

ORIGINAL RESEARCH

Early career location of University of Adelaide rural cohort medical students

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ABSTRACT

Introduction: In 2001 the Australian Government Department of Health began what is now the Rural Clinical Training and Support (RCTS) program which funds rural background selection and rural clinical education in an attempt to increase the rural medical workforce. At the University of Adelaide, students of the 6-year undergraduate medical program have the opportunity to complete the whole of their fifth year of clinical studies at one of eight rural locations. This study seeks to track the early career movements of these graduates in order to determine the program's rural medical workforce impact.

Methods: The retrospective study involved graduates who had studied a rural fifth year between 2003 and 2010 inclusive. Only domestic students were included in the study. One hundred and twenty four out of a possible 127 participants were contacted by email and asked to complete a 28-question online survey using SurveyMonkey. The survey included questions regarding career choices since graduation and experiences during the RCTS program. Quantitative data was analysed using descriptive statistics and qualitative data underwent thematic analysis.

Results: The survey response rate was 58.2% with 74 useable responses. Respondents described the career choices they had made since graduation, including the stage they were at in their training, the speciality they had chosen and their location during each year. Data showed that between 2009 and 2012 between 20.8% and 34.1% of respondents were located in a rural area (Australian Standard Geographical Classification – Remoteness Areas 2–5). More than half of respondents have spent time in a rural area since graduation and 85.1% of respondents indicated they had intentions to work in a rural area in the future. In saying this, 8 years post-graduation is not long enough to assess the rural work force outcome. Graduates move frequently between practice locations even at 8 years post-graduation; only five respondents had completed postgraduate training. The RCTS program is important in the progression from medical school to rural practice, including the initial decision to take part in it. The interest of some respondents who were practising in rural areas in 2012, and were initially 'very interested' in rural practice, either 'slightly' or 'significantly increased'.



Conclusions: These results show that the RCTS program can supplement an initial interest in rural medicine.

Key words: early medical career, medical education, Rural Clinical Training and Support, rural medical workforce.

Introduction

Health statistics demonstrate that people living in rural and remote areas have poorer health outcomes than their counterparts living in major cities. Their lives are shorter and they are more likely to exhibit unhealthy behaviours¹. At the same time medical practitioners are unevenly dispersed across Australia, resulting in more limited services in some rural areas². Effective medical practitioner attraction and retention strategies for rural areas have been sought to improve the availability of services. A recent review of factors making health professionals more likely to work in rural areas has again shown that a 'selection' of rural background students and rural 'education' of undergraduate students are the strongest predictors of future rural practice³. In 2001 the Australian Government Department of Health began what is now the Rural Clinical Training and Support (RCTS) program, which funds rural background 'selection' and rural clinical 'education'. The RCTS program operates in 16 rural clinical training schools from as many universities and exposes 25% of medical students to rural clinical and community 'education' for an extended period⁴.

At the University of Adelaide, students of the 6-year undergraduate medical program (MBBS; Bachelor Medicine Bachelor of Surgery) have the opportunity to complete the whole of their fifth year of clinical studies at a rural location under the direction of the Discipline of Rural Health. These 'rural cohort' students are taught a parallel curriculum and are examined in the same manner as their city-based counterparts. There are eight widely dispersed learning sites available which range from inner regional to very remote locations.

The University of Adelaide RCTS program is now in its 11th year, having commenced in 2003. This was considered enough time to measure the impact of the graduates of the program on the rural workforce, with the 2003 cohort being postgraduate for 8 years. These cohorts have not been

formally tracked until this point. This study is additional to the data collected for the Medical Schools Outcomes Database, which will track Australian medical graduate movement in the long term⁵.

Methods

In late 2012 a retrospective study of the rural cohort students of the University of Adelaide MBBS students who completed their fifth year of clinical studies at a rural location in years 2003 to 2010 was conducted. Only domestic students were included in the study. Recruitment involved obtaining email details of the 127 past students of interest using tools such as alumni records, a rural cohort Facebook page and previously known contact details. Details of 124 past students were found. SurveyMonkey was judged to be an appropriate online instrument for this type of study⁶. Each past student was sent an email directing them to a 28-question self-complete online survey. Respondents were required to confirm informed consent in order to begin the survey.

The survey was developed to include open and close-ended questions about rural background, placement details, the program's influence, past career decisions and future career intent, including corresponding locations (Appendix 1). A record of career movements since graduation was the only compulsory question. Quantitative data were analysed using descriptive statistics in the Statistical Package for the Social Sciences v20 (SPSS Inc; www.spss.com) and qualitative data underwent thematic analysis in NVIVO v9 (QSR International; http://www.qsrinternational.com/products_nvivo.aspx). A very small number of respondents indicated they took part of some years out of their medical career for parental leave or were travelling overseas. Both of these groups' locations were included in the analysis.



Several systems are used to classify remoteness in Australia, with two outlined in Table 1. The system used in the analysis of this study is the Australian Standard Geographical Classification – Remoteness Area (ASGC-RA) system as defined by the Department of Health’s Rural and Regional Health Australia, and is used by the RCTS⁷.

ASGC-RA2–RA5 are regarded as ‘rural’ areas by the Department of Health for the purpose of this medical education program.

Ethics approval

Ethics approval for the study was gained from the University of Adelaide Human Research Ethics Committee; ethics approval number H2012124.

Results

Seventy-five survey responses were received but one respondent discontinued after only a few questions, leaving 74 useful responses, with a response rate of 58.2%. This is in line with similar single-university surveys that track RCTS program participants, such as those conducted by the University of Queensland and Flinders University in South Australia⁹⁻¹². Some participants did not answer all questions and therefore totals were adjusted accordingly. There were higher numbers of responses from later cohort years, which is reflective of the program’s expansion in recent years. The response rate varied across cohort years, ranging from 40.0% to 73.0%.

Twenty-one respondents (28.4%) had spent more than 5 years in a rural area from the beginning of primary school to the beginning of university and 11 (14.9%) had spent some time but less than 5 years. Forty-two respondents (56.8%) had spent no time in a rural area.

Respondents indicated they entered into the RCTS program for a variety of reasons (Table 2). The most prevalent reasons were ‘exposure to a different clinical setting’ and ‘quality of the clinical learning experience’.

The survey made ample provision for respondent comments. These sections were well used and the information gathered provides more depth to quantitative data. Some comments provided by respondents follow.

Love the country lifestyle, being able to know everyone within the hospital/practice rather than being faceless in the city hospitals, felt very supported by colleagues.

... (I enjoyed the) workplace dynamics – (there is a) much flatter hierarchy than in the hospital system.

The need to do bulk of postgrad training for non-GPs in city is major risk for losing people from rural health.

If my speciality allows – at the moment it looks like I will not be able to do more than 3 months of my basic training and none of my advanced training in a rural area. It is difficult to practice medical specialities in rural areas and I do not have any interest in being a GP.

Program outcomes

Respondents were asked to record the career choices they had made since graduation, including the stage of their training, the speciality they had chosen and the location of each corresponding year.

There were several medical areas in which respondents had chosen to specialise (Table 3). The speciality chosen most was general practice (12 respondents; Royal Australian College of General Practitioners (RACGP) and Australian College of Rural and Remote Medicine (ACRRM)). Twenty-six respondents selected that entering a postgraduate training program was not applicable in 2012. Many of these respondents may have been completing an internship or generalist postgraduate year in 2012. Five respondents had completed postgraduate training by 2012, four of whom were Fellows of RACGP or ACRRM (Table 3). When asked about future career intentions, 85.1% of respondents indicated that they intended to work in a rural area.



Table 1: Remoteness classification systems used in Australia. The Australian Department of Health’s Rural and Regional Health Australia system⁷ is based on the ASGC-RA system previously used by the Australia Bureau of Statistics (ABS) while the Australian Bureau of Statistics ASGS-RS system is the most recent ABS classification, the Australian Statistical Geography Standard – Remoteness Structure⁸.

Description	Department of Health ASGC-RA Classification system	Australian Bureau of Statistics ASGS-RS Classification system
Major city	1	0
Inner regional	2	1
Outer regional	3	2
Remote	4	3
Very remote	5	4

Table 2: Motivations for entering the Rural Clinical Training and Support program

Motivation	Response count (n)	Percentage of respondents (%)
Exposure to a different clinical setting	56	75.7
Quality of the clinical learning experience	55	74.3
Wanted to try something different	50	67.6
Previous student recommendation	43	58.1
Interested in practising rurally	39	52.7
Study group also going	10	13.5
Partner or family located in same rural location	1	1.4

The location choices of respondents can be presented in two ways: by ‘years since graduation’ (showing career progression) and by ‘calendar year’ (showing effect on rural workforce). This enables evaluation of the complexities of work location decisions over the period since graduation.

Table 4 shows the location of medical practice analysed by ‘years since graduation’. It shows that respondents chose to work in a rural location at many points in their postgraduate career and trainin

g. During the first year post-graduation from university, a pre-registration or intern year, 13 respondents (18%) were located outside of a major city. The year for which the greatest number of respondents (16 out of 58 respondents (27.6%)) were located outside of a major city was the second

year after graduation. Tables 4 and 5 show that respondents travel to both developing and developed overseas countries in various years post-graduation.

In any given year, between 17.4% and 34.1% of the respondents were located in ASGC-RA2–RA5 areas, an average of 21.8% across the eight possible years (Table 5). Outer regional areas (ASGC-RA3) were the most prevalent rural areas that respondents had chosen to locate themselves in while only one respondent was located in a very remote area (ASGC-RA5) in 2012. However, many of those located in outer regional (ASGC-RA3) and and remote (ASGC-RA4) areas indicated in comments that they visited very remote areas to run clinics as part of their position. In 2012, 15 respondents (20.8%) were located in a rural area (ASGC-



RA2–RA5; Table 5). The 2012 data were used for cross-analysis with subsequent questions.

It is possible to aggregate data that are gathered from questions related to location to make a statement about the time that individual respondents have spent in a rural location since graduation, keeping in mind the varying amount of time that graduates have spent post-graduation. From this it is apparent that 32 people (44%) have spent no time in a rural location since graduation, 20 people (28%) have spent between 3 and 18 months in a rural area since graduation and 20 people (28%) have spent two or more years in a rural area since graduation.

Program impact

Table 6 shows the interest respondents had prior to completing the RCTS program and the level of change the program brought to their interest in working in a rural area. Results for respondents located in a major city (ASGC-RA1) and rural area (ASGC-RA2–RA5) are shown separately. Observations from this table include the following:

- Five respondents located in a rural area in 2012 and who were initially either ‘not really’ or ‘somewhat interested’ in practising in a rural area indicated the RCTS program either ‘slightly’ or ‘significantly increased’ their interest.
- Seven respondents located in a rural area in 2012 and who were initially ‘very interested’ in practising in a rural location indicated the RCTS program ‘slightly’ or ‘significantly increased’ their interest.
- Eighteen respondents located in a major city in 2012 and who were initially ‘not at all’ or ‘not really interested’ in rural practice indicated the RCTS program ‘significantly’ or ‘slightly increased’ their interest.
- Twenty-two respondents located in a major city in 2012 and who were initially ‘somewhat’ or ‘very interested’ in rural practice indicated the RCTS program ‘slightly’ or ‘significantly increased’ their interest.

- Five people located across both rural areas and a major city in 2012 and who were initially either ‘somewhat’ or ‘very interested’ in rural practice indicated the RCTS program either ‘slightly’ or ‘significantly decreased’ their interest in rural practice.

Discussion

Impact on the rural workforce

This study reports on the postgraduate career progress of 74 (58.2%) rural cohort medical students of the University of Adelaide and their contribution to the rural medical workforce. In recent years (2009–2012) between 20.8% and 34.1% of respondents were located in RA2–RA5. More than half of respondents have spent time in a rural area since graduation; additionally, 85.1% of respondents indicated they had intentions to work in a rural area.

These young doctors frequently move between rural and urban locations, which makes it difficult to express the contribution that graduates who participated in the RCTS program have had on the rural workforce. Many respondents indicated in qualitative comments that they had not chosen one area over the other because they are still completing training. The data produced from this study can account for this movement by showing how long each respondent has spent in a rural area since graduation, perhaps capturing their contribution to the rural workforce more clearly. The 20 graduates (28%) who had spent between 3 and 18 months in a rural area may have been on obligatory rural rotations in their training programs whereas the 20 graduates (28%) who had spent two or more years in a rural area were more likely making an active choice to work in a rural area, some having spent as long as 5 to 7 years rurally. South Australia is a very centralised state with only 27% of the population residing outside the metropolis of Adelaide¹³. The RCTS program graduate numbers are in similar proportion to the current workforce and the population distribution in South Australia. These data do not suggest that the graduates are redressing the rural medical workforce shortage.



Table 3: Specialisations for which respondents were training or had completed in 2012

Specialisation	In training (n)	Completed training (n)
Not applicable	26	
Medicine	7	
Surgery	7	1
General practice (RACGP/ACRRM)	8	4
Pathology	3	
Radiology	2	
Psychiatry	3	
Anaesthesia	3	
Other specialisation	8	
Total	67	5

ACRRM, Australian College of Rural and Remote Medicine. RACGP, Royal Australian College of General Practitioners.

Table 4: Australian Standard Geographical Classification Remoteness Area locations of respondents by year since university graduation

Year since graduation	Major city n (%)	Inner regional (RA2) n (%)	Outer regional (RA3) n (%)	Remote (RA4) n (%)	Very remote (RA5) n (%)	Overseas developed n (%)	Overseas developing n (%)	Total n (%)
1st	59 (81.9)	4 (5.5)	9 (12.5)					72 (100)
2nd	39 (67.2)	3 (5.2)	11 (19.0)	2 (3.4)		1 (1.7)	2 (3.4)	58 (100)
3rd	30 (68.1)	2 (4.5)	8 (18.2)			2 (4.5)	2 (4.5)	44 (100)
4th	27 (71.1)	2 (5.2)	5 (13.1)	2 (5.2)		1 (2.6)	1 (2.6)	38 (100)
5th	19 (63.3)		7 (23.3)	3 (10.0)			1 (3.3)	30 (100)
6th	17 (73.9)	3 (13.0)	2 (8.7)				1 (4.3)	23 (100)
7th	8 (57.1)	3 (21.4)	2 (14.2)		1 (7.1)			14 (100)
8th	1 (33.3)	1 (33.3)	1 (33.3)					3 (100)

RA, Australian Standard Geographical Classification Remoteness Area.

Table 5: Australian Standard Geographical Classification Remoteness Area locations of respondents, by calendar years

Year	Major city n (%)	Inner regional (RA2) n (%)	Outer regional (RA3) n (%)	Remote (RA4) n (%)	Very remote (RA5) n (%)	Overseas developed n (%)	Overseas developing n (%)	Total n (%)
2005	3 (100)							3 (100)
2006	11 (78.6)	1 (7.1)	2 (14.3)					14 (100)
2007	17 (73.9)		4 (17.4)			1 (4.3)	1 (4.3)	23 (100)
2008	20 (66.6)	1 (3.3)	6 (20.0)			1 (3.3)	2 (6.6)	30 (100)
2009	23 (60.5)	1 (2.6)	8 (21.0)	4 (10.5)		1 (2.6)	1 (2.6)	38 (100)
2010	28 (63.6)	3 (6.8)	10 (22.7)	1 (2.3)		2 (4.5)		44 (100)
2011	41 (70.6)	5 (8.6)	9 (15.5)	1 (1.7)		2 (3.4)		58 (100)
2012	57 (79.0)	7 (9.7)	6 (8.3)	1 (1.4)	1 (1.4)			72 (100)

RA, Australian Standard Geographical Classification Remoteness Area.



Table 6: Location chosen for 2012 and initial and change in interest in practising in a rural area after completing the Rural Clinical Training and Support program

Interest in rural practice prior to program		Change in level of interest in practising rurally after participation					Total n (%)
		Significantly decreased n (%)	Slightly decreased n (%)	No change n (%)	Slightly increased n (%)	Significantly increased n (%)	
In major city in 2012 [†]	Not at all interested	0 (0.0)	0 (0.0)	0 (0.0)	2 (40.0)	3 (60.0)	5 (100.0)
	Not really interested	0 (0.0)	0 (0.0)	1 (7.1)	11 (78.6)	2 (14.3)	14 (100.0)
	Somewhat interested	2 (6.7)	2 (6.7)	9 (30.0)	7 (23.3)	10 (33.3)	30 (100.0)
	Very interested	0 (0.0)	0 (0.0)	3 (37.5)	4 (50.0)	1 (12.5)	8 (100.0)
	Total	2 (3.5)	2 (3.5)	13 (22.8)	24 (42.1)	16 (28.1)	57 (100.0)
In rural area in 2012 [‡]	Not really interested	0 (0.0)	0 (0.0)	0 (0.0)	1 (33.3)	2 (66.7)	3 (100.0)
	Somewhat interested	0 (0.0)	0 (0.0)	1 (33.3)	1 (33.3)	1 (33.3)	3 (100.0)
	Very interested	0 (0.0)	1 (11.1)	1 (11.1)	4 (44.4)	3 (33.3)	9 (100.0)
	Total	0 (0.0)	1 (6.7)	2 (13.3)	6 (40.0)	6 (40.0)	15 (100.0)

[†] Selected Australian Standard Geographical Classification Remoteness Area 1 as location in 2012. [‡] Australian Standard Geographical Classification Remoteness Areas 2–5 as location in 2012. [§] The term 'significantly' in this context has no statistical relevance.

The rural service delivery model that has evolved in South Australia is largely peripatetic: medical specialist services are delivered by day visits and recently some distance technologies. As a result many respondents felt restricted to a major city where specialist training positions are almost exclusively located, some with rural rotations.

Although this analysis hasn't discriminated between states where the graduates now reside, because of the small sample size, subsequent data collection on the enlarging cohort and with longer postgraduate duration will explore an Australia-wide rural workforce impact. These 2012 data, with approximately 20% of University of Adelaide graduates being in rural areas and RACGP/ACRRM fellowships being the most common, suggest that this cohort is contributing to the South Australian rural workforce in proportion to the state's rural-urban population split.

These data support the suggestion that 8 years post-graduation may not be long enough to assess the rural workforce outcome¹⁴. In addition to the mobile nature of respondents, only five respondents had completed

postgraduate training. Of the five who had completed, four were Fellows of RACGP/ACRRM training and one a surgeon (Table 3). All of the RACGP/ACRRM fellows being based in ASGC-RA2 or ASCG-RA3 is a positive indication of the contribution to the rural workforce. Further longitudinal surveying of the enlarging rural cohort will show longer term trends in work location choice.

Influence on career decision-making

It is difficult to show the impact of a voluntary RCTS program; the initial interest many participants have in rural medicine prior to taking part creates a bias¹⁰. Somers and Spencer¹⁵ have shown that this initial interest increases the likelihood of practising in a rural location. Yet there were respondents who were initially 'very interested' in rural practice whose interest was further increased and were practising in rural areas in 2012. The role of the RCTS program, including the initial decision to take part in it, is important in the progression from medical school to rural practice^{11,12,16}.



Also, the RCTS program exposes students not initially interested in rural medicine to rural practice and inspires an interest in it. The majority of respondents indicated they entered the RCTS program for the 'quality of the clinical learning experience' and for 'exposure to a different clinical setting', often because of advice from past rural cohort students (Table 2). Qualitative comments also confirm this by saying that the RCTS program provides an opportunity to be exposed to rural practice in a supportive, non-hierarchical environment. Just over half of respondents indicated an interest in rural medicine as a motivation for entering the program, so this was not a universal reason. There were respondents working in a rural area in 2012 who were initially only 'not really' or 'somewhat interested' in rural practice that indicated an increased interest.

Study limitations

The initial cohort size and response rate of this study are small with 74 respondents (58.2% response rate). High quality, recent contact details for past graduates of the medical program are difficult to locate. There is a risk of selection bias with people that choose to answer the survey possibly having a greater interest in rural practice and therefore desire to be involved in such a study. These limitations, together with the length of postgraduate training, make it difficult to demonstrate the outcome of the RCTS program as yet. Repeating the survey with a larger sample, as intended, will provide more meaningful insight.

Conclusions

This is the first study of the University of Adelaide RCTS program rural cohort students to report on rural workforce outcomes. The study shows that the program is having a positive impact on the interests of some medical students to transition to rural medicine while providing quality education experiences. Further graduate tracking research, such as the Medical Schools Outcome Database, will document levels of interest at outset and longer term graduate tracking in postgraduate careers.

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Appendix I: Online survey regarding career choices since graduation and experiences during the Rural Clinical Training and Support program

1. From the beginning of primary school to the beginning of university how many years have you spent living in a rural area?
 - No time
 - Less than five years
 - More than five years
2. What was the suburb or postcode of the rural area you spent the most time in? [drop down menu]
3. What year did you undertake your 5th year rural medical placement? [drop down menu]
4. Where were you placed for most of your rural 5th year? [drop down menu]
 - Other (please specify if multiple sites) [text box]
5. What motivated you to choose to enter into the rural program? (choose as many as applicable)
 - Previous student recommendation
 - Wanted to try something different
 - Interested in practicing rurally
 - Exposure to different clinical setting
 - Quality of the clinical learning experience
 - Study group also going
 - Partner or family located in same rural location
 - Other (please specify) [text box]
6. How interested were you in practicing rurally prior to undertaking the 5th year rural medical program?
 - Not at all interested
 - Not really interested
 - Somewhat interested
 - Very interested
 - Cannot remember
7. How did your participation in the rural clinical change your level of interest in practicing rurally?
 - Significantly decreased interest
 - Slightly decreased interest
 - No change
 - Slightly increased interest
 - Significantly increased interest
 - Cannot remember
8. What was it about the program that increased your level of interest in rural practice? [text box]
9. What was it about the rural program that decreased your level of interest in rural practice? [text box]
10. When did you complete your medical degree? [drop down menu]
 - Other (please specify) [text box]
11. Did you receive any scholarships during your studies?
 - Yes
 - No
 - If yes, please specify [text box]
- 12–19. Please complete what career choices you have made, beginning with the year after you graduated. [matrix of year, activity, specialisation and location]
20. What category do you think has had the most impact on your decision to choose a rural career path, if applicable?
 - Affinity – rural background, prior interest
 - Education – experiences had during university including the rural program, postgraduate training
 - Coercion – compulsory period as international student
 - Indenture – bonds, scholarship repayment, rural scholarship, military scholarship
 - Support – postgraduate inducements, support for locums, ongoing education, retention payments for staying longer, spouse assistance
 - NA – have not chosen a rural career path
 - Comments [text box]
21. What is the postcode of your current workplace? [text box]



22. Have you ever held a metropolitan or regional centre medical position that involved travelling to rural areas? For example, as part of a community visit or outreach program.
- Yes
 - No
23. Have you ever taken up a post-graduate position because it was based in a rural location?
- Yes
 - No
24. Do you have intentions to work rurally in the future?
- Yes
 - No
- Please provide details.
25. Generally, what do you think are the key barriers to practicing in a rural area? [text box]
26. Do you have any additional comments surrounding the rural academic program or rural workforce? [text box]
27. Do you object to being contacted again in the future to update contact details and ask the direction your career has taken?
- Yes, I object to being contacted
 - No, I do not mind being contacted
28. If willing, please complete the following.
- Name:
 - Facebook name:
 - Postal address:
 - Email address:
 - Mobile number: