day, I might arrange something light-hearted and fun for the two professions to join in together to redirect difficult emotions before the afternoon session’ ‘provide tough questions that the students have to practice answering in the simulations. Perhaps ask someone to come in and share their palliative care story/experience and their interactions with the SLTs/DT’</p>	<p>‘more paediatric content’ ‘more open discussion time to explore thoughts’ ‘more time in simulation’ ‘more external speakers who can share their perspectives’</p>
<p>What do you feel you will do differently having participated in this training day?</p>	<p>‘be more confident in a room with a dying person’ ‘more holistic with this population’ ‘be more prepared’ ‘be more willing to engage and listen to difficult conversations’ ‘communicate with empathy’</p>	<p>N/A</p>



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216 **Figure 1. Student self-rating of a) knowledge and, b) confidence over time**

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DISCUSSION

220 We have described a postgraduate education quality improvement project focused on the preparedness
221 of speech-language therapist and dietetic students for working in palliative care. Our students had
222 voiced feeling ill-prepared for palliative care work and this is similarly reflected in other professions
223 with only 42% of US medical graduates feeling adequately prepared to provide end-of-life care on
224 graduation in a 2015 survey (Chen et al., 2015). Students felt ill-prepared in terms of formal education
225 and knowledge of the palliative care legislation in New Zealand but also in terms of their roles and
226 responsibilities and the emotional aspects of working in the field. Interestingly, the content analysis
227 themes that emerged from the 2016 graduates closely aligned with the curriculum components
228 mapped out in published systematic reviews (DeCoste-Lopez et al., 2015; Donne et al., 2019;
229 Fitzpatrick et al., 2017). This encouraged the educators to develop a palliative education programme
230 that covered knowledge, attitude, interprofessional practice and clinical communication skills. The
231 programme was designed to cover these content areas but also reflect published learnings on effective
232 education delivery mapped out in systematic reviews in terms of self-directed learning, didactic
233 teaching and simulated learning opportunities. Blended learning models with theoretical online or
234 didactic learning as well as a practical element are common in the literature (Donne et al., 2019). The
235 programme was well received by students and students gained greater perceived knowledge and
236 confidence after the programme.

237 *Student satisfaction*

238 Students were positive about the education programme and reported that they enjoyed both the
239 didactic learning and the simulations. They were particularly enthusiastic about the session with the
240 hospice specialist nurse. There is plenty of literature that backs up this positive response to
241 enthusiastic, knowledgeable teachers including those out-of-discipline (Lloyd-Williams & MacLeod,
242 2004). Students asked for more insights from those working in palliative care and wanted to hear from
243 people who have experienced an end-of-life situation where SLTs and DTs had been involved. They
244 also requested more cultural support in terms of death and dying across different cultures and what

245 they needed to know to support families adequately. Positively, 6-months after graduation, graduates
246 who responded to the survey were still in agreement that the programme had provided them with
247 knowledge and confidence. Importantly, with some of them moving into paediatric practice, they
248 reflected that paediatric care advice would also be beneficial. A recent scoping review explored the
249 role of SLT in paediatric palliative care and the authors conclude that there is an absence of guidance
250 in this area (Krikheli et al., 2018). Educators should consider content relating to age and culture in
251 developing education programmes for allied health professionals where the range of populations and
252 workplaces are so broad from acute hospital, community, aged care to specialist school settings.

253 ***Student preparedness for working with people in palliative care***

254 The use of the FATCOD was imperative to gain some insight into the attitudes and experiences of the
255 student cohort prior to the training day. Due to ethics concerns about time taken to complete the
256 FATCOD, students were not asked to repeat the measure post-programme. Many of the students in
257 these allied health clinical programmes came with personal experiences of death, religious and
258 cultural influences on their beliefs about dying and their FATCOD scores display an overall positive
259 attitude towards the value of working in this area. Students valued the role of family in end-of-life
260 care and felt strongly that conversations about dying should be openly discussed rather than avoided.
261 Students demonstrated less concordant ratings on topics related to their own emotional response to
262 being involved in end-of-life and this is perhaps not surprising in two professions where many may
263 not have a desire to work in acute healthcare and may be considering a career in speech and language
264 therapy in mainstream schools or corporate nutritional advisors for food companies.

265 Educators are recommended to remain cognisant of the students experiences of death and dying
266 throughout these sensitive aspects of education and have additional staff present to support upset or
267 distressed students throughout the day and to provide opportunity to debrief formally and causally.

268 Knowledge and confidence scores increased post-programme and as predicted dropped
269 slightly at 6 months follow-up. However, the sustained increase above the baseline measure suggests
270 that for two cohorts of students, the palliative care education programme was effective in increasing
271 their knowledge and confidence.

272 ***Limitations and future directions***

273 As a clinical education research project conducted as part of the ongoing curriculum, the impact of
274 other aspects of clinical and academic education cannot be ruled out. Response rates reduced across
275 time possibly those with a more positive attitude towards the programme, or ongoing links with
276 palliative care, were motivated to respond, particularly at 6-months resulting in response bias. It
277 would have been beneficial to repeat the FATCOD post-programme to gather more detailed
278 information about attitudes at follow-up. More controlled studies in a busy clinical training
279 programme are difficult to conduct as students' learning needs to be prioritised. Future studies should
280 explore the carry-over of knowledge and skills into clinical practice by assessing students'
281 competency in practice. Feedback from clinical tutors and patients and their families would add
282 insight to the level of competency developed.

283 **IMPLICATIONS FOR PRACTICE**

284 1 –Self-study, reflection, didactic teaching and simulation/ role-play within a supportive, safe learning
285 environment resulted in positive gains in preparedness for working with people in palliative care.
286 2 – Positive student evaluations of the programme at post-graduation follow-up in the workplace.
287 3 - Mapping curriculum development to the evidence-based scientific literature and to student
288 feedback ensured curriculum met the needs of students.

289 **CONCLUSION**

290 Palliative care situations are common for speech-language therapists and dietitians and they have an
291 important role in early discussions and decisions regarding nutrition. This longitudinal study followed
292 the development of an education programme for speech-language therapist and dietitian students.
293 Staff developed the programme interprofessionally and incorporated student and graduate feedback.
294 Students were positive about the programme and perceived themselves more knowledgeable and
295 confident in working with people in palliative care. Gains in knowledge and confidence were
296 maintained at 6-months for those who responded to the final survey. Mapping curriculum
297 development to the evidence-based scientific literature and student feedback ensured curriculum met
298 the needs of students. Modality of education materials should be considered with a particular focus on

299 the efficacy of immersive education modalities such as role play and simulated learning opportunities
300 to ensure knowledge and skills are transferred into clinical competency.

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305 **DECLARATION OF INTEREST**

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308 **AUTHOR CONTRIBUTIONS**

309 All authors planned, conducted and reported the work. All these contributors gave their final
310 approval of the version to be published and agree to be accountable for the accuracy and
311 integrity of the work.

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