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The training and job decisions of nurses – the first year of a longitudinal study investigating nurse recruitment and retention

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Project team

Patricia Kenny[1]
Denise Doiron[2]
Jane Hall[1]
Deborah J Street[3]
Kathleen Milton-Wildey[4]
Glenda Parmenter[5]

1. Centre for Health Economics Research and Evaluation (CHERE) University of Technology Sydney
2. School of Economics, University of New South Wales
3. School of Mathematical Sciences, University of Technology Sydney
4. Faculty of Nursing Midwifery & Health, University of Technology Sydney
5. School of Health, University of New England

Contact details

Patricia Kenny
Centre for Health Economics Research and Evaluation (CHERE)
University of Technology, Sydney
City Campus
PO Box 123 Broadway
NSW 2007

Tel: + 61 2 9514 4732
Fax: + 61 2 9514 4730
Email: patsy.kenny@chere.uts.edu.au

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Abstract

Understanding the employment choices and preferences of new entrants to the nursing profession is an important element in the formulation of policies for ensuring an adequate supply of nurses to meet population healthcare needs in the coming decades. A longitudinal cohort study to investigate the job preferences of nursing students and new graduates commenced in New South Wales in 2008. The study aimed to identify the relative importance of job attributes as well as factors such as age, family structure, education and health in nurses' employment choices. In addition to studying actual choices, it uses repeated discrete choice experiments (DCE) to measure preferences for job attributes and how these change after graduation and throughout the early career years. Data collection by annual online surveys commenced in September 2009 and, after one year, 530 participants had completed the first survey. This paper describes the characteristics of this cohort; it also provides an outline of the study and its methods.

How did the study come about?

Nurses comprise the largest professional group in the healthcare workforces of most developed countries and many of these health systems are facing similar challenges with regard to the future supply of nurses.[1] The supply of appropriately qualified nurses is important for both the quality of healthcare [2-4] and for the sustainability of health systems where the expansion of nursing roles in primary care and preventive services is an important component of reforms aimed at improving the efficiency and affordability of health systems. [5, 6] Concerns about the adequacy of the supply of nurses arise in the context of an increasing demand for health services brought about by both the aging of the population and by societal and technological changes which mean that the number of people living with chronic health conditions is increasing. The evidence from Europe, North America, and Australia suggests that the nursing workforce is aging, with many nurses likely to retire within the next decade. At the same time, attrition rates among young and newly registered nurses are high. [7-10]

Understanding the employment choices and preferences of new entrants to the nursing profession is an important element in the formulation of policies for ensuring an adequate supply of nurses to meet population healthcare needs in the coming decades. This requires longitudinal data following a cohort of nursing students into the workforce, recording their educational and employment decisions, as well as their preferences and the factors motivating their choices. Existing panel data such as the Household Income and Labour Dynamics in Australia (HILDA) survey are representative of the general adult population and hence are not well suited to the study of a particular occupational group, as the relevant sample sizes are too small. Further, while the Nurses and Midwives e-Cohort [11] commenced in 2007, there are currently no existing Australian datasets which focus on nurses at career entry level and collect both stated preference data and information about actual career choices.

Following an earlier investigation which relied on the limited data available in the registration database of the Nurses and Midwives Board of New South Wales (Australia),[8, 12] the chief investigators sought to fill some of the gaps in the available information. The study was conceived as a longitudinal study of training and work choices during and after completion of the initial nursing qualification, as well as a study of stated work preferences and how these might change over time. The investigators applied to the Australian Research Council for funding which was awarded to allow the study to commence in 2008.

What does the study cover?

The purpose of this study is to inform health workforce policy by identifying the relative importance of job attributes as well as factors such as age, family structure, education and health in nurses' job choices throughout the early years after graduation. In addition to studying actual choices, it uses repeated discrete choice experiments (DCE) which are well established in the investigation of consumer choices, but have not been widely used in understanding career choices in healthcare.[13] By modelling the choices made on a series of hypothetical scenarios, this approach enables the investigation of preferences for various aspects of nursing jobs, even though the current work environment may not offer such choices. The DCE method would also allow the investigation of preferences for attributes of new roles and responsibilities for nurses which may become available under future health system reforms. The data collected will enable identification of job attributes which reduce retention in nursing and could be used to predict the likely impact of proposed reforms. The

overall aim is to develop and estimate models that describe both the training decisions and the job decisions of nurses so that health system and health workplace reform can be designed from a robust evidence base.

The unique feature of this study is that it is a longitudinal study using a joint DCE and labour force survey. This allows us to address issues such as how the nurses' experiences affect their preferences over job characteristics and contribute to understanding why so many of the nurses finish their degree and then work only a few years as nurses.

Where is the study area?

The study is being conducted in New South Wales (NSW) Australia and is recruiting nursing students and recent graduates from two universities; the University Technology Sydney (UTS) located in the state capital city, Sydney, and the University of New England (UNE) located in Armidale, a regional centre. The study was approved by the research ethics committees at both universities. A pilot study was conducted at UTS in May-June 2008 and cohort recruitment commenced at UTS in August 2008; this was extended to include UNE in February 2009.

Who is in the sample?

The sampling frame currently comprises graduates and students enrolled in the Bachelor of Nursing (BN) program at the participating universities during 2008-2010 for UTS and during 2009-2010 for UNE. As of October 2010, 1,252 nursing students have joined the study and of these, 530 have completed the baseline survey; the majority of respondents are from UTS which has a much larger nursing school than UNE; UTS has 1300-1400 BN students compared to UNE with just over 400 students. The researchers plan to continue recruitment beyond 2010.

The recruitment procedures required potential participants to provide their name and email address to the research team. Each participant was then sent an email with a link to the baseline survey which was conducted online. Participants could provide the initial recruitment information (name and email address) by email or by completing a form which could be returned in person or by post. Multiple strategies have been used to inform potential participants and stimulate their interest in the study; these have evolved since the commencement of recruitment and in response to low initial rates. The following recruitment strategies have been used:

1. A researcher giving a brief presentation at the beginning of a lecture and distributing research forms;
2. A research assistant distributing brochures outside lecture rooms and at special information events for undergraduate nursing students;
3. A project website with information and news about the study;
4. Periodic announcements about the study placed in the undergraduate nursing subject areas of each university's online student communication system;

5. The placement of study brochures at each university's student centre and nursing faculty offices;
6. Small incentives to engender goodwill toward the project and encourage participation
    a. A syringe-shaped pen imprinted with the study web address was distributed to nursing students with the information brochure;
    b. For each completed baseline survey, the study donates $2 to Médecins Sans Frontières (a charitable organisation which provides healthcare in areas affected by disaster);
7. Periodic newsletters to keep participants informed about study progress and preliminary results.

There were some slight variations between universities in the application of some of these strategies, to take account of the local circumstances. The research team includes an investigator from the nursing faculty at each university which facilitated the development of procedures appropriate to each campus. Initially a third university, Southern Cross University (SCU) at Lismore and Coffs Harbour, was included in the study. However, the study investigator located at SCU moved interstate to take up another position during the first year of recruitment. Consequently, there were insufficient respondents recruited from SCU to include in the cohort.

What has been measured?

All data collection is through annual online surveys; the study is currently funded for five annual data collection waves, with follow-up beyond five years dependent on securing further funding. There are two sections to the survey, 1) a typical survey format with multiple choice or open-ended responses and 2) a DCE asking the participant to make a series of choices about hypothetical job scenarios.

The content of the baseline survey is summarised in Table 1. The first part of the survey includes extensive background questions covering demographic, economic, employment, education, family, health, and lifestyle information. It also includes questions about the factors motivating the decision to study nursing, and satisfaction with their nursing education program. In addition, new graduates currently working as nurses are also asked about their satisfaction with various aspects of their current job. The background questions are typical of instruments used in economic studies of labour supply. For example see the panel survey Household Income and Labour Dynamics in Australia (HILDA) at http://www.melbourneinstitute.com/hilda/ .

Table 1: Content of baseline survey

Background	Education	Employment and work
Demographic Age, sex, country of birth, language	Qualifications Qualification prior to BN, year of completion of BN or year of study	Current student Employment status, work in nursing, occupation, duration of job, work hours, satisfaction with hours, reason for not working
Family and household Children, partner, live with parents, live with partner	Motivation for nursing studies Main reason for BN studies, interest in nursing specialty, family/friends who are nurses or other healthcare workers, previous occupation and reason for leaving	Graduate Employment status, work in nursing, duration of job, work hours, satisfaction with hours, if in new graduate program, rural/urban location, type of nursing, type of organisation, satisfaction with different aspects of nursing job, expectations for future work, occupation if not nursing and reason if not working.
Income Personal income, household income, government student support	Satisfaction with BN program Workload, engagement in class, amount of training, type of training, preparation for work, information about nursing jobs	Preferences Graduates and current students complete 2 DCEs for first RN job (8 questions each) 1) Choose the best aspect of a job 2) Choose the best job from 3 jobs
Health Health in general, exercise, smoking		

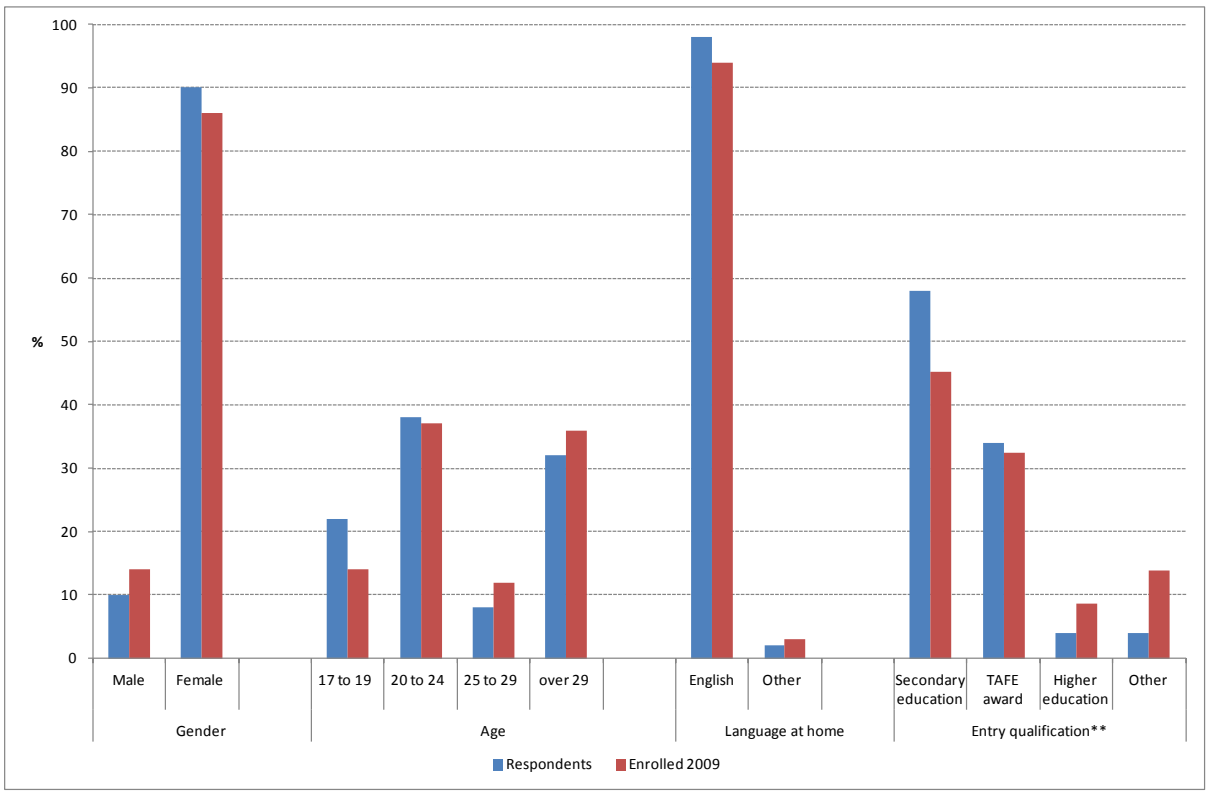
Abbreviations: BN Bachelor of Nursing; DCE Discrete Choice Experiment; RN Registered Nurse.

The DCE questionnaire was devised specifically for this study and in the initial survey focused on preferences for the first job as a registered nurse. The job attributes were based on the "magnet hospital" literature[14, 15] on job characteristics influencing nurses' acceptance of jobs and intention to remain with an employer. The attributes were devised to be appropriate in the context of an entry level job in a new graduate program. The following twelve attributes were included: the type of employer, the number of clinical rotations, the availability of full or part-time work, the flexibility of the rostering system, the adequacy of staffing levels, the workplace culture (in terms of support from management and staff), the standard of the physical work environment, professional development and progression, the parking facilities, the level of responsibility given, the quality of patient care and the salary. The levels of these attributes are varied systematically to create a series of hypothetical scenarios. The survey uses two types of DCE question. The first type presents a hypothetical job scenario constructed from a combination of different levels of the above list of attributes and asks respondents which is the best aspect of the job and which is the worst. Each respondent is asked this question for eight different jobs. The second type presents a scenario of three hypothetical jobs described in terms of different levels of the same attributes and labeled Job A, Job B and Job C. Respondents are asked which they think is the best job and which they think is worst. Each respondent is asked this question for eight sets of hypothetical jobs.

What has been found?

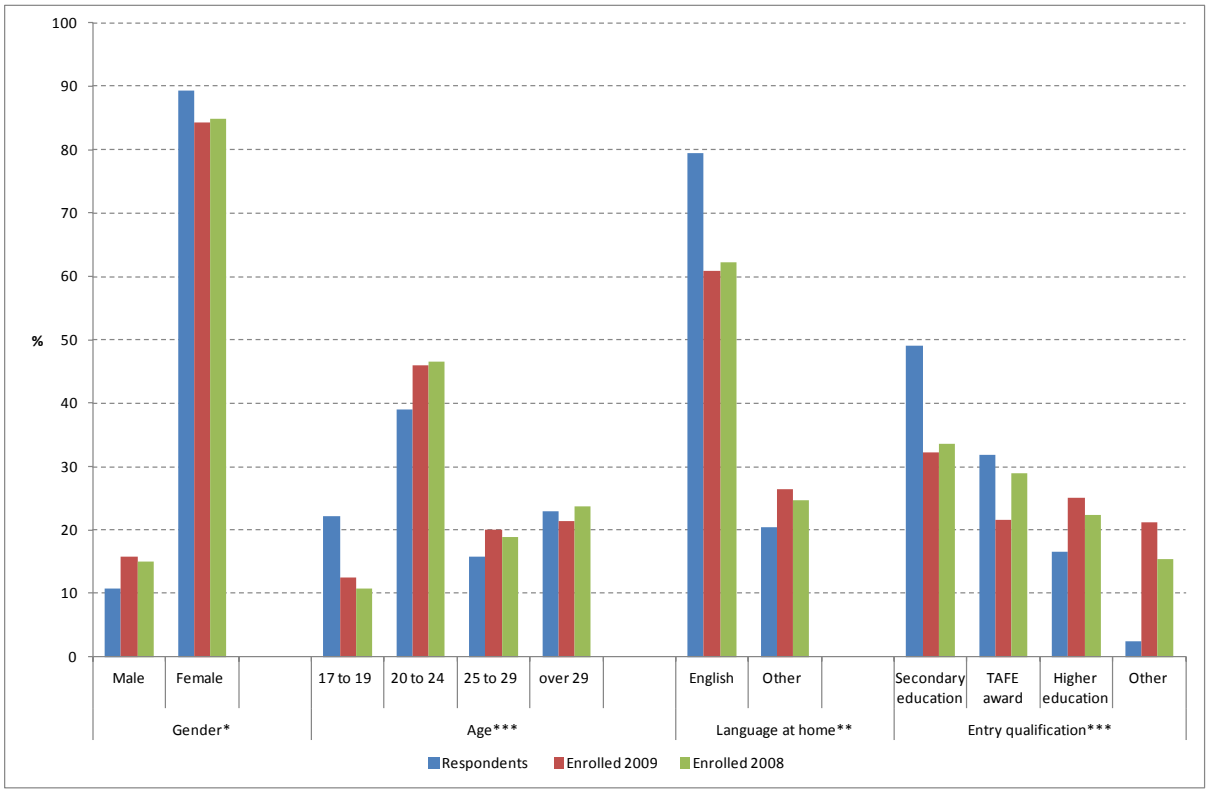
As of September 2010, 530 respondents had completed the baseline questionnaire online, representing 18% of the sampling frame. The characteristics of respondents recruited through each university were compared to the enrolment information for that university, for the years 2008 and 2009 for UTS and for 2009 for UNE. At both universities, the difference between the cohort and enrolled students was small for most measured characteristics (see Figures 1 and 2). Young students entering the BN from secondary education were over-represented in respondents from both universities; 58% compared with 45% of enrolled students for UNE (Figure 1) and 49% compared with 34% and 32% of enrolled students in 2008 and 2009 respectively for UTS. The UTS cohort also over-represented English speakers; 79% compared with 62% and 61% of enrolled students in 2008 and 2009 respectively (Figure 2). Using the Chi-squared test (Fisher's Exact test for tables with small cell counts), all comparisons were statistically significant for UTS but for UNE this was only the case for entry qualification. The comparison between respondents and enrolled students can be used to construct weights that can be used to weigh the observations in the analysis samples so that they have the same frequency distributions as the underlying population.

Figure 1: Characteristics of the University of New England cohort compared to enrolled students in 2009



Footnotes: *p<0.05, **p<0.01, ***p<0.001.

Figure 2: Characteristics of the University of Technology Sydney cohort compared to enrolled students in 2008 and 2009



Footnotes: *p<0.05, **p<0.01, ***p<0.001.

The cohort characteristics at baseline are reported in Table 2. As expected, the majority of respondents were recruited through UTS (81%) which has a much larger nursing school than UNE. While all respondents were students when recruited to the study, 72 (14%) had graduated by completion of the first online survey and three had withdrawn from the nursing degree. The majority of the sample was aged less than 25 years (61%), female (89%) and spoke English at home (83%). The proportion speaking a language other than English at home was higher for UTS respondents (20.5%) than for those from UNE (2%) and this reflected enrolment differences between the two universities.

Income was low relative to the general population which was expected among this group consisting mainly of students; 45% earned less than $20,000 Australian per annum and a further 15% earned less than $40,000 (Australian median gross household income was $66,820 per annum in 2007-08[16]). Among respondents who were current students, 62 % had paid work and 36% received government student support (loans or allowances). Sixty-one of the 72 graduates had paid employment and of these 50 were working in nursing. Almost half of respondents were living with their parents for part or all of the time; this was the case for a higher proportion of current students (51%) than graduates (40%).

Table 2: Characteristics of the cohort at the first survey

	UTS n=430 %	UNE n=100 %	Current students n=455 %	Graduate n=72 %	Total n=530 %
Age					
17 to 19	22.1	22.0	25.3	2.8	22.1
20 to 24	39.1	38.0	37.4	50.0	38.9
25 to 29	15.8	8.0	13.9	13.9	14.3
more than 29	23.0	32.0	23.5	33.3	24.7
Gender					
Male	10.7	10.0	11.4	5.6	10.6
Female	89.3	90.0	88.6	94.4	89.4
Born in Australia	62.8	89.0	67.0	72.2	67.7
English spoken at home	79.5	98.0	82.6	84.7	83.0
Household					
Lives with parents	51.9	36.0	50.6	40.3	48.9
Lives with spouse/partner	29.8	42.0	31.2	36.1	32.1
Has dependent children	15.6	23.0	15.4	25.0	17.0
Gross annual income[bc]					
Less than $20,000	45.6	44.0	47.5	33.3	45.3
$20,000-$39,999	14.2	21.0	14.7	18.1	15.5
$40,000-$79,999	12.6	16.0	12.3	18.1	13.2
$80,000 or more	12.8	12.0	11.7	19.4	12.6
Missing	14.9	7.0	13.9	11.1	13.4
Current employment					
Working	68.4	51.0	62.0	84.7	65.1
Working in nursing	34.7	36.0	29.5	69.4	34.9
Health					
Very good/ Excellent	69.3	69.0	67.7	79.2	69.3
Good	26.7	25.0	27.7	18.1	26.4
Fair/Poor	4.0	6.0	4.6	2.8	4.3
Smoking (currently)	14.4	15.0	15.2	11.1	14.5
Physical activity[a]					
Not at all	6.5	1.0	5.3	6.9	5.5
Less than weekly	18.6	18.0	16.7	29.2	18.5
1 to 3 times/week	50.7	50.0	53.0	36.1	50.6
More than 3 times/week	24.2	31.0	25.1	27.8	25.5

Abbreviations: UTS University of Technology Sydney, UNE University of New England.

a Moderate or intensive activity for 30 minutes or more.

b Income question: Over the last financial year how much total income did you (and your partner if you have one) receive before taxes?

c Income reported in Australian dollars 2009-10.

Almost all respondents reported their health to be good, very good or excellent; only 4% reported that they experienced fair or poor health. The proportion of respondents who reported being current smokers was 14.5% (7% smoked daily and 7% less than daily); this is lower than the rate for Australia where 18% of those aged 15 or more smoked daily and 2% less than daily.[17] The majority of respondents also reported participating in moderate or intensive physical activity for 30 minutes or more at least weekly.

What are the main strengths and weaknesses of the study?

The study will make an important contribution to the research for health workforce policy in Australia by filling a gap in the available data on nursing students and new graduates. Specifically, it will contribute detailed longitudinal data which will enhance understanding of the different career paths taken by nursing students and enable better identification of the personal and job characteristics determining these. It will also be one of the first applications of repeated DCE methods for health workforce policy analysis which will enable investigation of how the preferences of nurses change over time with workforce experience and how these relate to their actual employment decisions.

The sampling frame means that the majority of respondents are young adults, a difficult age group to recruit and retain in research. Thus recruitment has been slower than expected and has required the introduction of a range of strategies to encourage potential recruits to join the study and then to complete the first online survey. The challenge of ensuring a high response rate will continue throughout the study, requiring investment in effort to maintain contact with this cohort from a highly mobile demographic. The use of email contact will help with this as long as respondents retain the same email address; to account for this, respondents have been asked to provide alternative contact information to help track down those who change their email addresses. The study will also attempt to limit problems associated with diminishing sample size by continuing to recruit into the foreseeable future.

The use of online survey methods has both positive and negative consequences in that it makes geographically mobile respondents easier to contact but does place more limitations on the length of a survey the respondents would be prepared to complete, particularly while travelling. While we have minimised the level of detail collected in the interests of brevity, we have also managed this constraint by spreading the collection of some background details which need only be asked once across the first two surveys rather than making the initial survey too long.

This study provides Australia's first detailed longitudinal data collection on the training and employment choices and preferences of nursing students and new graduates. It also provides rich contextual information for these choices in terms of demographic, health, economic and family information as well as satisfaction with many aspects of training and work. The analyses arising from this study will potentially have a significant impact on nursing workforce policy in Australia and affect the capacity of the Australian health system to provide health services over the coming decades, amid increasing demand on the system through the aging population and rapid sociological and technological change.

Can I get hold of the data?

There are currently no plans to make these data available to other researchers outside of the current research team before completion of the initial follow-up period of five years. Interested researchers should contact Professor Jane Hall (jane.hall@chere.uts.edu.au).

Where can I find out more?

Further information about the project can be obtained through the study website at http://www.chere.uts.edu.au or by email to the first author (patsy.kenny@chere.uts.edu.au).

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