Using the Australian Rural Background Study to inform rural and remote multi-disciplinary health workforce planning research

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INTRODUCTION

The inequitable distribution of the rural health workforce (RHW) is not limited to the medical workforce nor is it limited to Australia (1–14). We understand that our rural communities lack not only sufficient numbers of doctors but also dentists (15), physiotherapist's (16), pharmacists (16), occupational therapists (17) and nurses (18) to name just a few of the professional groups. In Australia rural and remote multi-disciplinary health workforce planning suffers from a lack of detailed data on our rural areas (19) and on the workforce itself. As Larson (20) points out there is a vast array of definitions and regulatory boards that apply to the RHW, so much so that even attempting to describe the workforce is an extremely frustrating experience. Defining the RHW is as complex as defining rurality, as Ian Couper so wonderfully said "rurality is like beauty, which is in the eye of the beholder" (21, p.2) making it different to different people.

Within the 'rural health workforce' (RHW) we have three major groups: Allied Health (discussed further) — the most diverse; Nursing — the largest and Medical — the most researched. For the purposes of this paper, we have defined the RHW as consisting of the first two groups — allied health and nursing.

There are limited policies directed at correcting the inequitable distribution of the Rural Health Workforce, with the RUSC funded rural clubs being one of the few programs to include non-medical health providers (http://www.nrhn.org/clubs/) and this is likely to continue without strong evidence to inform policy. What do we look for in the RHW in terms of recruitment? How do we determine which members of the workforce to target for recruitment and who of those recruited are likely to remain past their time in a bonded place? How do we recruit a RHW when we find it difficult to count it? Some answers could be provided by using the ARBS study.

The Australian Rural Background Study (ARBS) was a simple, relatively quick and inexpensive project that was well supported by general practitioners throughout Australia. This research was undertaken because we found that major policies were implemented based on the assumption that people with a rural background were more likely to return to work in a rural location. At the time of the study (2000), major government spending was based on this assumption yet there was a limited rigorous evidence base at the time to support this assumption. The aim of the ARBS was to inform national policy around enrolment to medical school by providing up to date evidence on the role of rural background on the decision to become a rural general practitioner (GP).

Through this paper we hope to stress the importance and value of this kind of research and believe there are similarities between the data we have gathered on GPs and their partners and the Australian RHW. There are complexities but we suggest while there may be some barriers to applying this kind of research for the Australian Rural Health Workforce, they could be overcome.

DESCRIPTION OF ARBS SURVEY METHODOLOGY

The ARBS questionnaire was based on previously validated questionnaires (22–24) and piloted with rural and urban GPs in South Australia. We obtained data for this national observational, retrospective, case-control study from self-administered questionnaires distributed by mail. 'Cases' were GPs in rural practice and 'controls' were GPs in urban practice at the time of the mail out. We developed a national sample stratified by state and territory (from here on called jurisdictions) (excluding the Australian Capital Territory, as it has no rural areas in which GPs work) and defined a 'GP' using Health Insurance Commission (HIC) criteria (previously published (25). Using our study definition, the HIC randomly selected 4513 GPs from the 17 182 eligible GPs across Australia in 2000. The questionnaire was first mailed in December 2000 and was re-sent twice to non-responders.

We limited our analysis to graduates of Australian medical schools, because the definition and schooling experience of rurality varies greatly between countries. For the purpose of this study 'rural background' was defined as any rural experience or rural exposure (e.g. residing in, or attending primary school or secondary school in rural areas). At the time of this study, the Health Information Section of the HIC defined rurality using the Rural and Remote Metropolitan Areas classification (RRMA) (26). The seven RRMA zones were collapsed into two groups — urban (RRMAs 1–2) and rural (RRMAs 3–7) — as there are insufficient numbers of GPs in each of the seven RRMA zones in each state and the Northern Territory to allow meaningful comparisons and maintain the GPs privacy. This does not mean that we see either the rural or urban areas of Australia as homogenous entities, rather it is merely for convenience and privacy issues that we must group together these areas.

At the time of the commencement of this study RRMA was not the only categorisation of rurality available, for example ARIA (27) a geographical approach to defining remoteness was also available and so the data needed to be collected in such a way as to allow analysis using these various classification systems. In order do this and to limit bias that could be introduced by recall bias or bias through a GPs perception of rurality, it was decided to gather town names from the GPs and their spouse/partners (from here on called partners), this also meant that at any stage the data could be re-analysed using any of the newly available categorisations of rurality.

RESULTS OF ARBS SURVEY

The ARBS tool has been shown to successfully gather valuable data on rural and urban practising GPs and their partners from every jurisdiction across Australia (excluding the ACT). Of the 4513 questionnaires mailed, 3113 valid responses were received (response rate, 71.1% [3113/4376]) (previously published in full (25). Of the GPs who responded, 30 declined to participate, leaving us with usable data for 3083 GPs. Of these, 2414 (78%) were graduates of Australian medical schools and are analysed here. A subgroup of GPs with Partners (2164) were then analysed for the association between partners' background and current practice location.

The data was analysed to determine the association between a GP and their partners' background and the decision to work in a rural or urban practice location. We have previously published data showing that rural GPs were more likely to report being Australian born; having had a rural home and rural primary and secondary school education (25); and rural undergraduate and postgraduate experience (28). We also found that the partners of the GPs were more likely to have had a rural background but most importantly these associations were found to vary between jurisdictions. For example, for Australia as a whole rural GPs were more likely to be male but this was found to be a non-significant trend in all jurisdictions except Tasmania, where the association was significant. Across jurisdictions, rural GPs were between 1.85 times (Western Australia) and 3.32 times (Victoria) more likely to have spent 'some' time in a rural primary school, except those in Queensland and the Northern Territory and Rural GPs in Queensland, South Australia and Western Australia were more likely to have spent 'all' of their primary schooling in rural areas. Secondary schooling location was found to similarly influence the decision to work in a rural practice location for all states except the Northern Territory when GPs had spent 'all' of these years in a rural school.

We found that although some and all rural primary schooling and having a rural home during primary school years had similar odds ratios (around odds ratio [OR] 2.8), for secondary schooling and residence during secondary school years all (OR 2.86) was more influential than some (OR 1.22) (25).

The data gathered was also used to validate two medical workforce policy areas of support for rural background students — Rural Australian Medial Undergraduate Scholarship scheme (RAMUS) (29) (submitted for publication) and the FAIRWAYS (30) special entry scheme (28). To be eligible to apply for the RAMUS scheme medical students must have had a principal home address in an identified Australian rural area for a minimum of five consecutive or eight cumulative years. To be eligible for the FAIRWAYS special entry points students must have spent their final year of high school in a designated rural or area of need school (28).

Rural GPs were more likely to report having had rural undergraduate training (OR 1.61) and rural postgraduate training (OR 3.14) than were urban GPs and as the length of rural postgraduate training increased so did the likelihood or working as a rural GP.

Those GPs reporting more than 50% of their postgraduate training in a rural area were most likely to be working in a rural area (OR 10.52) (28).

Analysis of the partner background data from the ARBS found that partners of rural GPs were more likely to report having a rural childhood home and attending a rural primary or secondary school than were partners of urban GPs. The magnitude of the effect was found to be similar to that of GPs reporting rural primary home and school location (OR 2.86 and OR 2.92). However, for the partners' secondary school and home locations the ORs were higher (OR 3.45 and OR 3.23, respectively) than those for the GPs (OR 2.87 and OR 2.86, respectively).

APPLICATION OF THIS METHODOLOGY TO OTHER DISCIPLINES

The methodology and the tool of the ARBS are most transferable to research involving the non-medical RHW ie allied health and nursing. The variables (see Table 1) used in the survey are very generic and can be adapted to cover pre-tertiary or professional training education years (e.g. primary and secondary years), information on rural placements or experiences whilst training and postgraduate or post qualification training locations.

Table 1 ARBS questionnaire variables

ARBS Questionnaire	GP survey	Rural Health Workforce survey
Ability to define rurality using various categorisations	Yes	Yes
Ability to define workforce	Yes	Problematical but achievable
Ability to contact the workforce	Yes	Problematical but achievable
Age	Yes	Yes
Country of birth	Yes	Yes
Year arrived in Australia	Yes	Yes
Gender	Yes	Yes
State of main practice location	Yes	Yes
Australian qualifications	Yes	Yes
Country of qualifications	Yes	Yes
Year of graduation	Yes	Yes
Primary schooling location	Yes	Yes
Primary school years home location	Yes	Yes
Secondary schooling location	Yes	Yes
Secondary schooling home location	Yes	Yes
Undergraduate rural placements	Yes	Yes
Postgraduate rural training	Yes	Yes
Ever worked in rural location	Yes	Yes
Number of years worked in rural location	Yes	Yes
Member or Fellow of organisation	Yes	Yes
Spouse partner background	Yes	Yes
Primary schooling rural location	Yes	Yes
Primary school years home location	Yes	Yes
Secondary schooling rural location	Yes	Yes
Secondary schooling home location	Yes	Yes

The variables used for partners also gathered extremely useful information on an area much less well researched but from our analysis we found to be strongly associated with the decision to work in a rural or urban location. This has great implications for recruitment efforts by communities and organisations and for policies such as the RUSC funding of Rural Student Clubs. The Rural Clubs play a vital role in supporting rural students in their efforts to develop and maintain rural contacts and opportunities for rural education.

DIFFICULTIES WITH THE ARBS METHODOLOGY FOR RHW

While most of the ARBS methodology could be applied to the RHW two key problem areas emerge — defining the RHW and accessing a reliable and accurate contact data source.

Definitions of rural health workforce

Currently there is no consistent definition of the RHW. For example 'Allied health professionals' are frequently regarded as any tertiary trained health professionals, who are not medical practitioners, mainstream nurses or administrators. However, as an example of the variations found in defining 'allied health' we can look at the Services for Australian Rural and Remote Health (SARRAH) survey in 2000 (31) which focused on 9 different professional groups: audiology; dietetics; occupational therapy; physiotherapy; podiatry; psychology; radiography; social work and speech pathology. And compare this to the Australian Standard Classification of Occupations (ASCO)
mailto:(http://www.abs.gov.au/Ausstats/abs@.nsf/66f306f503e529a5ca25697e0017661f/1761c8ec7130b

d69ca25697e00184d0e!OpenDocument) which divides health professional occupations in this sub-major group into three following minor groups: Medical Practitioners; Nursing Professionals and Miscellaneous Health Professionals. The minor groups of Medical Practitioners And Nursing Professionals are reasonably straightforward however the Miscellaneous Health Professionals include 'Health Professionals not elsewhere classified': Dental Practitioners; Pharmacists; Occupational Therapists; Optometrists; Physiotherapists; Speech Pathologists Chiropractors and Osteopaths; Podiatrists; Medical Imaging Professionals; Veterinarians; Dieticians; Natural Therapy Professionals and Other Health Professionals. ASCO then divides 'Other Health Professional' into a 'unit group' which includes audiologists; orthoptist; orthotist; health professionals nec (sic) and in order to find psychologists we must look to minor group 251 Social Welfare Professionals.

Let's take this a little bit further and think about the Minor Group 238 Miscellaneous Health Professionals dental practitioners, and then the allied dental practitioner labour force which consists of: dental therapists, dental hygienists; and prosthetists and we begin to have some understanding of the complexity of the issues of a multi-disciplinary RHW that serves diverse populations in many and various different types of practice arrangements that is also inequitably distributed across Australia. Many different allied health professional groups are also not represented in large numbers in rural practice, except in larger regional rural towns, where typically they work in the public health system.

We also have to consider new and emerging subgroups for example Aboriginal Health Workers (AHW). It is unknown how many AHWs work in rural Australia, only the Northern Territory government keeps workforce registers on their AHW however, AHWs have been part of the Australian rural workforce since the 1960s. They provide a wide range of services that are often greater than their educational preparation. There are several different classification levels of AHWs working in public health services and Aboriginal Community-Controlled Health Organisations. A SA review of AHWs identified 20 different titles: AHW; Community worker; Hospital liaison worker; Community development worker; Health promotion worker; Women's and men's health worker (32). Not only do the titles of AHW vary but also their roles: interpreters and cultural brokers; liaison with external agencies and co-ordination of services direct clinical care; traditional healing practices; agents of Western medicine to Indigenous people; health education and promotion; environmental health' administration and co-ordination; community care. AHWs are not tertiary trained but generally accredited through Technical and Further Education (TAFE) Primary Health Care Certificate 3 in basic 840 hour program over 18 months FT or 3 years PT.

Nurses consist of the largest group of RHW but within this group there are a diverse range of subgroups who are funded through different avenues. Nurses based in the regional and rural hospitals comprise the majority of this group and funded through State health, however, many rural practices will also employ nursing who are funded privately (33).

While the RHW comprises of an increasing number of subgroups, this may cause problems around privacy of individuals and obtaining reasonable sample size to be statistically significant. This may mean that while details on the various subgroups are collected, for analysis these groups may need to be collapsed. This is similar to the issue around using RRMA for ARBS.

COMPREHENSIVE DATABASE ON RHW

For the RHW there is no one federal database with reasonably accurate definitions of the RHW that can provide a denominator with which to define sample sizes for research as was available for the medical workforce.

Exploration of the data collections of the Australian Bureau of Statics soon shows us that there is very little detailed information in these 'generic' type data collections gathered about some of the health professions (34). The lack of large Australian Rural Workforce databases is a major limitation to research. The ARBS was fortunate that we were able to access a Commonwealth database that provided us with the numerator required to determine our Australian wide sample. Even though the HIC has problems and although it is an administrative database not designed for research it still provided us with a means to define GPs for our study as "a non-specialist and vocationally registered general practitioner whose non-referred attendance items (using Health Insurance Commission [HIC] criteria) made up at least half the schedule fee value of Medicare billing in the last or most recently available quarter" and allow us to work within privacy legislation by performing all mail outs, all correspondence was sent from the HIC on HIC stationery, and included a letter from the HIC explaining how the GPs had been selected. The research team had access to de-identified data only. Anecdotally this link with the HIC was perceived by some GPs to compromise our independence from the Commonwealth but this was of course not the case. These issues of definition, sample size calculation and ability to work with the privacy legislation need to be addressed for RHW research.

If there is no national database, distributing the survey is made more difficult. Individual groups within the RHW may have databases that can be utilised, however the accuracy, quality of data and definitions may vary between organisations and between states and territories.

RESOLUTION OF THESE DIFFICULTIES

The opportunity now exists to gather comparable data on the different professional groups in the RHW and the various branches or elements within them using a reliable and tested methodology. Gathering data on the RHW will provide the detailed research required for effective policy and planning direction whilst providing good baseline data for future areas of research. For example, do differences exist between jurisdictions for Allied Health or for Dentists and Physiotherapists? We have shown that differences exist between jurisdictions for GPs and from these differences questions arise about the implementation of blanket Commonwealth policies for training and recruitment. The 'one size fits all' policy approach may not be best means of addressing our RHW shortages. However before this can be achieved we need to resolve the difficulties around definitions and accessing a sample. Some suggestions are outlined below:

- working party to define the RHW and its subgroups, possibly facilitated by the NRHA which could then be used by all organisations and allow for comparisons to be made between datasets;
- utilising the Universities and RCS to identify appropriate databases as they have access to all rural health disciplines; and
- utilising registration boards for some disciplines.

THE FUTURE

Once the difficulties are overcome, and a study based on the ARBS is undertaken on the RHW, what will it achieve?

Unlike, the medical workforce, this study would allow policies and programs which are evidence based, rather than validated after their implementation. However this raises the other difficulty associated with RHW:

WHOSE RESPONSIBILITY IS IT TO FUNDS THESE POLICIES AND PROGRAMS?

As outlined at the beginning of this paper, most research and policy development has focused on the medical workforce and has been instigated by the Commonwealth as this group falls under their jurisdiction. However, with the RHW, some groups are funded through State Health, some nationally and some a combination of both. Any systematic policies to address the RHW will require agreement by all thee levels to resolve (35).

CONCLUSIONS

We have demonstrated that it is possible to do large-scale, quality and relatively inexpensive, quantitative research into the issues surrounding the decision to choose to work in a rural or urban practice location and we have added to the existing medical workforce evidence base. One of the advantages of this sort of research is that it can be used to inform policy before it is implemented or to validate policies that are already in place.

We now have strong Australian evidence that living and attending school in a rural location, rural undergraduate placements and rural postgraduate training are all associated with increasing the likelihood that a GP will choose to work in a rural location. We also now have evidence on the strong association between a partners rural background and the decision to work in a rural location. Our findings support the Commonwealth government's policy of encouraging medical schools to increase the enrolment of students with a rural background and we have validated two of the policies directed at this. The Commonwealth has also funded rural placements for all medical students, provided scholarships for rural students and established a network of university departments of rural health and rural clinical schools, to train large numbers of medical students for long periods of time in the country. However, the inequities that can be seen between rural health professionals living and working in rural and remote locations is mirrored in the inequities in the Commonwealth governments policies supporting the encouragement of rural students into other RHW areas and once there they do not experience the same financial support for their rural education and training experiences as the rural medical workforce.

We suggest research along similar lines to the Australian Rural Background Study may provide the evidence required by the policy makers to implement change and be innovative in their attempts to improve the maldistribution of the RHW thereby improving the health of rural Australians and already the ARBS tool is currently being used as the basis for three separate research projects of rural psychiatrists, rural nurses and rural specialist postgraduate training.

POLICY RECOMMENDATIONS

- ARBS provides a method for obtaining important and timely information on the rural health workforce.
- National definitions for the non-medical rural health workforce that are endorsed by all organisations.
- NRHA maintain a list of all rural health workforce databases which can be accessed by researchers and policy makers.

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