

Original Article

First-Year Dental Students' Awareness and Intentions for Rural Dental Practice: A Survey Study

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ABSTRACT

Australian universities have implemented rural outplacement programs to motivate dental students to pursue rural careers. Dental curricula should equip graduates with comprehensive insight into the challenges faced by rural oral health practitioners. Understanding students' pre-outplacement attitudes toward rural practice is essential for refining these programs, yet this topic has received limited attention. This study conducted an anonymous, voluntary, online survey among first-year dental students to assess their awareness and understanding of rural oral health, willingness to work in rural regions, and factors influencing the attractiveness of rural practice. On a seven-point Likert scale, most students reported a moderate to high awareness of rural communities and oral health issues. Participants with rural backgrounds demonstrated significantly greater intention to practice rurally following graduation ($p = 0.001$). Overall, students expressed favorable intentions for short-term rural work. Enhanced employment prospects were cited as the main motivator, whereas separation from family and friends was the leading deterrent. Rural background strongly influenced post-graduation rural practice intentions. These pre-outplacement perceptions align closely with post-placement findings described in prior research.

Keywords: First-year dental students, Rural oral health, Rural training, Rural background

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Introduction

Rural outplacements have become a crucial component of clinical dental education worldwide [1–3]. Such programs have been designed to generate tangible benefits for students, academic institutions, and host communities [1, 4, 5]. Students gain exposure to diverse clinical situations and collaborative teamwork, while universities benefit from external clinical resources and teaching support. Local communities also profit from the dental services provided by students. Specifically, rural placements are strategically implemented to increase the likelihood of future dentists practicing in underserved areas [6–9]. The uneven distribution of dental professionals between urban and rural areas has been widely

documented. In Australia, approximately 63 dentists per 100,000 people serve metropolitan regions, compared to only about 26 per 100,000 in Remote or Very Remote locations [10]. This shortage negatively impacts both oral health outcomes and the overall well-being of rural residents [11]. Common challenges deterring professionals from rural practice include social isolation, limited compensation, insufficient schooling options for dependents, and scarce opportunities for professional development [12, 13]. To mitigate these challenges, numerous strategies have been introduced, such as structured rural training and outplacement initiatives for dental students. These programs are based on evidence showing that graduates with rural experience or origin are more inclined to remain in rural practice [14–17].

Over the past twenty years, many dental schools—including those in Australia—have embedded rural placements into their curricula to familiarize students with rural settings and community health realities [16]. Post-placement feedback has consistently shown that students value these experiences, gain deeper understanding of rural oral health, and exhibit heightened interest in working in rural environments after graduation [7–9]. The Australian Dental Council [18] mandates that graduates demonstrate competence in providing care for rural and Indigenous populations. Hence, it is crucial that the dental curriculum delivers both theoretical and practical exposure to rural practice. Continuous evaluation of learning outcomes ensures this objective is met. A vital element of such evaluation is examining students' baseline awareness and perceptions before their initial rural experience. Anecdotal evidence suggests that positive reports from senior peers can influence early-year students' expectations regarding rural placements. Nonetheless, little empirical research has addressed dental students' pre-outplacement attitudes [16].

This study presents findings from a pre-outplacement survey conducted among first-year dental students at an Australian university with a long-standing rural outplacement program established in 2006 [7, 19]. The research aimed to evaluate: (a) students' understanding and awareness of rural communities and rural health, (b) their intentions to work in rural locations, and (c) the factors that shape their consideration of rural dental careers. Associations between these perceptions and students' rural backgrounds were also examined. The outcomes were then compared to post-placement findings reported in existing literature.

Materials and Methods

First-year Doctor of Dental Surgery (DDS) students at the University of Melbourne were invited to complete an anonymous, voluntary, online questionnaire hosted on SurveyMonkey® (Survey Monkey Inc., San Mateo, CA, USA) during a mandatory session in March 2018. Ethical approval was obtained from the Human Ethics Advisory Group (HEAG), Melbourne Dental School, University of Melbourne (Ethics ID: 1647795.1, 17 July 2017).

The survey gathered information on demographics, perceptions of rural living, understanding of rural oral health and practice, intentions to work in rural areas, and factors influencing these intentions. Responses were recorded on a seven-point Likert scale, where 1 represented “strongly disagree” and 7 represented

“strongly agree” [20]. One open-ended item asked respondents to identify barriers to long-term rural practice. These qualitative responses were thematically analyzed by seven researchers and organized using Microsoft® Excel. Before providing participants with the Australian Standard Geographical Classification of remoteness [21], perceptions of rurality were assessed. The term “rural” was used interchangeably with “regional.” Participants were also asked to indicate their preferred future work setting: major city, rural/regional, or remote.

Data were processed using SPSS™ Version 24 (IBM®, Armonk, NY, USA). Missing responses were omitted from the analysis. Two composite variables were created: “rural affiliation” and “rural knowledge.” Rural affiliation was based on current or past residence in a rural area, birthplace, and family or social connections in rural communities. Rural knowledge represented the average score of six questions assessing understanding and perception of rural life. Descriptive statistics summarized individual question responses. Mann–Whitney U tests were used to determine whether intentions to work rurally differed significantly by gender, age, rural knowledge, or rural affiliation (binary variables).

Results and Discussion

From a total of 101 first-year dental students, 94 completed the survey, corresponding to a response rate of 85.5%. The majority of participants (80.9%) were younger than 24 years, and females constituted 51.1% of the group.

Overall, respondents demonstrated limited understanding of rural environments, based on mean values obtained from the seven-point Likert scale (**Table 1**). While most students believed they understood what rurality means (Mean \pm SD: 5.38 ± 1.29), they were less certain about distinctions among rural, regional, and remote classifications (4.29 ± 1.56). Their confidence in communicating or interacting—socially or professionally—with rural and Indigenous communities was moderate (Mean $\geq 4.47 \pm 1.51$), and self-reported familiarity with Indigenous culture was notably low (3.62 ± 1.49). In general, students had only a partial grasp of oral health concerns and the practical difficulties of dentistry in rural regions (**Table 2**). Most respondents agreed there was a significant shortage of dental specialists in rural settings when compared to metropolitan areas (5.78 ± 1.07 and 5.65 ± 1.23 , respectively).

Table 1. Perceptions and comprehension of the rural environment among first-year dental students.

Questionnaire Statement	Average Score	Standard Deviation
I possess a strong understanding of what defines a rural setting.	5.38	1.29
I can clearly differentiate between rural, regional, and remote locations.	4.29	1.56
I feel assured in my ability to connect socially with people in rural areas.	4.82	1.54
I am certain of my capacity to engage professionally with rural communities.	4.96	1.42
I am comfortable interacting socially with Indigenous Australian populations.	4.47	1.51
I have confidence in my professional interactions with Indigenous Australians.	4.71	1.44
I feel knowledgeable about the cultural aspects of Indigenous Australians.	3.62	1.49

N = 94. † Mean ± SD based on a seven-point Likert scale where 1 = entirely disagree and 7 = entirely agree.

Table 2. Perceptions of oral health and clinical practice in rural regions.

Survey Statement	Average Score	Standard Deviation
Practicing dentistry in rural areas is more intricate than in urban settings.	5.01	1.14
Effective communication poses greater challenges in rural dental practice compared to urban practice.	4.70	1.21
Dentists in rural areas receive less professional support than those in urban areas.	5.33	1.07
A general dentist in a rural setting requires a wider range of dental expertise than one in an urban environment.	4.61	1.34
Fewer dental specialists practice in rural areas compared to metropolitan areas.	5.78	1.07
There is a demand for dental specialists in rural communities.	5.65	1.23
The dental health of rural residents is generally worse than that of urban residents.	5.43	1.20

N = 89. † Mean ± SD on the same seven-point scale as **Table 1**.

Respondents highlighted a number of personal and professional aspects affecting their willingness to consider rural employment (**Table 3**). The highest-rated positive influences were strong community support, financial benefits, and closeness to family or friends, each showing mean scores of 5.23 or higher.

When asked to select from multiple possible motivators, better job prospects and higher pay were most frequently cited (**Table 4**). In contrast, answers to the open-ended question identified major obstacles such as distance from family and friends and differences in lifestyle (**Table 5**).

Table 3. Factors perceived as influencing rural career decisions among first-year dental students.

Survey Item	Average Score	Standard Deviation
I would be open to rural dental practice if I had reliable housing and support systems.	5.23	1.23
I would be inclined to work in a rural area if offered substantial financial benefits.	5.54	1.07
I would consider rural practice if my loved ones were located nearby.	5.56	1.17
Working in rural areas offers benefits to one's lifestyle.	4.31	1.50
Practicing dentistry in rural settings provides professional opportunities.	4.90	1.38

N = 87. † Mean ± SD of 7-point Likert scale.

Table 4. Commonly reported motivators for choosing to work in rural areas.

Incentives for Rural Practice	Number	Percentage
Increased employment possibilities	68	28.5
Higher financial compensation	48	20.1
Appealing rural way of life	35	14.6
Sense of ethical duty	33	13.8
Rich cultural diversity	31	13.0
Enhanced engagement with Indigenous health issues	24	10.0

† Multiple responses permitted.

Table 5. Thematic summary of discouraging elements for rural practice.

Barriers to Rural Practice	Number	Percentage
Separation from loved ones	50	49.1
Proximity to urban areas	14	13.7
Variations in way of life	14	13.7
Limited availability of amenities	10	9.8
Restricted opportunities for professional growth	7	6.9
Financial constraints	4	3.9
Insufficient support systems	3	2.9

† Derived from qualitative open-ended comments.

When questioned about rural clinical education (**Table 6**), participants tended to agree that both rural outplacement opportunities and a curriculum emphasizing rural oral health are vital, with mean ratings ≥ 5.27 .

Table 6. Attitudes toward rural clinical education and intention to work rurally post-graduation.

Survey Topic and Statements	Sample Size	Average Score	Standard Deviation
Rural Clinical Education			
Participation in rural placement programs during the dental course is essential for students.	94	5.68	1.31
I am open to participating in a rural placement program as part of my dental training.	94	5.40	1.62
Learning about rural dental health issues is crucial within the DDS curriculum.	89	5.90	0.97
The DDS curriculum should place substantial emphasis on rural health topics.	89	5.27	1.10
Aspiration for Rural Dental Practice			
I am keen on practicing dentistry in a rural area after completing my course.	87	3.99	1.61
I would be willing to work in a rural area for a short period (up to 2 years).	87	5.46	1.30
I would consider practicing in a rural area for an extended period (more than 2 years).	87	3.70	1.51

† Mean \pm SD on a seven-point Likert scale.

Regarding preferred locations for professional practice after graduation, 92% of respondents ranked urban areas as their top choice, 82% selected rural/regional second, and 85% listed remote locations third. Students' overall interest in pursuing rural practice after graduation was neutral (3.99 ± 1.61), while their attitude toward long-term work in such settings was generally negative (3.70 ± 1.51). Conversely, there was a positive inclination (5.46 ± 1.3) toward short-term rural experience.

As presented in **Table 7**, no statistically significant variation in rural work intention was associated with gender, age, or current rural knowledge ($p > 0.2$). However, rural affiliation was a key differentiator: students with rural connections showed stronger interest in rural employment both after graduation ($p = 0.001$) and for long-term practice ($p = 0.002$). Regardless of demographic or experiential factors, all students shared a broadly favorable view of short-term rural placements ($p > 0.15$).

Table 7. Relationship between students' rural work intentions and their demographic, knowledge, and background characteristics.

Variable	Category	N	Mean Score†	p‡	Mean Score†	p‡	Mean Score†	p‡
			<i>Interest in Rural Practice Post-Graduation</i>		<i>Intention for Short-Term Rural Work (<=2 years)</i>		<i>Intention for Long-Term Rural Work (>2 years)</i>	
Gender	(1) Male	42	3.95	0.720	5.36	0.217	3.74	0.965
	(2) Female	44	4.09		5.64		3.73	

Age Category	(1) ≤24 years	70	3.90	0.372	5.44	0.907	3.63	0.337
	(2) >24 years	17	4.35		5.53		4.00	
Awareness of Rural Issues§	(1) Knowledgeable	65	3.91	0.478	5.40	0.322	3.68	0.704
	(2) Limited/No knowledge	22	4.23		5.64		3.77	
Rural Connection¶	(1) With rural background/affiliation	30	4.70	0.001	5.70	0.159	4.40	0.002
	(2) Without rural background	57	3.61		5.33		3.33	

† Mean of 7-point Likert scale (1 = entirely disagree, 7 = entirely agree).

‡ Mann–Whitney U test used for analysis.

§ Rural knowledge score derived from the average of six perception-related questions: (1) With Knowledge > 4; (2) No Knowledge ≤ 4.

¶ Rural affiliation determined through current/past residence, place of birth, or social/familial connections in rural locations.

A central recommendation of Australia's National Oral Health Plan emphasizes strengthening initiatives that attract and retain dental students and practitioners in rural and regional communities [22]. Achieving this requires considering both the proportion of clinical training hours spent in rural placements and the enrollment of students originating from non-metropolitan backgrounds. Despite ongoing efforts, enrollment numbers for students from rural areas in dental programs remain relatively limited [23]. Consistent with national data, only a small fraction of participants in the current research identified as having a direct rural or Indigenous origin. However, when accounting for those with indirect ties—such as family, social, or residential connections—approximately one-third of respondents exhibited some level of rural affiliation.

Due to the limited number of comparable pre-placement investigations, the current findings are interpreted alongside previously published post-outplacement research. The discussion focuses on the influence of rural background on intentions for both short- and long-term rural employment, students' perceived barriers to working rurally, and their familiarity with Indigenous culture.

Comparable to earlier research involving first-year medical students [24], participants with existing rural links in this study demonstrated a stronger inclination toward establishing long-term careers in rural settings. A systematic review examining workforce distribution [25] identified prior rural experience as one of the most influential determinants of recruitment and retention in rural practice—an observation supported by the present findings. Both lifestyle and social considerations have also been recognized as vital to sustaining rural and remote healthcare professionals [26, 27]. Our data

similarly revealed that proximity to family and friends was viewed as an essential factor for contemplating long-term rural employment, aligning with results from post-placement dental surveys [6–8]. Thus, relying solely on financial incentives or career advancement opportunities is unlikely to secure the long-term commitment of dental practitioners in rural regions.

In contrast, most students expressed interest in participating in short-term rural placements regardless of their background. Within this group, better job prospects and higher earning potential were the most frequently cited motivators for temporary rural practice.

Government-supported rural placement programs have led to the integration of rural and Indigenous health content in undergraduate dental curricula. Nonetheless, ongoing assistance for early-career graduates remains crucial—especially through structured mentoring schemes offered by universities and professional bodies, such as the Australian Dental Association, for those beginning their careers in smaller rural or Indigenous communities.

Respondents in this pre-placement survey reported limited confidence in their understanding of Indigenous culture. Comparable medical studies have shown that students returning from rural placements often retained stereotypical assumptions about Indigenous people and felt unprepared for Indigenous health work [28]. However, evidence from dental outplacement programs suggests that hands-on experiences in Indigenous clinics substantially improve students' awareness and sensitivity to these issues [19]. This improvement may result from direct interactions with Indigenous patients and staff during such placements. Although these findings must be interpreted carefully, they suggest that rural

outplacements play an important role in deepening students' cultural understanding. Future longitudinal comparisons—examining post-placement responses from this same cohort—will help clarify these preliminary observations.

At the time of this survey, first-year students had received little or no formal instruction in rural or Indigenous oral health. Nevertheless, participants rated themselves as somewhat knowledgeable about rural oral health and dental practice (mean ≈ 5 on a 7-point scale). This optimistic self-assessment could be attributed to several contextual factors: growing media and public discourse on rural health over the past decade, limited metropolitan employment opportunities for graduates, greater awareness of rural workforce needs, and positive feedback from senior peers regarding their own outplacement experiences. Survey-based studies such as this are inherently subject to potential participation bias. Social dynamics or contextual cues may encourage respondents to provide what they perceive as socially acceptable answers. Hence, the findings should be interpreted cautiously. Because the data were obtained from a single student cohort within one Australian dental school, they may not represent attitudes across other institutions or populations. Broader research involving multiple universities is recommended. Longitudinal studies comparing early-program (pre-placement) and final-year (post-placement) perceptions would enable a more accurate evaluation of changes in students' understanding of rural practice, their motivation to work rurally, and the overall impact of the curriculum.

Conclusion

Pre-placement perceptions of dental students in this study share notable similarities with the post-placement outcomes reported in previous research. First-year students displayed partial awareness of oral health challenges within rural communities but reported limited familiarity with Indigenous culture. Those with rural connections demonstrated significantly stronger intentions to pursue long-term rural practice compared with peers lacking such ties. However, across all demographic groups—regardless of gender, age, rural knowledge, or affiliation—students exhibited comparable positive attitudes toward short-term rural experiences ($p > 0.15$). Financial and professional advancement were the main factors motivating students to consider rural employment, while personal and social aspects—particularly distance from family and friends—emerged as the principal deterrents to remaining in rural communities over the long term.

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