

Where Would Final Year Dental Students Like to Work as Opposed to Where They Will Work?

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Abstract

BACKGROUND: Australia has a disproportionate number of dentists working in its capital city locations relative to its rural locations. Australian Government agencies have initiated two different approaches to partially equalize this workforce imbalance. One approach has been to allow for the placement of dental students from capital city-based universities into a rural work student location. The second, more recent, approach has been to establish dental schools in regional areas. The study has the objective to assess the perceptions and views of both urban and rural-based dental school students on rural placement experience and future rural work.

METHODS: Two rural dental schools and one capital city-based dental school were approached, and all consented to their students participating in this survey. The data from the two rural universities were then coalesced and compared to the data from the capital city-based university to quantify the usefulness of the two different approaches in enhancing a dental workforce within rural locations.

RESULTS: Many urban-based dental students in this study indicated that they might return to a rural location for employment, and that their rural placement helps them to make this decision. Furthermore, having a rural clinical placement is perceived as beneficial by dental students, and might assist them with their decision about where to practice post-graduation.

CONCLUSION: A rural clinical placement experience is perceived as beneficial by dental students, and might assist in decisions on post-graduation practice locations. At this stage, based on student perceptions, the rural-based schools are not more likely than the city-based schools to provide a dental workforce for rural locations.

Introduction

Due to Australia's large geographical size and the clustering of most of its population within major cities and inner regional areas, there are difficulties in providing services in rural and remote regions (1). The difficulties include medical, dental, and other allied health care services and workforce (2–8). Studies have shown the shortage of health care professionals working in Australia, predominantly in rural Australia, though the main focus of these studies has been on shortages and the maldistribution of doctors (2–4, 9–14). Some of these studies have also included allied health professionals (12, 13), but dental professionals appear underrepresented in the literature (3, 15, 16).

The Australian Federal Government has recognised these difficulties and has attempted to improve this situation using various methods, and all have involved some form of collaboration between Australian State Governments and their local universities. Prior to 2002, all training of dental students occurred within the dental schools in capital cities (17). However, it was recognised that clinical experience in rural communities might better prepare students for future practice in rural locations, and might motivate some of them to seek employment in such rural areas following graduation.

Two approaches were put into place to mitigate the absence of rural exposure; one focused on existing city-based schools, the other on the development of new rural-based schools. In 2002, the University of Western Australia, located in the capital city Perth, introduced the provision of options for final year dental students for placements into rural, remote, and Indigenous locations¹⁶. Dental students were placed into selected dental practices, most often State Government community health clinics, for short-stay placements (17). A similar initiative was introduced in 2009 by the city-based University of Sydney (18). There is general agreement in the literature that the placement of final year dental students in rural areas has resulted in an increased interest from them to return to work in rural and remote regions following graduation (17–19). The second approach saw the Australian Government (in collaboration with State Governments) establish the training of dental students in dental schools located in non-metropolitan rural areas. This saw the establishment of four new rural (regional) dental schools in three Australian States.

It has been established that the choice and preference of health care providers to practise rurally is the result of many factors (5, 16, 20–24). The recurrent theme in the literature is that health care providers are more likely to remain within a rural setting if they come from a rural background, and/or if they have experienced a rural placement (3–5, 15, 18, 20, 23). This concept has been tested amongst medical students with the establishment of rural clinical schools in some States, which found an increased likelihood of rural clinical school graduates choosing to practise rurally (10, 11, 14).

There has been little research on the influence of rural clinical experiences on dental students' decisions regarding practice location after graduation, and the perceptions of students training at any of the four regional-based dental schools in Australia have not been previously assessed. The aim of this study was to determine the perceptions of students from both urban and regional-based dental schools, regarding rural placements and future work locations.

Materials And Methods

Ethics approval for this study was obtained from the Human Ethics Committee of the University of Western Australia.

A survey was used to gather information on the attitudes and perceptions of final year dental students at Australian dental schools. Students from five dental schools, two city-based and three located in rural locations Adelaide (city), James Cook (rural) and Griffith (regional), Charles Sturt (rural), and La Trobe (rural), situated in four States (South Australia, Queensland, New South Wales, and Victoria), were invited to participate in the survey. Respondents who answered the survey were students at Adelaide University, Griffith University, and James Cook University.

The survey questionnaire required information on each participant's age, gender, whether their university had enabled them to participate in a rural placement, and if they ever lived in a rural area. The next eleven questions were Likert-scale questions, with each offering a five point scale response option, from strongly agree, (being a numerical value 1), to that of strongly disagree (being a numerical value of 5). Of the

eleven questions, five sought answers as to the reasons why students wanted to participate in a rural placement. The next six questions sought answers as to whether that student would prefer to work in a rural/remote location, and if so, the reasons for that preference. There was a final, open-ended question, which invited any comments on factors regarding the survey or the participants' rural placements.

Both a paper-based and electronic-based approach were taken to optimise response rates. A total of 270 students were invited to take part, and 92 responses were received, resulting in a response rate of 34%.

Statistical analysis was completed using SPSS (Version 2). Descriptive and frequency analysis was used to indicate the responses on the Likert-scale questions, and differences between proportions were determined with chi-square tests (statistical significance was set at the 95% confidence level). Mean scores and standard deviations were also calculated.

Results

Demographic distribution

A total of 92 responses were received; 41 (44.6%) were male, with 29 (31.5%) aged 18-22 years, 48 (52.2%) aged 23-27 years, 10 (10.9%) aged 28-32 years, 4 (4.3%) aged 33-37 years, and 1 (1.1%) aged 38-42 years (Table 1). A total of 40 (43.5%) of the respondents were studying at Adelaide University, 22 (23.9%) were studying at Griffith University, and 30 (32.6%) were studying at James Cook University. Among the respondents, 89 (96.7%) had been enabled by their universities to undertake a rural clinical placement, and 39 (42.4%) had ever lived in a rural area for more than a year (Table 1).

Reason for applying for rural placement

Overall most respondents strongly agreed that a rural clinical placement would provide them with a wider range of clinical skills (Figure 1). When comparing gender, age groups, and those from either regional or urban dental schools, mean scores were different, but not significantly so. Reasons for applying for rural placement were (from highest to lowest): for enhancing job prospects upon graduation (2.6, sd1.1); for experiencing rural life (2.6, sd1.2); for improving dental health of people in such areas (2.3, sd1.1); for increasing clinical skills (2.2, sd1.2); and for getting exposure to a wider range of clinical treatments (2.1, sd1.3) (Table 2). No significant differences were found in the responses of those participants who had ever, compared to never, lived in a rural location for at least a year.

Preparation for rural placement

The majority of respondents agreed that they were adequately prepared for a rural placement (Figure 1), with an average score of 2.4 (sd1.1) (Table 2). This did not vary significantly across students of different

genders, age groups, university locations, or previous experience of rural living (Table 2).

Competition for employment

The majority of respondents strongly agreed that they will enter a highly competitive job market (Figure 2), with an average score of 1.7 (sd1.1) (Table 3). This response did not vary significantly across students of different genders, age groups, university types, and previous rural habitation (Figure 2, Table 3). There was support for this view in the open text responses, as some respondents stated that “it is not a level playing field” when some graduates rely on having family associations with the profession, which could help them to obtain employment.

Employment preference

Most respondents strongly agreed that they preferred to be fully employed in one dental clinic location rather than being partly employed in multiple dental clinic locations (Figure 2)(mean score 2; sd1.63) (Table 3). The mean score obtained for the students from the urban-based university was higher (2.2, sd1.2) than that for the students from the two rural-based universities (1.8, sd1.1), but the difference was not statistically significant (Table 3).

Most students agreed that the rural placement would enable them to make a better choice as to where they would prefer to work. This is more pronounced for students from the urban-based universities than for the rural universities (2.4, sd 1.0 versus 2.2, sd 1.0, $p>0.05$) (Table 3).

City employment only

Most respondents disagreed with the proposition that they wanted to work in the city only (mean score 3.4, sd 1.1) (Figure 2 and Table 3). This did not differ significantly between gender, age, urban/non-urban dental school, and previous rural habitation groups. However, students from rural-based universities more strongly disagreed that they wanted to only work in a city, compared to urban-based students (3.6, sd 1.1 versus 3.1, sd 1.1; $p>0.05$) (Table 3).

Prefer Rural Employment

The average response to this question of rural employment preference was neutral (mean score 2.9, sd 1.0) (Figure 2 and Table 3). Those students who had lived previously in a rural area indicated a greater preference to work in a rural area (2.7, sd 1.0) than those who had not lived in a rural location (3.1, sd 1.0).

The mean score obtained was higher amongst students from urban-based than rural-based universities (3.0, sd 0.9 versus 2.8, sd 1.0; $p > 0.05$) (Table 3).

Qualitative responses

The final part of this survey asked respondents to make a personal comment about their rural clinical placements. A response rate of 30% was achieved for this part of the survey. Most of these responses were positive and made mention of the greater range in dental treatments provided, the increase in clinical time available (4.5 days as opposed to 1.5 days), more clinical variety and scope of treatments, different mentorships and guidance by other dental students, making professional contacts for possible future employment opportunities, the greater degree of patient appreciation for their treatments, and the ability to be part of a rural community and to enjoy the experience.

Some negative responses included loss of time with family, for example parents, partners, and in some cases, children. There was also dissatisfaction with some universities which were perceived as charging their students too much for unacceptable accommodation and making the cost of rural placement too high. Some students pointed to travel and living costs, which were not being subsidised by some of the universities. Some mention was made of perceived government bureaucracy in placing limitations on patient clinical management.

Discussion

The current model of dental education has been called upon to be reviewed for it to be more context specific, respectful of racial and cultural differences and sans prejudice (25). Previous studies (4, 5, 15, 16, 18) have found that dental students and dentists are more likely to go to or remain in rural locations if they come from a rural background or have been provided with rural placements during training. Our study supports this finding; dental students who experienced placements in rural areas indicated that they were more likely to return to rural areas for future employment. This is in agreement with earlier work in Australia (17–20). We found that there is a greater likelihood that some dental graduates will relocate from urban to non-urban locations, but this notion is unlikely to ever solve the problem of the maldistribution of the workforce between urban and rural areas (6–8, 16, 26). Similar findings were reported in a previous study involving medical students (10, 15), which found that ongoing employment is influenced by the students being from an urban or rural background. Dentists and other health care providers who work in a rural locations make their decisions about where to work based on many factors (5, 10–12, 14–16, 20). A number of studies have found that the placement of medical schools in rural areas led to an increase in rural practice of medical doctors (9–11). This could equally apply to dental graduates. It has also been found in several overseas studies that if dental faculties are placed in a rural setting, then the dental graduate is more likely to practice in that rural setting (27).

There was an indication in the current study that the main reasons students apply for rural clinical placements are because they believe that this will provide them with a wider range of clinical treatments and increase their clinical skills. Such placements could enhance their job prospects upon graduating, allow them to experience rural life, and can contribute towards improving the dental health of people in such areas. It was also interesting that responses did not differ significantly between those students from urban and regional-based dental schools.

Most of the students included in the study believed that their respective universities adequately prepared them for rural placement, despite some comments regarding the high costs of sometimes poor accommodation provided by the university. The study was in general agreement with previous work that indicated positive responses from students regarding their rural experiences (17, 18).

Conclusion

Today's dental students do believe that they will be graduating into a highly competitive job market, and this will influence their preference for employment location. Many urban-based dental students in this study indicated that they might return to a rural location for employment and that their rural placement helps them to make this decision.

To summarise, the first key finding of this study is that dental students who have had the experience of being placed in rural areas indicated that they were more likely to go back to rural areas for future work. Further, the next key finding of the study illuminates that based on dental student perceptions; the rural-based schools do not have more probability than the city-based schools to provide a dental workforce for rural locations. This finding corroborates studies suggesting that the placement of final year dental students in rural areas has brought about an increased interest from them to return to work in rural and remote regions after completion of their studies. The latter finding calls for a reconsideration of the current policy focus on the oral health workforce in Australia. The existing policy is that Australia has invested a lot of money and time and effort to build rural dental schools in the belief that will recruit rural students who are more likely to want to serve rural communities. This belief is evidenced as the Australian Government in cooperation with State Governments in Australia establish the training of dental students in dental schools situated in non-metropolitan rural areas.

Based on our study, it could be concluded that having a rural clinical placement is perceived as beneficial by dental students, and it might assist them with their decision about where to practice post-graduation. In future research, should there be an opportunity, it would be interesting to increase the sample size and to examine the changes in trends over a longer period of time. It would also be engaging to compare the outcomes of this study with students who did not participate in a rural placement program.

Declarations

Ethical approval for this study was attained from the Human Ethics Committee of the University of Western Australia. Consent to participate in the survey was obtained from participants.

Consent for publication

The authors consent for publication.

Availability of data and materials

All data generated in this study are not publicly available as per ethical approval to ensure privacy and confidentiality of participant data.

Competing interests

The authors declare no competing interests.

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Authors' contributions

Marc Tenant (MT) provided development advice for the paper. Frank Kinkela (FK), Callum Durward (CK), Stephanie Doris Short (SDS), Estie Kruger (EK), Marc Tenant (MT) drafted and wrote the following sections: introduction, literature review, results, discussion and conclusion. All of the authors reviewed the paper. EK worked on the statistical data and provided statistical advice for the paper.

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Tables

Table 1. Gender, Age Categories, and Lived in Rural/Remote/Non-Urban Area by University Attending

[Please see the supplementary files section to access table 1.]

Table 2. Reasons for applying for a Rural Clinical Placement

	Age:*				P**	Urban	University location:*	
	All	18-22	23-27	28-42			Rural	P**
University has quately pared me for rural ement plied for rural ement ause: ill increase my ical skills	2.4(1.0)	2.4(0.9)	2.4(1.0)	2.4(1.3)	.999	2.2(0.9)	2.5(1.5)	.206
sh to help rove the dental lth of this rural munity	2.2(1.2)	2.1(1.3)	2.1(1.2)	2.7(0.9)	.255	2.1(1.2)	2.3(1.2)	.456
ill provide me a wider range linical skills	2.3(1.1)	2.3(1.3)	2.2(1.0)	2.3(0.9)	.976	2.3(1.0)	2.2(1.2)	.570
ill enhance my prospects upon uation	2.1(1.1)	2.0(1.3)	2.1(1.3)	2.1(1.1)	.870	2.1(1.2)	2.0(1.2)	.578
sh to erience rural	2.5(1.1)	2.7(1.3)	2.5(1.0)	2.5(1.0)	.611	2.6(0.8)	2.5(1.3)	.480
	2.5(1.0)	2.4(1.3)	2.6(1.1)	2.6(0.9)	.845	2.5(1.1)	2.5(1.2)	.997

*Mean (standard deviation) **Chi-square

Table 3. Preference to work in rural area compared to urban area

	Age:*				P**	Urban	University location:*	
	All	18-22	23-27	28-42			Rural	P**
If I graduate I would prefer to work in a highly competitive job rather than multiple dental clinic locations	1.7(1.1)	1.9(1.2)	1.6(1.0)	1.6(1.0)	.656	1.7(1.6)	1.7(1.0)	.961
If I graduate I would prefer to work in an urban location	3.4(1.1)	3.7(1.0)	3.2(1.0)	3.3(1.5)	.229	3.1(1.1)	3.6(1.1)	.072
If I graduate I would prefer working in a rural location	2.9(0.9)	2.8(1.0)	3.0(0.8)	2.8(1.1)	.404	3.0(0.8)	2.8(1.0)	.448
If I graduate, I would prefer to work in an urban location, but if employment not possible, I will work in a rural location	2.7(1.1)	2.8(1.1)	2.6(0.8)	2.9(1.5)	.452	2.5(0.9)	2.8(1.1)	.175
If I graduate, I agree that my rural placement will be a better choice as opposed to where I would prefer to work	2.3(1.0)	2.2(1.0)	2.2(0.9)	2.5(1.0)	.572	2.4(0.9)	2.2(1.0)	.439

*Mean (standard deviation) **Chi-square

Figures

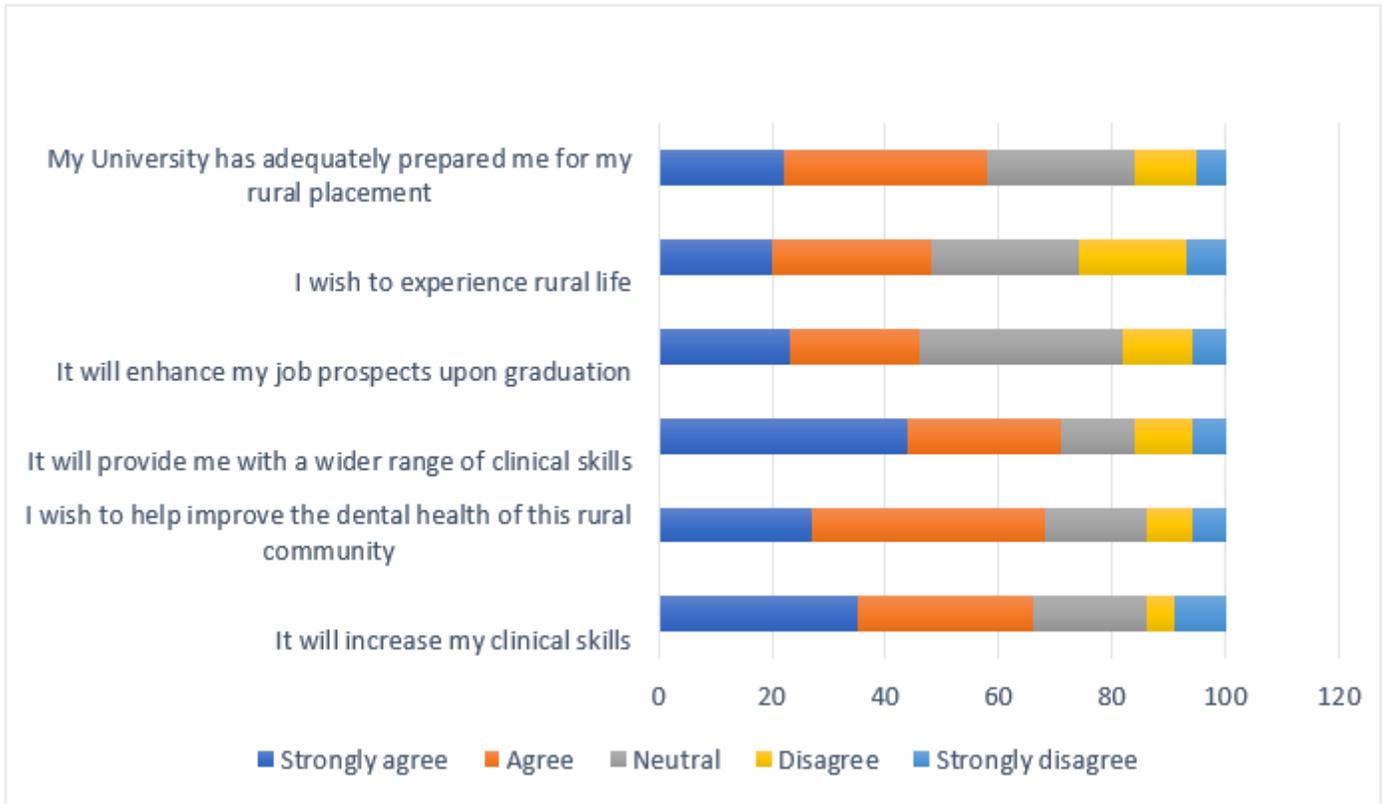


Figure 1

Response frequencies: reasons for applying for a rural placement

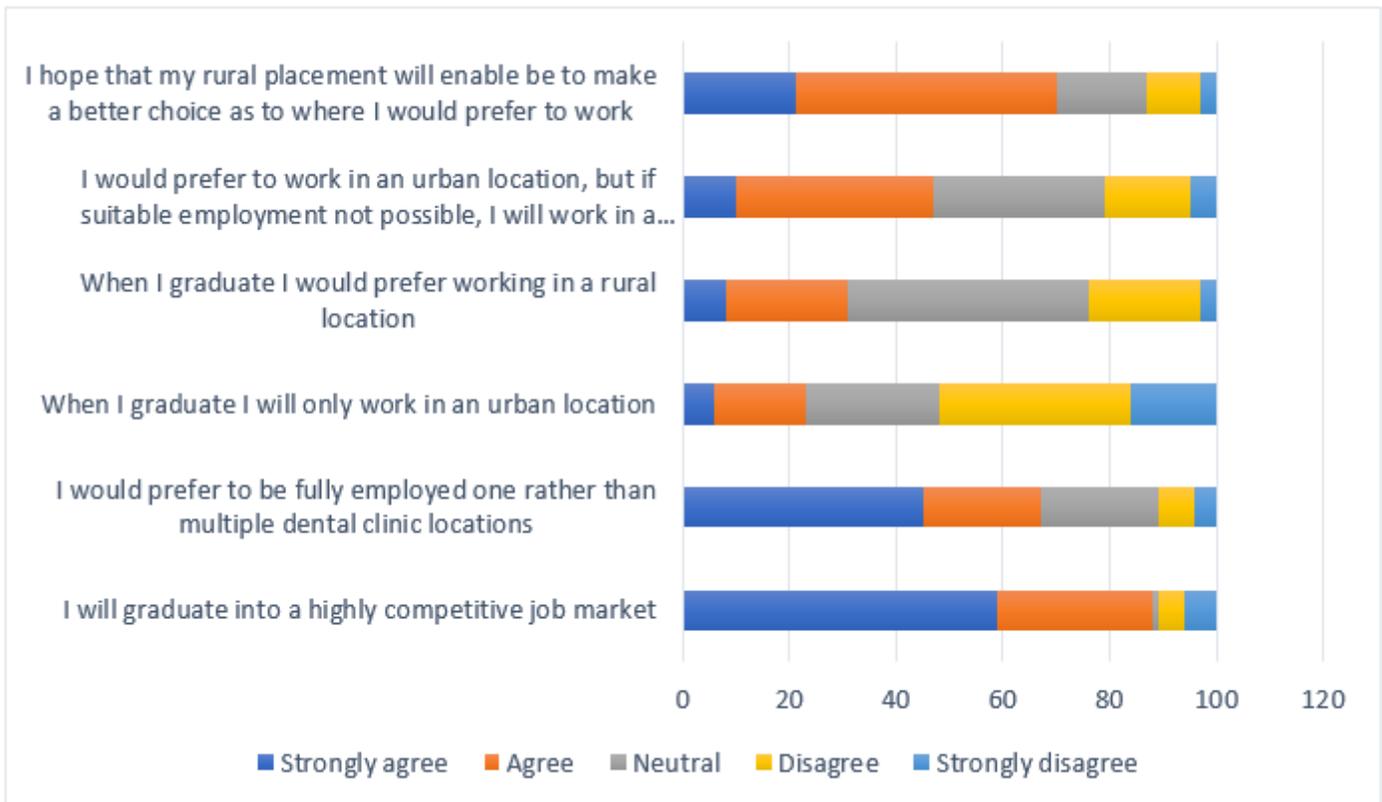


Figure 2

Response frequencies: preference to work in rural or urban areas

Supplementary Files

This is a list of supplementary files associated with this preprint. Click to download.

- [Table1.docx](#)