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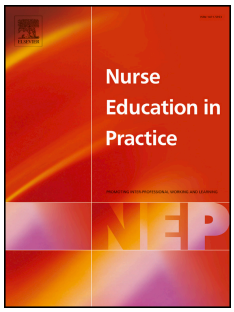

Career interests of undergraduate nursing students: A ten-year longitudinal study

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Author statement

Conceptualization, methodology of the project was developed by Julia Slark, Grace Hunt and Antonia Verstappen.

Data collection and analysis was supervised by Antonia Verstappen and performed by Grace Hunt.

First draft was prepared by Grace Hunt and edited by Antonia Verstappen and Julia Slark.

Review and editing was undertaken by, Julia Slark, Antonia Verstappen and in addition Bridget Kool and Lisa Stewart.

Overall project supervision was performed by Julia Slark.

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Abstract

An understanding of students' career interests at entry and exit from undergraduate nursing programmes could inform decisions regarding curricula and clinical placements. Since 2006, the University of Auckland has surveyed healthcare students at entry to and exit from their respective programmes, collecting information on a range of demographic, and career-related factors. This article describes career interests of over 500 undergraduate nursing students in New Zealand over a ten-year period. All Bachelor of Nursing cohorts commencing between 2006 and 2016 were invited to complete a questionnaire included questions about their career interests. In total 1875 questionnaires were completed (89% response rate). Among the overall cohort at entry, there was strongest interest for emergency care and child health, and least interest in older person's health. At exit, child health and surgery (general) were of strongest interest to the cohort, while older person's health remained of least interest. The analysis of the paired data (n = 564) identified decreases in interest for mental health and child health over the course of the programme, while there was an increased interest in primary health care. Changes in career interests indicate that education and clinical exposure to specialty areas during the programme may influence career interests.

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Introduction

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In New Zealand, as in other countries around the world, the growing shortage of nurses at a time when demand for health services is growing, presents a significant problem for workforce planning (Jamieson et al., 2015, North, 2011). In addition to this global shortage, there is a discrepancy in clinical areas with the greatest workforce shortages identified where nurses choose not to work after graduation; particularly older persons health and primary health care. These vacancies arise from a lack of interest in the specialty area and are largely influenced by clinical experiences (Van Iersel et al., 2018), lack of theoretical knowledge (De Guzman et al., 2013) and subsequent transition to the work environment (Sharif and Masoumi, 2005). One way to influence and increase the workforce in these areas which are exactly the areas required to support the health needs of future populations, may be through gaining a greater understanding of factors which influence nursing students career interests during their education. Hayes et al. (2006) suggest students tend to change their approach to nursing care as they are socialised and progress through their education and Clements et al., (2016) identified clinical placements as crucial to the professional socialisation and identity of nursing students. Therefore, an understanding of students' career intentions and factors involved in their formulation could inform decisions regarding curricula, clinical placements and the required support structures within the workplace.

Students entering their undergraduate nursing degree commonly have a fixed idea of what specialty they want to work in (Wareing et al., 2017; Hayes, 2006; Spouse, 2000). Child health, (Happell, 2002; McCann, Clark, & Lu, 2010; Stevens & Crouch, 1995; Stevens, 2011; Surgenor et al., 2005) emergency and acute care (Birks, Al-Motlaq & Mills, 2010; Ganz & Kahana, 2006) are commonly the most popular speciality areas of choice at entry, and older person's health

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the least popular (Hovey et al, 2017; Ganz & Kahana, 2006; Kloster, Hoie, & Skar, 2007; McCann et al., 2010). International research suggests, by completion of their undergraduate programme, nursing students favour surgery (Hovey et al, 2017; Stevens, 2011; Surgenor et al., 2005) and are least likely to favour working in older person's health (King et al, 2013; Happell, 2002; Ganz & Kahana, 2006; McCann et al., 2010; Stevens, 2011). It has been suggested that curriculum focussed on acute care has a role to play in these preferences (Hayes et al., 2006). De Guzman et al (2013) have also linked knowledge to nursing students career intentions after qualifying and suggest sufficient knowledge of specialist areas such as older persons health within the curriculum may be important.

The shortage of registered nurses working in older person's health in New Zealand (New Zealand Immigration, 2016b), is reflected in the international literature through decreased interest and least interest for the speciality between nursing programme entry and exit (Ganz & Kahana, 2006; Happell, 2002; McCann et al., 2010; Stevens & Crouch, 1995; Stevens, 2011) in all but one study (Kloster et al., 2007). Common reasons cited by nursing students for not wanting a career in institutionalised care of older adults include; perceptions of unexciting work, an unpleasant environment, a negative view of older people, and previous employment in this area (Hovey et al., 2016; Fagerberg et al., 2000; Happell, 2002a). Even when studies have identified positive student attitudes (Neville & Dickie, 2014), they still choose not to work with older adults (King et al., 2013).

Both the clinical practice area and the theoretical environment can have an influence on nursing student's career interests following graduation (Millns Sizer et al., 2016). Therefore, the need for collaboration between nursing educational providers and health service providers is greater than ever (Hayes et al., 2006).

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McCann (2010) adds we should identify students' perceptions of different areas of healthcare practice early on in their studies. Therefore, this study aimed to deliver insights in nursing students career interests at entry and exit in order to build on knowledge of factors which may influence nursing students career choice on graduation.

Methods

This analysis of primary data took place at the University of Auckland's School of Nursing. Data on speciality intentions for practice was obtained for the 2006-2016 period from the University's Health Career Pathways Project, an ongoing prospective longitudinal cohort study. This survey did not include any student midwives as in New Zealand midwifery is offered as a separate degree to nursing and The University of Auckland does not offer a degree in midwifery.

All students are invited in class, to complete a programme entry questionnaire (15 question items) during the first year of their three year undergraduate Bachelor of Nursing (BNurs) programme. During the final semester of the programme, students are invited to complete the exit questionnaire (8 question items). Information collected includes demographic data (age, gender, ethnicity, marital status, presence of dependent children, socio-economic status), and their level of interest ('no interest', 'some interest', 'strong interest') in working in a specialty on graduation. Although the survey questions were not changed across the time-period reviewed, the available response options for speciality choice were expanded. From 2011 the following career specialities were included: medicine (sub speciality), surgery (sub speciality), operating theatre, older person's health, obstetrics & gynaecology, and public health.

Surveys without an ID number recorded were excluded as those data could not be paired. In addition, surveys where students had not responded with speciality level of interest for a particular career speciality were excluded from the analysis

of that speciality. Descriptive statistics were used to summarise the data using SPSS 22.0 for Windows (IBM Corp., 2013). A repeated measures design was used to follow students from entry to exit from the programme. The ID numbers were used to locate questionnaires in order to pair and then compare data with entry and exit to identify any changes in interest from entry and exit to the nursing programme.

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Ethical approval for the Health Career Pathways Project was obtained from the University of Auckland Human Participants Ethics Committee (UAHPEC, 018456). To maintain student confidentiality, personal details were stored separately. To reduce any risk of coercion, all data collection was performed by the Health Career Pathways Project database manager who has no alignment with the school of nursing.

Results

In total, 1875 completed surveys were received (89% response rate) with 1057 at entry and 818 at exit during the 10 year period reviewed. The greater number of students were born in New Zealand (n = 582, 55%). Most students came from major urban centres (n = 849, 81%). About half of students were high school leavers (n = 532) prior to entering the programme while 36% (n = 374) were students who already held a or tertiary qualification, 10% (n = 101) were wage earners and 4% (n = 41) were doing other activities. The highest qualification prior to entry to the BNurs programme for most (83%) students was a high school qualification (n = 867), while 10% (n = 105) had a Bachelor's Degree and 7% (n = 76) had a higher education qualification. The proportion of students under the age of 20 years (inclusive) at entry increased with a strong, positive, linear trend (R^2 = 0.7735, graph not shown) between 2006 and 2016 and form the majority of the cohort. Differences in absolute responses between entry and exit can be accounted for by attrition and variation in class intakes

during the review period. Both entry and exit collection points had a 89% response rate.

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The mean age of students at entry was 20.4 years (range 16 to 51) and 22.7 years at exit (range 19 to 50). The majority of students at both survey points were female (90%). Fewer males finished the programme with the proportion of males decreasing on average by 0.8% (95% CI -3.1%, 1.5%). There was a 4% increase in the proportion of married students between entry (95% CI -1.0%, 8.9%), although most were single (Table 1). There was a moderate increase in the proportion of students with children between entry and exit (95% CI -3.3%, 3.5%).

Table 1: Overall student characteristics, unpaired data

Demographic		**Entry** **n (%)**	**Exit** **n (%)**
Mean age (SD)		20.4 (4)	22.7 (4)
Gender	Female	956 (90%)	742 (91%)
	Male	101 (10%)	75 (9%)
	Missing data	0	1
Marital status	Single	947 (91%)	682 (84%)
	Married	98 (9%)	131 (16%)
	Missing data	12	5
Dependent children	Yes	33 (3%)	40 (5%)
	No	1017 (97%)	770 (95%)
	Missing data	7	8
TOTAL		1057	818

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Paired analysis of Speciality Interest

A total of 564 students answered both the entry and exit surveys and this data was paired by speciality response for further analysis of career interest and changes in interest during the course of the programme (Table 2). Missing data represents when a participant included in the paired analysis did not answer for that particular speciality at entry, exit, or both and were excluded from that particular speciality's analysis.

More than half (54%) of all respondents at entry into the programme, selected a strong interest in emergency care, followed by child health (54%). Students were least interested in academic/research (51%) followed by older person's health (42%). By exit, child health had the strongest interest (42%) followed by surgery (general) (40%). Students continued to have the least interest in academic / research (53%) and older person's health (47%).

Negative values in Table 2 indicate decreased interest. Most specialities listed as potential career choices had no clear change in direction of interest between entry and exit, as observed in confidence intervals spanning between negative and positive (Table 2). However, there was a clear decrease of 'some interest' for mental health between entry and exit with a mean decrease of 5% (95% CI -10.5%, -0.3%). Despite this decrease, the average proportion of students at exit indicating 'some interest' in mental health remains high (41%).

Strong interest for child health decreased significantly between entry and exit (mean decrease 11.8%; 95% CI -16.9%, -6.8%). Despite these notable decreases in interest, the average proportion of students indicating a 'strong interest' in child health at exit remained large at 42%.

'Strong interest' for primary health care increased across the span of the degree on average by 9% (95% CI 2.9%, 15.6%) with a third of students (34%) indicating a 'strong interest' by exit.

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Interest for emergency care decreased between entry and exit as observed in the mean decrease in 'strong interest' by 14% (95% CI -20.4%, -7.4%). Nevertheless, at exit the proportion of students with a 'strong interest' for emergency care (40%) remained high.

Table 2: Interest for nursing specialities at entry and exit, paired data

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Speciality	Interest Level	Interest at entry n (%)	Interest at exit n (%)	Change between Interest at Entry and Exit (%)	95% Confidence interval for change(%)(1dp)
Medicine (general)	No interest	51 (10.1)	89 (17.2)	7.2	(-0.7, 15.0)
	Some interest	286 (55.1)	285 (54.9)	-0.3	(-7.7, 7.1)
	Strong interest	182 (34.8)	145 (27.9)	-6.9	(-14.4, 0.5)
	Missing data	45	45		
Medicine sub speciality	No interest	18 (6.4)	28 (8.3)	3.4	(-3.2, 10.0)
	Some interest	153 (53.9)	171 (56.6)	6.4	(-9.5, 22.3)
	Strong interest	113 (39.8)	85 (35.1)	-9.8	(-26.8, 7.2)
	Missing data	280	280		
Surgery (general)	No interest	63 (11.9)	65 (12.4)	0.5	(-4.7, 5.7)
	Some interest	237 (45.3)	249 (47.4)	2.1	(-8.8, 13.0)
	Strong interest	222 (42.8)	208 (40.2)	-2.6	(-14.1, 8.9)
	Missing data	42	42		
Surgery sub speciality	No interest	45 (15.8)	48 (17.2)	0.9	(-5.8, 7.5)
	Some interest	151 (53.1)	135 (47.0)	-5.6	(-15.6, 4.4)
	Strong interest	89 (31.2)	102 (35.8)	4.7	(-7.9, 17.3)
	Missing data	279	279		
Mental health	No interest	173 (34.6)	201 (38.9)	4.3	(-3.7, 12.3)
	Some interest	**235 (46.1)**	**206 (40.7)**	**-5.4**	**(-10.5, -0.3)**
	Strong interest	101 (19.3)	102 (20.4)	1.1	(-6.5, 8.7)
	Missing data	55	55		
Paediatrics (Child Health)	**No interest**	**55 (10.2)**	**100 (18.9)**	**8.6**	**(3.5, 13.8)**
	Some interest	**192 (36.3)**	**209 (39.5)**	**3.2**	**(0.5, 5.9)**
	Strong interest	**283 (53.5)**	**221 (41.6)**	**-11.8**	**(-16.9, -6.8)**

	Missing data	34	34		
Primary health care	No interest	102 (19.8)	96 (18.2)	-1.6	(-8.2, 5.0)
	Some interest	284 (55.7)	244 (48.0)	-7.7	(-17.0, 1.6)
	Strong interest	**128 (24.5)**	**174 (33.8)**	**9.3**	**(2.9, 15.6)**
	Missing data	50	50		
Emergency care	**No interest**	**42 (7.9)**	**118 (22.9)**	**14.9**	**(8.7, 21.2)**
	Some interest	197 (38.2)	192 (37.1)	-1.1	(-7.8, 5.7)
	Strong interest	**281 (53.9)**	**210 (40.0)**	**-13.9**	**(-20.4, -7.4)**
	Missing data	44	44		
Academic / research	No interest	205 (50.5)	232 (52.5)	2.0	(-7.8, 11.9)
	Some interest	182 (38.7)	175 (37.9)	-0.8	(-10.8, 9.2)
	Strong interest	68 (10.8)	48 (9.6)	-1.2	(-5.9, 3.5)
	Missing data	109	109		
Operating Theatre	**No interest**	**39 (13.7)**	**118 (32.5)**	**27.8**	**(14.4, 41.2)**
	Some interest	132 (46.7)	110 (38.1)	-7.9	(-18.2, 2.4)
	Strong interest	**113 (39.6)**	**56 (29.4)**	**-19.9**	**(-31.9, -7.9)**
	Missing data	280	280		
Older Person's Health (Aged Care)	No interest	118 (42.4)	150 (47.1)	11.1	(-14.8, 37.1)
	Some interest	130 (45.8)	110 (45.8)	-6.6	(-33.5, 20.2)
	Strong interest	33 (11.8)	21 (7.1)	-4.5	(-12.1, 3.2)
	Missing data	283	283		
Obstetrics and Gynaecology	No interest	100 (34.9)	109 (35.6)	2.8	(-10.0, 15.6)
	Some interest	121 (42.3)	127 (43.9)	2.1	(-7.0, 11.2)
	Strong interest	66 (22.8)	51 (20.6)	-4.9	(-14.5, 4.6)
	Missing data	277	277		
Public health	No interest	63 (22.0)	93 (29.2)	10.7	(-2.7, 24.2)
	Some interest	153 (53.7)	135 (51.5)	-6.3	(-20.8, 8.3)

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	Strong interest	69 (24.3)	57 (19.3)	-4.4	(-12.5, 3.5)
	Missing data	279	279		

Bolded items have a consistent change between entry and exit

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The most dramatic change between entry and exit was the loss of interest for operating theatre nursing. The proportion of students with 'no interest' for theatres more than doubled by exit, increasing on average by 28% (95% CI 14.4%, 41.2%) at the expense of 'strong interest' which decreased on average by 20% (95% CI -31.9%, -7.9%).

Discussion

The results of this longitudinal study of student nurse's career interests on entry and exit to the BNurs programme at the University of Auckland over a 10 year period provide some unique insights. They support the argument that nursing students have a preconceived idea of their preferred clinical specialty from the beginning of their education (Wareing et al., 2017; Hayes et al., 2006). However, they also demonstrate changes in career interests throughout the programme which also suggests nursing students can change their approach to care once socialised and as they progress through their education (Hayes et al., 2006). This is supported by the increase in interest in primary health care nursing over the course of the programme. The students experience two clinical community placements in their second and third year. Access to a clinical experience and exposure to primary health care during training may be responsible for the change and similar findings have been reported in other studies (Ganz & Kahana, 2006; Happell, 2002; Kloster et al., 2007; Stevens & Crouch, 1995; Stevens, 2011). Research exploring the impact of clinical placements on nursing students' attitudes toward clinical specialties and later career choices, have identified clinical placements are important to students across the entire three years of the programme. However, clinical placements

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most important in the third year and have a significant impact on the nursing students' choice of graduate destination (Wareing et al., 2017).

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The results of this study suggest New Zealand nursing students are similar to nursing students across the globe in their disinterest in working with older people. Bloomfield et al., (2016) found aged care was consistently ranked the least popular career preference by students across all three years of a longitudinal study in Australia. It is well known that students find the prospect of working with the elderly too complex and they find it hard to relate to older people particularly as the cohorts are getting younger. Stevens (2011) suggests students enter nursing with a negative view of older people and often early clinical placements occur in the aged residential care setting. These areas are frequently understaffed and poorly resourced leading to feelings of stress and powerlessness for nursing students (Kloster et al., 2007). These feelings are likely to add to student's negative attitudes as often those patients are highly complex with multiple comorbidities. King et al., (2013) performed a longitudinal study of nursing students' attitudes and preferences for working with older adults and found attitudes and preferences improved over time, however, working in nursing homes ranked last out of a choice of ten work preferences. In focus groups King et al (2013) went on to find students reported the gerontological course dispelled myths about caring for older people and the clinical placement played a major role in influencing student work preferences. The students from the current study do not undertake an aged residential care placement, instead their exposure to older people is in the acute care environment. This is reported to also reinforce negative attitudes as students observe poor standards of care for older people, patronising behaviour towards older people, and age-based discrimination (Brown et al., 2008a, McLafferty and Morrison,2004, Dobrowolska et al. 2017) Consideration should be given to offering students a focussed clinical experience later in their programme, once

they are have enhanced their communication skills, and developed a greater understanding of the complexities of ageing.

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Interestingly, the results of this study also identified academia and research as an area of low interest to students. The interest reduces even further throughout the BNurs programme, despite there being a well-established research thread which runs across all three years. There is little in the literature about this area of interest to students. This result may have identified an opportunity for programmes to highlight the importance of research and evidence in nursing and make students aware of the career opportunities available to them.

Interest in mental health nursing was found to consistently decrease during the course of the programme throughout the ten years of the survey. This observation has been reported in New Zealand by Surgenor, Dunn & Horn (2005) but also in other international literature (Ganz & Kahana, 2006; Kloster et al., 2007; Stevens & Crouch, 1995; Stevens, 2011). Birks et al., (2014) described in all three rounds of surveying, that first year students had no interest in mental health nursing. It has been suggested, students with multiple exposures to clientele in a mental health setting have more positive attitudes toward mental health nursing (Surgenor et al., 2005; Thongpriwan et al., 2015). Currently in the BNurs programme students receive a four-week clinical placement in a mental health care setting in the second year of their training. Therefore, longer and more frequent clinical placements in mental health areas may increase student's interests in working in the field.

Child health retained the strongest interest at exit from this programme and is clearly reflected in the low vacancy rates for child health nurses in New Zealand (New Zealand Immigration, 2016b). Birks et al., (2014) found school leavers in their Diploma of Tertiary Studies had high levels of interest in child health.

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However, in this study there was a decrease in all levels of interest in child health from entry to exit from the programme. This phenomena has been described in the literature (Ganz & Kahana, 2006; Happell, 2002; Kloster et al., 2007; McCann et al., 2010; Stevens & Crouch, 1995; Stevens, 2011; Surgenor et al., 2005). It has been suggested, this decrease may be due to student's previous experiences with healthy children (Happell, 1999), who then realise following exposure to the clinical area that their interest was misplaced when faced with sick and dying children (Happell, 2002; Stevens, 2011). Ganz & Kahana (2006) offered an explanation that elevated and persisting perceptions of social prestige for working in child health may influence interest for this speciality.

This project identified decreased interest for emergency care nursing over the course of the degree, which was different to the findings of Ganz and Kahana (2006) who found interest to increase. However, there is agreement that remaining interest for the area is high, Ganz and Kahana (2006) found emergency care to be ranked second choice at exit while this study found that 40% of students at exit held a strong interest for the area. Birks et al., (2014) conclude those areas of practice which are presented in the media as glamorous and exciting remain a strong preference for students entering the nursing profession. Nevertheless, there remains a shortage of nurses in the area of critical/intensive care & emergency care nursing according to New Zealand Immigration's figures (NZ Immigration, 2016b).

The decreased interest found for operating theatre nursing in this study is also confirmed by the literature (Happell, 2002; Kloster et al., 2007; Stevens & Crouch, 1995; Stevens, 2011). However, students in this programme are not routinely placed in operating theatres until they can choose to go there in their

final placement. Therefore, this also suggests the absence of clinical placement may have a strong association with career choice.

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Limitations

A methodological limitation of this study was the absence of questions prompting students for reasons explaining their specified levels of interest for each speciality and thus limited the depth of discussion for the identified major findings. Differences will exist between the specialties students indicate interest for and the actualised area of practice students embark their career pathway in, however the extent of difference was not examined here and requires further research. Also the findings of this longitudinal study are based on one school of nursing in New Zealand and may not be representative of other nursing students in New Zealand or internationally.

Conclusion

This study was the first of its kind to describe both demographics and trends in career interest for multiple cohorts of undergraduate nursing students over a 10 year period. Nursing students in New Zealand appear to have similar specialty interests to students from other countries and the findings of this study may be generalised to other undergraduate nursing cohorts. It is critical to note students remain disinterested in older person's health between entry and exit, however, an increase in interest for primary health care during the three-year degree was found. This suggests increasing awareness and strategically positioned clinical placement in specialty areas may offer the answer to increased interest at graduation. It is imperative for nurse educators to identify ways to increase nursing students' exposure to positive experiences in older persons health and primary health care to ensure an adequate workforce for future populations.

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Highlights

1. First 10-year longitudinal study of nursing students career choices

2. Nursing students remain disinterested in working in older persons health

3. Interest in primary health care increased after clinical exposure

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