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Original Research

Longitudinal tracking of workplace outcomes for undergraduate allied health students undertaking short, medium and long-term rural placements in rural Australia

Abstract

Creating positive experiences in rural practice at the undergraduate level can influence allied health students' attitudes to working rurally. This study aims to evaluate allied health students' experiences of their short-term, medium-term or long-term rural placement, and to follow their career outcomes.

Methods: The study uses a mixed methods design that utilises qualitative and quantitative data. Students from six allied health degree programs undertaking placements in [locations blinded] are invited to participate. Participation comprises of a series of surveys and an individual in-depth semi-structured interview.

Results: One-hundred and ninety-eight students have completed 257 end of placement surveys as of June 2014, with 72.7% reporting an intention to work rurally after placement. Fifty five percent (n=51) of the 92 students who had never lived in a rural area had a more favourable attitude towards working rurally following placement. After one year, 50% of graduates were working in a rural or remote location.

Conclusions: Current findings indicate a positive perception of the rural placement experience and impact on intention to work rural, particularly from those who have not previously spent time in a rural area. Future directions are to investigate longer-term workforce outcomes and the impact on the rural health workforce.

Keywords: allied health occupations, health workforce, mixed methods research, rural health services, undergraduate education

Background

People living in rural and remote areas of Australia have poorer health outcomes than their metropolitan counterparts,¹⁻³ including shorter life expectancy and higher rates of preventable and chronic diseases.⁴ A key factor contributing to these poorer health outcomes is the comparative shortage of health professionals, including allied health practitioners, in rural and remote areas.⁴⁻⁶ In order to improve health outcomes for rural Australians it is essential to enhance the recruitment and retention of all health professions to non-urban areas.

Given that undergraduate exposure to rural health practice has been shown to influence attitudes towards a rural career path,⁷⁻¹² the Australian Commonwealth Government has developed initiatives such as the University Department of Rural Health (UDRH) program and Rural Clinical Training Scheme (RCTS) with the aim of increasing the number of undergraduate medical, nursing and allied health students exposed to rural clinical practice during their undergraduate education.¹³ The primary funding requirement under the UDRH program is to provide support for students from medicine, allied health and nursing to undertake placements in rural and remote areas, as well as to support the clinical staff who supervise them.

The [removed for blinded review] Department of Rural Health ([REMOVED FOR BLINDED REVIEW]) is based in northern New South Wales with educational hubs in the regional centres of [locations blinded]. The [REMOVED FOR BLINDED REVIEW] has received funding under both the UDRH and RCTS programs, which are part of the overarching Rural Health Multidisciplinary Training program¹⁴ funded from the Australian Government Department of Health. At the [REMOVED FOR BLINDED REVIEW] students are able to complete their academic coursework and undertake their required professional practice placements in the local area. Thus, opportunities exist for allied health students to participate in rural experiences ranging from short-term placements two to eight weeks to a full academic year of study.

The full year, 'immersion' option is currently available to undergraduate students in diagnostic radiography, nuclear medicine, nutrition and dietetics, and physiotherapy, with plans to expand to the disciplines of occupational therapy and speech pathology. This involves the students living and studying in a rural multi-disciplinary environment, with the intention of increasing their understanding of rural health issues, community engagement and inter-professional practice and socialisation with the aim of improving their appreciation of rural practice. The [REMOVED FOR BLINDED REVIEW] employs a range of allied health academics to provide discipline-specific support to students and co-ordinate professional placements and community engagement and social activities.¹³

In order to investigate the outcomes for allied health students, [REMOVED FOR BLINDED REVIEW] a concurrent exploratory mixed-method, longitudinal study is being undertaken. This study aims to evaluate allied health students' experiences of their short-term, medium-term or year-long rural placements, as well as to track their short and medium-term career outcomes after they graduate. This paper reports the preliminary results from this longitudinal study in relation to student satisfaction with rural placement, intention to practice in a rural location, and the influence of the [REMOVED FOR BLINDED REVIEW] placement experience on their choice of position and work location after graduation.

Previous studies

To date there have been few published evaluations of the student outcomes from the UDRH program^{11,13, 15-16} or the resulting impact on the health workforce in rural and remote areas of Australia,^{15,17} none have looked at longer term workforce outcomes. The undergraduate setting is a key place to start strategies for the recruitment and retention of allied health professionals. There is a need to investigate the experiences of allied health students during undergraduate rural placements and the impact of these placements on postgraduate career pathways and geographic employment locations.^{14, 17-19} Results of previous studies^{20, 21} have shown that students' experiences of rural placements are predominantly positive. Factors influencing graduates' intention to pursue careers in the rural healthcare workforce include previous rural experience, attitudes of supervisors and the perceived value and duration of the rural placement.^{12, 17, 22, 23}

In a study of nursing and allied health students from universities in Western Australia who had undertaken a rural placement in their final year of study, 25% had entered the rural workforce, six months after graduation. Even rural placements of four weeks or less were associated with greater rural employment.¹⁷ A study examining medical students career choices after studying at a Rural Clinical School (RCS) in Western Australia found that 16.3% were working rurally compared with 4.7% who had not completed a rural placement.⁹ These findings are similar to other studies of medical student career locations^{24,25} from regional based universities and other RCSs. Short-term and longer-term career locations have been reported^{24,25} with up to 65% of graduates working as an intern in a non-metropolitan location²⁵ and up to 34% of respondents located in a rural area over a four year period after graduation.²⁴ Other studies of medical students have reported on short¹⁰ and medium-term placements^{26,27} in rural locations and have found positive attitudes to rural practice and some positive short-term work outcomes. In the nursing profession, student intentions to work rural²⁸ and recruitment implications²⁹ have also been investigated.

Despite the largely positive impact of rural placements, others found that financial hardships resulting from loss of part-time income during longer placements may have contributed towards students' negative experiences.³⁰ This suggests that, while students find rural placements rewarding, they need support so that they are not unduly disadvantaged. New allied health graduates who find employment in rural areas after graduation, do not stay long due to feelings of isolation, difficulty accessing professional development and feeling unsupported.^{31,32} By examining longer term career outcomes, issues around retention of graduates in rural areas can be further explored.

Methods

This longitudinal study uses a concurrent explanatory mixed methods design³³ as outlined in Figure 1. Qualitative data is used to help explain initial quantitative results.³³ Data collection comprises of a series of surveys and semi-structured individual in-depth interviews. The concurrent timing of the mixed methods design refers to quantitative and qualitative data being analysed and interpreted at

approximately the same time, with subsequent merging of data after initial separate analysis.³³ Data collection comprises of individual in-depth semi-structured interviews and a series of surveys.

[add Figure 1 here]

The evaluation framework used for this study is based on the Context, Input, Process and Product Evaluation Model (CIPP).³⁴ The CIPP Model consists of four components for evaluation; Context, Input, Process and Product. It is a comprehensive framework for conducting formative and summative evaluations of projects.³⁵ Context evaluation is often referred to as a needs assessment and helps to assess problems, assets and opportunities within a defined context or setting. Input evaluation assesses how a program is delivered. Process evaluation monitors the project implementation process and product evaluation assesses project outcomes. This paper reports on the preliminary results from this longitudinal study and primarily addresses aspects of the *input, process* and *product* components of the CIPP model,³⁴ refer to Table 1.

[insert Table 1 here]

Ethics approval for the study was obtained from the [removed for blinded review] Human Research Ethics Committee. To maintain participant anonymity, once students have consented they are allocated an identification number by a research assistant who is otherwise not associated with the students' education. The identification number is unique to the study and separate from their university student number. Raw data is stored in a locked filing cabinet and de-identified data is entered into a password protected Microsoft Access® database by the research assistant.

Eligible participants include allied health students from the [removed for blinded review] enrolled in undergraduate Bachelor Degree programs of Diagnostic Radiography, Nuclear Medicine, Nutrition & Dietetics, Occupational Therapy, Physiotherapy or Speech Pathology who undertake short, medium or long-term placements based at [locations blinded]. Students were excluded if enrolled at another

university or from a discipline other than those listed. The first cohort of students was recruited in 2011 and recruitment will be ongoing up to and including students undertaking placements in 2018. Students were categorised as undertaking short-term (less than 8 weeks), medium-term (8 to 18 weeks) or long-term (semester-long or full-year) placements. Eligible students were informed of the study and invited to participate during their orientation to the [REMOVED FOR BLINDED REVIEW], either by the administrative staff member delivering the orientation or by a research assistant. Informed consent was sought from students for their participation in one or more of the following study components, each of which is described in detail below:

- (i) End of Placement Student Survey responses included in the study;
- (ii) End of Placement Individual In-depth Interview (for medium to long-term placements only)
- (iii) Follow-Up Graduate Survey at 1, 3 and 5 years after graduation.

In addition, where possible, for the purpose of comparison, publically available data pertaining to employment type and location of all students from the eligible participant group is collected annually. This data has been obtained from publically available internet search engines, online databases or membership registers of professional associations and personal details de-identified. These online databases and search engines were utilised to collect post-graduate employment location and field of work data for students. In addition, de-identified data from the Australian Graduate Survey³⁶ relating to [removed for blinded review] graduates from the targeted disciplines is utilised for comparison of workplace outcomes for each discipline annually. The overall flow of the study components is shown in Figure 2.

[add Figure 2 here]

End of Placement (EOP) Student Survey

As part of the [REMOVED FOR BLINDED REVIEW]'s quality assurance processes all students undertaking a rural placement in a [REMOVED FOR BLINDED REVIEW] site are asked to complete an EOP student survey after each placement, with some students having more than one placement.

Study participants may consent to this data being used in the study. The questionnaire includes 21 common questions used by all UDRHs to characterise the national student cohort involved in regional, rural or remote placements, to evaluate their experiences and degree of satisfaction with their placement and determine if this has influenced their perceptions of living and working in a non-metropolitan location. In addition, a further 16 questions target specific local aspects of the [REMOVED FOR BLINDED REVIEW] students' educational and lifestyle experiences while on placement. The questionnaire is provided online via Survey Monkey^{® 37} and responses downloaded automatically into a Microsoft Excel[®] spread sheet. For analysis, data is then exported to IBM SPSS[®] software.³⁸ Cross-tabulation and Chi squared analysis was used to determine to the relationships between the key dependent variables and various independent variables.

End of Placement (EOP) Individual In-depth Interview

Students completing medium-term or long-term placements are invited to take part in a semi-structured interview that aims to explore in greater depth their experiences, perceptions and attitudes towards their placement and what impact it has had on their future career plans. Interviews are conducted in a private, mutually convenient location by a member of the academic staff from a different discipline to the student and who is not involved in the assessment of the student. All interviewers are either experienced qualitative researchers or have been specifically trained to conduct these interviews. The interviews were audio-recorded and transcribed verbatim by an external transcription service. All individuals and sites mentioned in the transcripts were de-identified. Transcripts are coded by at least two researchers using qualitative content analysis as described by Sandelowski^{39,40} Transcripts are initially read to gain a sense of the whole, following this they are re-read and inductively coded. Codes are then analysed and developed into descriptive thematic categories using NVivo[®] software⁴¹ to manage the qualitative data. While data from these individual indepth interviews are not reported in this paper, the description above is given to provide an overview of the methods used in this longitudinal study.

Follow-Up Graduate Survey

All students are invited to take part in the longitudinal component of the study comprising of an online Follow-up Graduate Survey to be completed at 1, 3 and 5 years after graduation. The survey collects workforce data and has been adapted from the survey used in the NSW Rural Allied Health Workforce study.⁴² Data collected includes demographic and employment information; including the postcode of their current employment, details about their position (including why they chose the position and their level of satisfaction with their job), and information about their ongoing professional development. There are a total of 38 questions, most of which require tick-the-box answers. Follow-up Graduate Surveys are emailed to students and reminders and links to the survey are posted on the [REMOVED FOR BLINDED REVIEW] Facebook® page. Using a similar method to the EOP Survey, data is downloaded automatically for analysis.

For all collected postcode data, the Australian Standard Geographical Classification Remoteness Area (ASGC-RA) index⁴³ was utilised to classify locations as remoteness areas (RA1-5); major cities (RA1), inner regional (RA2), outer regional (RA3), remote (RA4) and very remote (RA5). This classification system has been utilised to classify the rurality of locations where students have lived, undertaken placement and their graduate workplace locations.

Results

As of June 2014, 257 EOP surveys have been completed by 198 students. Fifty nine students completed multiple EOP surveys, as they undertook more than one clinical placement. One hundred and six students (53.5%) reported they had previously lived in a rural area. Student placement details are summarised in Table 2. When completing the EOP survey most students were in their fourth year of study (59.4%). The majority of students (97.2%) reported their satisfaction with their placement overall was either 'good' or 'excellent'.

[add Table 2 here]

One hundred and eighty four (72.7%) of the respondents reported an intention to work in a rural area after placement; 52.2% remained positive in their intention to work rurally both before and after the placement and of the 253 responses there was a 38.3% positive change in intention to work rurally. Fifty one (55%) of the 92 students who had never lived in a rural area had a more favourable attitude towards working rurally following placement. Refer to Table 3 for details of student change in intention to work in a rural location after graduation.

[add Table 3 here]

One year after graduation, graduates responding to the Follow-Up Graduate Survey (n=80) were mostly employed in rural or remote locations (50%), with 35% employed in a metropolitan areas and 12.5% unemployed at time of survey. Most (70%) were salaried employees, with 62.5% in full time employment, and 44% in a permanent position. One third of graduates worked as a sole practitioner at some stage in their first year. Refer to Table 4 for details of the employment type.

[add Table 4 here]

Of the allied health graduates employed after one year (n = 68), the largest number who were employed in rural areas were dietitians (n=12), but the largest proportion working rural or remote (83%) were occupational therapists (n = 5). Refer to Table 5. While 67% those from rural or remote background were working in a rural or remote workplace after graduation, 44% of metropolitan background graduates also went to a rural or remote location for work. Graduates who described their background as rural were 2.63 times (95% CI 0.955 – 7.276) more likely to be employed in a rural or remote area (RA2-RA5) than those who describe their background as metropolitan ($p = 0.058$).

[add Table 5 here]

Discussion

This study is the first known to examine allied health undergraduate placement experiences in rural areas and link this to workforce outcomes. It informs a key aim of the Australian Commonwealth Department of Health funded UDRH program, to encourage undergraduate students to practice as health professionals in rural and remote locations following graduation through positive rural experiences. The positive placement experiences of allied health students on rural placement have influenced intentions to work rurally post-graduation and preliminary data from this longitudinal study indicates that those of non-rural background are 'converted' to consider rural practice.

In this study, a 50% return to rural for work in the first year after graduation, compares favourably with another study that had a 25% rural return after six months.¹⁷ While those of rural or remote background were more likely to return to a rural location for work, there was a positive influence on those of metropolitan background to work rurally. Our finding that 44% of those from a metropolitan background were working in a rural or remote location one year after graduation indicates that while efforts are focussed on rural graduate return, the likely return of non-rural background graduates should not be under-estimated. Ongoing longitudinal data will help to further elucidate the workforce outcomes in the longer term. It should be noted that not all new graduates have a choice about their first work location and other factors such as employment options and new graduate positions may influence their choice of work location. The qualitative data collected in the Follow-Up Graduate Survey will enable, over time, for a more detailed interpretation of the quantitative workforce outcome data to further explain workplace outcomes after graduation.

This paper provides some preliminary data from this unique longitudinal study of allied health graduates undertaking rural placements. The large amount of longitudinal data collected for this study will necessitate multiple publications to report on the emerging results, with ongoing data analysis and interpretation over-time, hence this paper represents only a snapshot of the current available data for this area of research enquiry. The researchers acknowledge that there is a likely sample bias due the inherent likelihood that students with an interest in rural work and recruitment are more likely to consent to be involved in the study. To address this the researchers are collecting data from publically

available databases to determine the workplace location of students from the larger group of students who have undertaken a rural placement. Issues of bias are also being addressed through the use of staff from an alternative discipline to interview students and an independent researcher to assist with data analysis from qualitative interviews.

Utilising a mixed methods approach enables a more thorough exploration of perceptions and attitudes of students' experiences of a rural placement and this is a strength of this study. The CIPP evaluative framework provides a comprehensive process to the evaluation of the program in terms of processes and end-products in terms of program outcomes. The EOP survey provides timely information about student placement experiences and can lead to ongoing program changes to strengthen or improve placements. Individual interviews provide an in-depth exploration of student experiences and intentions for future practice. Future qualitative analysis will assist in determining student attitudes and perceptions of rural placement and to identify ways to improve placements and shape future student perceptions of rural based practice. The longitudinal tracking of students will allow for monitoring of initial intentions and actual outcomes in terms of workplace locations and career outcomes.

Future directions for this research will focus on investigating the impact of rural immersion placements on the local health service and the health workforce from the perspective of clinical educators. Longitudinal attachments for medical students, as placements or as integrated clerkships, have been found to develop improved relationships between supervisors and students and for students to be able to undertake more complex cases.⁴⁴⁻⁴⁶ A sense of belonging, access to positive role models, supported learning environments and cultural skill development⁴⁷ have been identified as other positive outcomes. Other researchers have investigated the impact of longitudinal rural medical student clerkships on clinical supervisors and hospitals⁴⁸ and their findings indicated a positive influence on the hospital as a more vibrant learning environment, with enhanced teamwork, improved patient care and improvements to policies and procedures. Supervisors indicated benefits such as updating their clinical skills, increased reflective practice, improved value of professional identity and increased enthusiasm for interprofessional learning.⁴⁸

304 **Conclusions**

305 Preliminary data suggest that efforts to support student placements in rural locations during
306 undergraduate allied health degrees programs has had a positive impact on the workplace intentions
307 and outcomes for allied health students in the [REMOVED FOR BLINDED REVIEW] program. Given
308 the considerable amount of funds allocated to the RHMT program in Australia, it is important that
309 student workplace outcomes are assessed to determine if the program is successful. These outcomes
310 will not be immediately apparent and it may take time for students who have participated in rural
311 placements to return to rural practice. The results of this study will help to inform the ongoing attempts
312 to redress the rural allied health workforce shortage in Australia and other countries.

313

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Figure 1 Sequential Explanatory Mixed Methods Design. QUANT = dominant quantitative study component, QUAL = dominant qualitative study component, qual = sequential qualitative component

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Figure 2 Flow chart of data collection.

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