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Australian nurse practitioner census: A protocol guide

Abstract

Internationally, collection of reliable data on new and evolving healthcare roles is crucial. We describe a protocol for design and administration of a national census of an emergent healthcare role, namely nurse practitioners in Australia using databases held by regulatory authorities. A questionnaire was developed to obtain data on the role and scope of practice of Australian nurse practitioners. Our tool comprised five sections and included a total of 56 questions, using 28 existing items from the National Nursing and Midwifery Labour Force Census and nine items recommended in the Nurse Practitioner Workforce Planning Minimum Data Set. Australian Nurse Registering Authorities (n=6) distributed the survey on our behalf. This paper outlines our instrument and methods. The survey was administered to 238 authorised Australian nurse practitioners (85% response rate). Rigorous collection of standardised items will ensure health policy is informed by reliable and valid data. We will re-administer the survey two years following the first survey to measure change over time.

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Key Words: census, nurse practitioner, workforce planning,

Introduction

Utilisation of new service delivery roles should be made '*on the basis of rigorous evaluation and evidence rather than on opinion or vested interests*[1] however, rarely are these roles evaluated close to their point of inception [2,3]New service delivery roles arise through circumstances such as changes in population distribution, increased pressure on healthcare providers and economic constraints.[4-6] In Australia, healthcare delivery is evolving due to environmental pressures such as the ageing population and dwindling working population.[7] The Productivity Commission position paper on Australia's workforce specifically identified a lack of comprehensive data about the full range of professions and support workers in the health care system.[8] This hampers evidence-based solutions for workforce re-design indicating a clear need for valid and reliable data to inform workforce planning for the future.

The nurse practitioner role is one example of an emerging healthcare service delivery role. Introduced in Australia in 2000 [9] nurse practitioners are registered nurses who have also undergone additional education and training in nursing at an advanced level, in line with their additional responsibilities.[10] Working autonomously in an advanced and extended clinical role, but in collaboration with other health professionals as part of a multidisciplinary team, authorised nurse practitioners prescribe medications, order diagnostic tests and make referrals when operating within approved guidelines. [10] Nurse practitioners provide healthcare in a diverse range of settings from community centres to hospitals, nursing homes and rural and remote settings to individuals from all ages, families, communities and groups.[11] Nurse practitioners are grounded in the nursing profession's values, knowledge, theories and practice. [12]

Annually in Australia, nurses and midwives in each jurisdiction are invited to participate in the National Nursing and Midwifery Labour Force Census. The term 'nurse' includes all individuals who are registered or enrolled with a state/territory nursing and midwifery registration board at the time of the Census.[10] This census form is sent to nurses with their registration renewal form and is administered by each state and territory government health authority with the cooperation of the relevant nursing/midwifery registration board.[10] Data from this census are published in the Australian Institute of Health and Welfare (AIHW) National Labour Force Series and include information on the demographic and employment characteristics, work locations and work activity of all nurses and midwives in Australia at the time of the survey. [10] To date, the specialised role of nurse

practitioner has not been fully recognised in this census. There is only one question in the census pertaining to nurse practitioner status that asks, *'Are you registered/endorsed/authorised by your board to practise as a nurse practitioner?'*[10]

As part of the National Nurse and Nurse Education Taskforce responsibilities and recognising the limitations of the above data set for collection of valid and reliable data about nurse practitioner services, a proposed Nurse Practitioner Workforce Planning Minimum Data Set was developed in 2005 to identify data to describe the role of the nurse practitioner [(13).] Specifically, the minimum data set recommended collection of standardised, de-identified client level data (19 items) and nurse practitioner service provider data (nine items). The latter divided into nurse practitioner/ individual service provider data (four items) and nurse practitioner workplace data (five items).[13]

The collection of valid and reliable data instils confidence in the inferences, generalisations and recommendations that are drawn from studies.[14] In turn, it is hoped that influential decisions will be made based on these data. Reliability ensures data can be collected consistently over time. This is imperative, particularly if measures are to be repeated longitudinally. Reliability ensures the consistency of data collection and validity ensures the quality of data collected. One way to make sure the data are valid and reliable is to use standardised definitions, established data elements and rigorous and replicable data collection processes.[14]

Objective evaluation is critical to determine the success of the nurse practitioner role in order to ensure that services are responsive to the needs of the community.[15] Rigorous evaluation including comprehensive descriptions of the types of services provided by different nurse practitioners, their relevant population service groups, how nurse practitioners interact with other healthcare professionals and resulting patient outcomes is warranted to fully describe nurse practitioners' varying scopes of practice. Phase One of the Australian Nurse Practitioner Project (AUSPRAC) aimed to develop validated data fields for nurse practitioner workforce planning by conducting a cross-sectional postal survey of all authorised nurse practitioners in Australia. This paper describes the process of undertaking a national census using databases held by regulatory authorities and describes in full the development and subsequent final instrument used to rigorously profile a new health service

delivery model. Results of the census are presented elsewhere.[16] Such a protocol may assist the evaluation of new health service delivery models in the future.

Method

Instrument development and testing

A draft questionnaire was developed by the researchers using 28 existing items from the National Nursing and Midwifery Labour Force Census.[17] In addition, nine items were added based on recommendations from the Nurse Practitioner Workforce Planning Minimum Data Set (2006)[13] and also informed by the literature. Specifically, the educational and employment sections of the National Nursing and Midwifery Labour Force Census were expanded to enquire about nurse practitioner scope of practice, access to continuing education, service model, geographical location and other potential retention issues. Items were selected to ensure there was nationally consistent data collection on the demographic profile, workplace (including geographic location), hours of work and tenure, educational pathway and preparedness, referral patterns, prescribing practices and use of clinical protocols, and barriers and enablers to practice. The National Health Data Dictionary (NHDD) and the Australian Bureau of Statistics resources also were consulted to ensure standardised, accepted terms and conventions were used to define data. The collection of standardised information to describe nurse practitioner practice is imperative in order to locate nurse practitioner practice within the broader social and cultural changes taking place in healthcare and to explore how these new roles are in the process of being constructed.[18] Standardised information provides a way to build a profile on nurse practitioner practice and identifies specific characteristics unique to the nurse practitioner role.

Independent external peer review was conducted by an expert panel representing authorised Australian nurse practitioners, researchers, senior nurses and policy makers and included an analyst from the AIHW. This group reviewed the face and content validity of all items.

The survey then was pilot tested by 30 nurse practitioner candidates enrolled in a Master of Nursing Science (Nurse Practitioner) degree in July 2007. The final survey was developed following results of the pilot survey and feedback from independent expert review and is described in full below.

Final Instrument

A 14 page survey was developed (known as the 'Australian Nurse Practitioner Study Nurse Practitioner Survey 2007') comprised of five sections and a total of 56 questions.

The first section related to demographic and professional membership information (nine questions). The second section asked questions about general nursing registration and nurse practitioner authorisation processes including category or band of practice (10 questions). The third section sought information on formal education and professional development activities relevant to the nurse practitioner role. This section included questions on any education the nurse practitioner was undertaking at that time, the teaching methods employed and the mode of delivery. If not studying, nurse practitioners were asked to nominate reasons. Also included were questions regarding any previous education that the nurse practitioner had completed since becoming authorised as a nurse practitioner (nine questions).

The fourth section related to the employment profile of the nurse practitioner (16 questions). This section covered both the nurse practitioner role and, if applicable, any other nursing or health-related job also held by the nurse practitioner. Respondents were asked to specify the amount of time they had spent working as a nurse practitioner since authorisation, including whether they were working as a nurse practitioner in the working week preceding survey completion, total hours worked in the nurse practitioner job and/or other health-related job/s, their clinical field and principal place of work, the nature of their employment (i.e. full-time or part-time as a nurse practitioner, or part-time in a dual role nurse practitioner and other nursing/health-related role), employment conditions (i.e. if the nurse practitioner position was permanent, casual, fixed term, own business), and allocation of responsibilities in those role/s (i.e. the percentages of time they spent in the preceding week on direct patient care, research or administration). This section also requested information on: the location of the principal place of nurse practitioner work, any unpaid absence, and how the nurse practitioner position was initiated (i.e. whether the nurse practitioner position was developed by the nurse practitioner, the health service, department of health, or other). Respondents who were, at the time of the survey, not employed as nurse practitioners were asked to indicate what, if any, active steps they took to secure work as a nurse practitioner in Australia.

Section five related to clinical service patterns and specifically elicited information on current clinical work as a nurse practitioner (12 questions). Respondents were asked to indicate if their capacity to work was determined by clinical and medication protocols[19] and if it was so determined, whether these clinical protocols were developed and approved by their employer. Nurse practitioners were asked to indicate to whom they referred patients, to nominate the diagnostic tests utilised in their practice and whether they had hospital admission and discharge privileges (i.e. whether the nurse practitioner could control their own admissions or discharges from hospital). Nurse practitioners also were asked about the arrangements for professional indemnity insurance. The final question used a seven point Likert scale ranging from 'Not at all limiting' to 'Extremely limiting' to ask nurse practitioners about barriers and enablers to their current clinical work as a nurse practitioner. The survey closed with an invitation to participants to expand in free text on any other issues or factors that they believed limited their practice as a nurse practitioner.

In addition, participants were asked to express their interest in participating in two further phases of the AUSPRAC Study, namely a work sampling and case study phase, and a study to examine patient outcomes.

Examples of a selection of questions from each section are shown in Table 1. The full questionnaire is available on request from the authors on publication of the final results.

Survey Distribution Procedure

An advance letter, signed by the Chief Executive Officer of the Australian Nursing and Midwifery Council (ANMC), was sent to all Australian Nurse Registering Authorities (n=6) identified as authorising nurse practitioners in a report produced by the National Nursing and Nursing Education Taskforce.[20] The letter requested assistance from these authorities in the distribution of surveys to all authorised nurse practitioners in their jurisdiction. The Nurse Registering Authorities distributed the survey as requested on behalf of the researchers between September and November 2007. In this way, the confidentiality of individual nurse practitioner contact details was maintained. The postal mail-out process comprised three components. The first survey package included a covering letter explaining the study, a plain language statement, unique identifier sheet (to enable linking of data to a planned future repeat national survey two year hence), a copy of the survey and a reply-paid

envelope. The plain language statement outlined the purpose of the study, clearly described the method of data collection and set down the privacy and confidentiality guidelines governing the study. This original mail out was followed-up by two postal reminders.[21]

The first reminder was mailed two weeks following distribution of the initial package and the second reminder package was mailed a further two weeks later and included another survey with a reply-paid envelope. Return of the survey was regarded as consent to participate in the study.

Ethical approval was granted by Queensland University of Technology and Australian Catholic University.

Results

The first national census of Australian nurse practitioners was conducted from September to November 2007. All Australian nurse practitioners authorised or registered at this time were invited to participate. A total of 238 authorised nurse practitioners participated from all states, except Tasmania and the Northern Territory, the two jurisdictions with no nurse practitioners at that time. Responses from 202 nurse practitioners were received within the allocated time frame (85% response rate). As this paper describes the development of a tool and the process of undertaking a national census only, results from the census are reported elsewhere. [16]

While most survey questions elicited clear responses, after the first administration and analysis of our survey, it became apparent that six questions were producing unanticipated (n=4) or ambiguous (n=2) responses. The reasons for these are outlined in Table 2 and did not decrease the validity of responses to these questions.

Encouragingly, participant interest in participating in the two further phases of the AUSPRAC Study, namely the work sampling and case study phase, and a study to examine patient outcomes was high.

Discussion

Only two national surveys of nurse practitioners previously have been published [22,23] one undertaken in the United States of America and the other, a survey of cardiovascular nurse practitioners, undertaken in Canada. Findings from these studies likely will facilitate further understanding about nurse practitioner health workforce issues that may, in turn, improve service delivery. Credible research is urgently needed to realise the potential of nurse practitioners in Australia and to bridge the divide of inequitable distribution of health services [24]

The latest national Nursing and Midwifery Labour Force Census published report states that, '*Nurse practitioners are only a small group, numbering in the order of 200 in 2005, are registered as such only in New South Wales, Victoria, South Australia, Western Australia and the Australian Capital Territory'* [(10, p. 2).] There are no other nurse practitioner statistics presented in the report despite the fact that this collection is used to inform the community about the nursing profession, and to form the basis of planning and policy decisions. Further, while a commendable activity to gather important data about working patterns for the current nursing workforce, participation in the census is voluntary and not all nurses who receive the questionnaire respond. [10]

In addition, the AIHW does not administer the census but receives de-identified survey data and aggregate total registration numbers from each State and Territory nurse authorizing body without knowing the precise numbers of surveys sent out or the precise number of replies received. Response rates are estimated based on this information [10] The aggregated response rate for the 2005 Nursing and Midwifery Labour Force Census was 55.0%. South Australia had the highest attributed response rate at 68.9% and the lowest response rate of 13.7% was fromNorthern Territory. No response rate was recorded for Victoria [10] Adding to this variability is the fact that the overall Nursing and Midwifery Labour Force Census response rate has dropped over time. From a high of 77.2% in 2001, the response rate has incrementally decreased to 59.8% in 2004[10]. Thus the generalisations and inferences that can be made from samples to the population from the Nursing and Midwifery Labour Force Census are limited.

Response rates by nurses to surveys are, at best, moderate.[25] Our survey achieved a laudable response rate of 85%, and as such, we are confident our results are generalisable to

the entire nurse practitioner population in Australia. We also plan to re-administer the survey two years following the first survey to measure change over time. Minimal changes to the second survey will be made in order to improve and not compromise validity and reliability; as such the six questions that were problematic in the first survey will be addressed with additions as shown in Table 2. The same distribution methods will be used in the second administration of the national survey to ensure validity and reliability.[26-29] In addition, results of the second survey also will provide further evidence of the reliability of this survey instrument. We also will have the ability to match respondent's responses to the first survey with their responses to the second survey through unique identification numbers for key questions where the answers would be expected to be the same, thus allowing us to examine the re-test reliability of these questions which will be reported with our final results. This way, crucial evidence-based decisions arising from the data will be defensible.

While this has been the first time this census has been administered, it has been strongly based on relevant questions from the National Nursing and Midwifery Labour Force Census and also is consistent with recommendations from the Nurse Practitioner Workforce Planning Minimum Data Set[13] Our use of recommended standardised data items potentially will enable links and comparisons with similar data collections from other healthcare professional groups such as national data from Australian family physicians, (eg data items on the location of delivery of service).[30]

Conclusion

Clearly, reliable national data on nurse practitioner practice is warranted and there is a need for further rigorous, large-scale, multi-factorial investigation of nurse practitioner service in Australia to inform workforce policy and planning decisions about the role of the nurse practitioner in the health workforce[31]. Nationally consistent data will help to support the ongoing development of the nurse practitioner role, provide data to inform future policy development and service planning and provide a basis for future development of research and evaluation methods related to nurse practitioner practice.[13]

In addition, we believe methods undertaken to prepare the instrument, the content of the instrument itself and the survey distribution procedure outlined in detail will be of value to inform evaluation of other emergent health service delivery models of care in the future.

The importance of consistent data collection methods and collection of standardised data items within and between health professional groups cannot be over-estimated.

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Authorship Credit

GG, AG, SM and PD conceived and developed the study, drafted the study protocol and secured funding.

GG and MG distributed the survey, coordinated the response and management of data.

GG, AG, SM, PD, MG and LM contributed to research materials and drafts of the manuscript.

AG and LM undertook data analysis

All authors have read and approved the final manuscript, and take public responsibility for its content

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Table 1: Sample of AUSPRAC Survey Questions from each of the Five Sections

Demographics What is your date of birth What is your residential postcode?
Authorisation Process In what year did you first become a Registered Nurse? In which Australian State or Territory did you receive your nurse practitioner authorisation?
Professional Development Which of the following educational programs are you currently undertaking? Which of the following options best describes your reason/s for not studying at this time?
Employment Profile For how long since you were first authorised as a nurse practitioner have you worked as a nurse practitioner? In the last working week, were you working as a nurse practitioner? In which Australian State or Territory is your nurse practitioner workplace/s?
Clinical Service Patterns To whom do you refer patients? Do you have hospital admission privileges? Who provides your professional indemnity insurance?

Table 2. AUSPRAC Survey Changes For Time 2

Old Question Wording	Issue	Category		New Question Wording
		Unanticipated	Ambiguous	
In which Australian State or Territory do you usually live? SA..... ☐1 VIC..... ☐5 WA. ..... ☐2 NT..... ☐6 NSW ..... ☐3 QLD..... ☐7 TAS..... ☐4 ACT..... ☐8	Did not anticipate that NP's authorised and now not living in Australia would be forwarded their survey.	✓		In which Australian State or Territory do you usually live? SA..... ☐1 VIC..... ☐5 WA. ..... ☐2 NT..... ☐6 NSW ..... ☐3 QLD..... ☐7 TAS..... ☐4 ACT..... ☐8 Not living in Australia ..... ☐9
In what year were you first authorised as a Nurse Practitioner?	NP's first authorised overseas took their overseas authorisation date rather than the date authorised in Australia.		✓	In what year were you first authorised as a Nurse Practitioner in Australia?
The second set of questions in this section asks about any education program/s you have previously completed <u>since becoming</u> authorised as a NP. Have you *previously completed* any education programs related to your practice as a NP since becoming authorised as a NP?	NP's included data prior to NP authorisation which was not required.		✓	The second set of questions in this section asks about any education program/s you have undertaken and completed <u>since becoming</u> authorised as a NP. Have you *completed* any education programs related to your practice as a NP since becoming authorised as a NP?
In your last working week, were you working as a NP? *(either full-time or part-time)* Yes ☐1 go to Q 32 No ☐2 go to Q 44	People who were not working as NP's completed rest of survey when not required.	✓		In your last working week, were you working as a NP? *(either full-time or part-time)* Yes ☐1 go to Q 32 No ☐2 **You have almost finished, go to Q 44**
What is the postcode of your principal NP workplace? If you practise in more than one place, please list the postcodes of your other workplace(s).	Too many postcodes listed	✓		What is the postcode of your principal NP workplace? If you practise in more than one place, please list the postcodes of your other **main** workplace(s).
Which of the following categories are included in your medication protocols, whether approved or not *(please select one box on each line)* Schedule 2.....Yes☐1.....No☐2..... N/A☐3 Schedule 3.....Yes☐1.....No☐2..... N/A☐3 Schedule 4.....Yes☐1.....No☐2..... N/A☐3 Schedule 8.....Yes☐1.....No☐2..... N/A☐3	Additional two categories required as added by cohort of NP's	✓		Which of the following categories are included in your medication protocols, whether approved or not *(please select one box on each line)* Schedule 2 ..... Yes☐1 ..... No☐2 ..... N/A☐3 Schedule 3 ..... Yes☐1 ..... No☐2 ..... N/A☐3 Schedule 4 ..... Yes☐1 ..... No☐2 ..... N/A☐3 Schedule 8 ..... Yes☐1 ..... No☐2 ..... N/A☐3 Section 100 ..... Yes☐1 ..... No☐2 ..... N/A☐3

Table 2. AUSPRAC Survey Changes For Time 2