

# A baseline study of the demographics of the oral health workforce in rural and remote Western Australia

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## Abstract

**Background:** A shortage of dental practitioners in Australia is predicted for the future, and the greatest effect of this will be felt in rural and remote areas. Strategies are needed to increase the recruitment and retention of dental practitioners in these areas. Part of this process is to assess the demographics of the oral health workforce.

**Methods:** A postal questionnaire survey was undertaken in 2002, that involved all registered dentists, therapists and hygienists in rural and remote Western Australia.

**Results:** Rural dentists are predominantly male, early middle aged, married, UWA trained, Australian born with one to two children. Rural dental therapists are predominantly female, in their mid-thirties, married, Australian born, trained in Western Australia, with two children. Male dentists worked slightly more hours per week than female dentists. The majority of the workforce does have access to email and the internet. Taking leave is a problem for most dentists because of difficulties in finding locums.

**Conclusions:** The rural dental workforce capacity and demographic distribution need monitoring and analysis. This will determine the dental workforce's future ability to deliver the necessary services in rural and remote regions, where currently there is a dental workforce shortage.

**Key words:** Demographics, rural and remote, oral health workforce.

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## INTRODUCTION

The increase in the population over the next 20 years will outstrip the increase in dentists in Australia, resulting in a shortage of dental practitioners. As trends in medicine have shown, the greatest effect will be felt in rural and remote regions, where an undersupply of dentists already exists.<sup>1</sup> Australians in rural and remote areas are at a disadvantage in accessing dental care due

to a lack of availability of dentists and oral health facilities, and also the greater distances involved. These factors contribute to discrepancies in oral health status between groups in urban and rural areas.<sup>2</sup> Western Australia poses further challenges in that its geographical area is the largest of any of the States in Australia, and its population is very sparsely distributed.

As such, it is highly important that strategies be developed that will increase the recruitment and retention of practitioners in these regions. Part of this process is to assess the demographics of the oral health workforce in rural and remote Western Australia. A longitudinal study of dentists' practice activity in Australia conducted over a period of 15 years has provided valuable information on how the demographics of a workforce impacts on short and long-term productivity.<sup>3</sup> It is acknowledged that with the greater emphasis on part-time employment the total service output of a section of the workforce is diminished. As such, it is of vital importance that a detailed understanding of the current demographics and dental practice activity in rural and remote Western Australia is gained. These data will form the basis of projections and relative needs analysis for this section of the dental industry. The aim of this study was to develop a demographic profile of the rural and remote oral health workforce in Western Australia.

## METHODS

A postal questionnaire survey was undertaken in 2002. A list of all registered dentists, dental therapists and dental hygienists working in rural and remote Western Australia was obtained from the Dental Board of Western Australia, and a standardized questionnaire was sent to each person in December 2001. Repeat contact with all non-respondents was completed in February 2002, and reminder phone calls were made in April 2002 to all who, at that stage, had not yet responded. Ethics approval for this study was obtained from the Ethics Committee of the University of Western Australia. Rural and remote practitioners were identified according to the Rural, Remote and Metropolitan Areas (RRMA) classification, developed

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**Table 1. Difference in numbers (N) between dentists and therapists by variable**

		Dentists N=70	Therapists N=20
Workforce profile	Male	49 (70%)	0
	Female	21 (30%)	20 (100%)
	Mean age in years	42.7 (sd 11.24)	36.5 (sd 8.38)
	UWA/WA qualified	52 (74%)	20 (100%)
	Married	47 (67%)	15 (75%)
	De facto	3 (4%)	2 (10%)
	Single	20 (29%)	3 (15%)
Country of birth	Australia	41 (59%)	14 (70%)
	United Kingdom	16 (23%)	2 (10%)
	Elsewhere	13 (18%)	4 (20%)
Number who have children in each age category	0-4 years	12 (18%)	2 (10%)
	5-12 years	15 (23%)	7 (35%)
	13-18 years	14 (21%)	6 (30%)
	19+ years	18 (27%)	1 (5%)
	Average number of children	1.63 (sd 1.53)	1.52 (sd 1.34)
Partners/spouses	Working in their profession	33 (66%)	17 (100%)
Access to:	Email	58 (83%)	13 (65%)
	Internet	60 (86%)	13 (65%)
	University databases	12 (17%)	3 (15%)
	Mobile phones	48 (69%)	13 (65%)
Annual leave	Weeks per year	3.8 (sd 2.46)	4.1 (sd 2.25)
Leave cover	Not covered	36 (51%)	18 (95%)
	Locums	10 (15%)	2 (5%)
	Assistants/partners	21(30%)	0
	Other practice	3 (4%)	0
Location of previous practice	Rural	30 (43%)	11 (55%)
	City	12 (17%)	4 (25%)
	Overseas	9 (13%)	0
	Not applicable	19 (27%)	5 (20%)
Years at previous practice	Mean number of years	4.9 (sd 6.7)	4.6 (sd 5.17)
Years at current practice	Mean number of years	8.7 (sd 8.8)	6.2 (sd 7.0)
Numbers of staff	Dental assistant	2.1 (sd 1.8)	1.9 (sd 1.5)
	Technical	0.2 (sd 0.7)	0.06 (sd 0.2)
	Administrative	1.4 (sd 0.9)	0.4 (sd 0.7)
	Clinical	2.7 (sd 1.9)	2.3 (sd 1.3)
Number of chairs	Dental chairs	2.5 (sd 1.27)	2.2 (sd 0.8)
Patients treated per month	Full-time	260 (sd 95.7)	248 (sd 78.4)
	Part-time	160 (sd 90.0)	128 (sd 92.6)
Hours worked per week	Full-time	39.72 (sd 12.6)	38.25 (sd 16.3)
	Part-time	25.31 (sd 16.3)	23.63 (sd 14.2)
Practice description	Solo	31 (44%)	6 (30%)
	Group	29 (42%)	1 (5%)
	Government	10 (14%)	13 (65%)

in 1994 by the Department of Human Services and Health. Seven categories are included in this classification. The classification is based on Statistical Local Areas (SLA) and allocates each SLA in Australia to a category based primarily on population numbers and an index of remoteness.<sup>4</sup> As there were insufficient numbers of practitioners in each of the RRMA categories, comparisons were not possible.

The questionnaire contained questions on services delivery, demographic information, support and auxiliary staff, and previous practice location. Data were analyzed using SPSS Version 11.0 (Chicago, Illinois, USA).

## RESULTS

A total of 224 questionnaires were sent out and 148 responses were received. Of these 39 were employed elsewhere, one dentist retired, one dentist was not working anymore, and 15 therapists had changed careers. With these 56 out of scope, only 168 remained in the survey frame. Valid information was obtained

from 70 dentists, 16 therapists and four hygienists (n=90, 53 per cent response rate). A further two therapists refused to take part. Because there were so few hygienists (and in Western Australia they differ only marginally from therapists), they were classified as therapists for data analysis. Of the dentists, 49 (70 per cent) were male, and 21 (30 per cent) were female. All the therapists were female.

## Workforce profile

The mean age of dentists was 42.7 years (sd 11.24), and that of the therapists was 36.5 years (sd 8.38). Only four (6 per cent) of the dentists were over the age of 60, and none of the therapists were. Of all the dentists 52 (74 per cent) were UWA graduates, and the therapists and hygienists were 100 per cent Western Australian qualified (Table 1). Of the dentists, 47 (67 per cent) were married, 20 (29 per cent) were single and three (4 per cent) had de facto partners. Of the therapists, 15 (75 per cent) were married, three (15 per cent) were single, and two (10 per cent) had de facto

**Table 2. Practice activity: comparisons between ages, gender and full- or part-time workers**

Category	Age (years)	Gender	N	Patients per month (SD)	Hours worked per week (SD)
Full-time dentists	20-34	Male	9	243.3 (75.6)	40.7 (6.7)
		Female	9	205.5 (62.6)	40.6 (3.2)
	35-49	Male	20	278.7 (95.5)	40.7 (6.8)
		Female	8	211.7 (70.3)	37.87 (8.0)
	50-59	Male	16	311.2 (75.1)	38.2 (12.6)
		Female	1	240.0	38.0
	60+	Male	3	302.0 (87.6)	40.0 (5.0)
Female	1	290.0	40.0		
Part-time dentists	35-49	Female	2	115.0 (15.6)	23.0 (12.7)
	60+	Male	1	250.0	30.0
Full-time therapists	20-34	Female	6	242.0 (104.0)	38.91 (2.24)
	35-49	Female	5	254.0 (53.1)	37.7 (0.61)
Part-time therapists	20-34	Female	1	80.0	15.20
	35-49	Female	8	93.75 (67.3)	23.92 (6.3)

partners. The dentists were mostly Australian born (n=41, 59 per cent), 16 (23 per cent) were born in the UK, and 13 (18 per cent) were born elsewhere. Of the therapists 14 (70 per cent) were Australian born, two (10 per cent) were born in the UK, and four (20 per cent) elsewhere (Table 1).

### Children

Dentists had an average number of 1.63 (sd 1.53) children and therapists an average of 1.52 children (sd 1.34). The numbers of the workforce with children in each age category are indicated in Table 1. Of the dentists, 14 (21 per cent) and of the therapists six (30 per cent) had high school aged children. In total 24 per cent of the male dentists and 57 per cent of the female dentists did not have any children. Eight (40 per cent) of the therapists did not have any children.

### Partners working

Seventeen (100 per cent) of therapists' partners/spouses were working in their profession, and 33 (66 per cent) of dentists' partners/spouses were working in their profession (Table 1).

### Access to internet

Most of the workforce had access to email (79 per cent), the internet (81 per cent), university data bases (UDB) (16 per cent) and mobile phones (69 per cent). Dentists had higher levels of access to email, internet, and mobile phones than therapists (Table 1).

### Annual leave

Annual leave (mean weeks) for dentists and therapists were very similar, with dentists having 3.8 weeks annual leave (sd 2.46) and therapists (who mostly work in the public sector, and not the private sector) 4.1 weeks (sd 2.25). Leave cover was a big problem for dentists, and most (51 per cent) did not have any cover. Assistant dentists or partners covered in 30 per cent of cases, locums in 15 per cent and 4 per cent was covered by the other practitioner in town. Most of the therapists (95 per cent) did not have any cover (Table 1).

### Previous practice

Most of the dentists who practised somewhere else before, practised in rural areas before their current location (43 per cent), with 17 per cent coming from the city, 13 per cent from overseas and 27 per cent had never been in practice before or had always been at their current practice. Of the therapists, 55 per cent practised rurally before their current position, 25 per cent came from the city and 20 per cent never worked before (new graduates), or had always been at their current position (Table 1). The mean number of years the workforce spent at their previous location was 4.92 (sd 6.7) for the dentists and 4.68 (sd 5.17) for the therapists. The mean number of years the workforce spent at their current practice was 8.7 (sd 8.87) years (dentists) and 6.21 (sd 7.04) years (therapists) (Table 1).

### Staff numbers

The mean numbers of staff (FTEs) at dental practices and clinics are indicated in Table 1. Most dental practices had on average two dental assistants, 1.5 administrative staff and almost three clinical staff members. Therapists reported that each clinic had on average almost two dental assistants, almost no administrative staff and two clinical staff members. The average number of dental chairs per practice was 2.54 (sd 1.27) for the dentists and 2.25 (sd 0.8) for the therapists (Table 1).

### Numbers of patients treated

On average the 67 full-time dentists each treated 260 patients per month, and the three part-time dentists each treated 160 per month. Full-time therapists (n=11) each treated 248 patients per month on average, and part-time therapists (n=9) each treated 128 patients per month on average (Table 1). Male dentists in each age category treated more patients on average than female dentists. Older dentists treated more patients an average than younger dentists (Table 2).

### Hours worked per week

On average full-time dentists worked 39.72 hours (sd 12.6) hours per week, and part-time dentists worked 25.31 (sd 16.3) hours per week. Full-time

therapists worked 38.25 (sd 1.06) hours per week, and part-time therapists worked 23.63 (sd 14.5) hours per week (Table 1). Male dentists worked only slightly more hours per week than female dentists, and there were no significant differences in average hours worked per week between dentists in each age category (Table 2). Male dentists without children worked on average longer per week (42.7 hours, sd 7.5) than male dentists with children (38.8 hours, sd 9.1), and female dentists without children worked on average longer per week (40.8 hours, sd 3.8), than female dentists with children (33.5 hours, sd 9.7). Therapists with children also worked on average less hours per week (29.1 hours, sd 8.8) than those without children (34.8 hours, sd 8.7).

### Practice description and ownership

Slightly more dentists worked in solo practices (44 per cent, n=31) than in group practices (42 per cent, n=29), and 10 (14 per cent) worked in public sector clinics. Most of the therapists (65 per cent, n=13) worked in public sector clinics and the rest in private solo (30 per cent, n=6) or private group practices (5 per cent, n=1) (Table 1).

### Government clinic workforce

Only 10 (14 per cent) of dentists who responded worked in Government clinics, but of these six (60 per cent) were female, six (60 per cent) were single, and six (60 per cent) did not have children. This compares to the non-Government dentists who were mostly male (75 per cent), mostly married/had de facto partners (76 per cent), and had children (70 per cent). The average ages of the two groups did not differ much, with an average age of 40.6 years (sd 17) for the Government dentists and 42.9 years (sd 9.1) for the non-Government dentists. Hours worked differed slightly between the groups with 37.3 (sd 3.1) hours worked per week by Government dentists compared to 39.3 (sd 8.9) hours worked per week by private dentists.

## DISCUSSION

The results of this study indicated that rural dentists in Western Australia were predominantly male, early middle-aged, married, UWA trained, Australian born and had one to two children. Rural dental therapists in Western Australia were predominantly female, in their mid-thirties, married, Australian born, trained in Western Australia, and had one to two children.

The profile of rural dentists compared well to that of rural general practitioners and surgeons who are also predominantly male, middle-aged and married.<sup>5</sup> The age distribution was different for practitioners above age 60 years with 15-20 per cent of rural general practitioners,<sup>5</sup> but only five (7 per cent) dentists in this study were over the age of 60. The Longitudinal Study of Dentists Practice Activity also indicated that the percentage of dental practitioners over the age of 60 in non-capital locations in Australia was 5 per cent in 1983-1984, 9 per cent in 1988-1989 and 12 per cent in

1993-1994.<sup>3</sup> This could be an indication that more dental practitioners than medical practitioners retire from practising their profession at or before age 60.

More than one-third (n=15, 34 per cent) of the therapists who responded were not working as therapists anymore. This number was much higher than reported in 2002 when 18 per cent of the therapists in Western Australia were not working, or were working in other professions.<sup>6</sup> Reasons for not working as therapists anymore were not asked in this survey. However, some respondents indicated that they were not working at the time of the survey because of child rearing, household duties and a preference not to work, or they were working in other professions. One respondent indicated that she was unemployed but had problems in finding a position locally. It might be that therapist employment opportunities in rural regions are limited.

Most of the workforce did have children and 21 per cent of dentists and 30 per cent of therapists had high school aged children, whilst 27 per cent of dentists and 5 per cent of therapists also had children older than 19 years. Previous surveys among rural general practitioners indicated that children's education (especially high school and tertiary education) were a reason for people not to live and work in rural and remote regions, with many dissatisfied with the available local schooling.<sup>5,7,8</sup> It is not known how many of the high school aged children mentioned in this survey attend local schools, go to boarding schools or attend schools in other centres. A previous study among rural surgeons indicated that more than 50 per cent were sending or had sent their children to boarding schools, for some at significant costs.<sup>5</sup>

Most of the dentists who had partners/spouses (n=50, 71 per cent) indicated that their partner or spouse worked in their profession (n=33, 66 per cent) and all of the therapists with a partner or spouse (n=17, 85 per cent) indicated that their partner or spouse worked in their profession. The most mentioned professions included medical or dental practitioners (nine respondents), farming or agriculture (six respondents), dental assisting or reception work (seven respondents), accountants (five respondents), and managers (five respondents). Teachers were also mentioned by a few (seven respondents), although five of these were not working in this profession. Most respondents (12) mentioned their partner or spouse's profession as home duties or child rearing. This group was not included in the 'working in their profession' number. A variety of other professions were mentioned, including tradespeople, business owners, and health related professions such as nursing and occupational therapy. It would seem that employment opportunities for partners would be an important consideration when opting for rural dental practice, as most of the respondents were part of dual-income families, and a large proportion of spouses/partners have professional qualifications.

The majority of the dental workforce did have access to email and the internet. Where professional isolation has been identified as problematic for many rural and remote professionals,<sup>5,9</sup> especially those working in solo practices, the internet has clearly become a way of solving some of these issues. Professional support could be improved by way of web-based courses, ongoing education courses, on-line discussion groups and information database access.

In terms of annual leave most dentists had almost four weeks, with therapists having 4.1 weeks. The majority of the therapists worked in public sector clinics, and had four weeks leave as part of their work contract. Leave was usually taken during school holidays, and the majority did not require anyone to cover their leave. However, leave covering was a major problem for most dentists, and just over half of them did not have any cover. Not being able to get locums or even assistants was mentioned by many dentists as the reason why they do not take any leave, or when they did, it was only for very short periods. For dentists working in towns where there were other dental practices, there was the option of covering by the other practice in town. The problem of lack of locum cover is shared by rural general practitioners.<sup>5,10</sup>

The reasons why people choose to practise in rural regions were not investigated in this survey, but because most respondents practised in rural areas before their current location, it could be an indication that they prefer practising in rural locations and/or the rural lifestyle.

Previous Australian data indicated that male dentists had higher levels of practice activity compared with female dentists.<sup>11</sup> In this survey the male dentists worked 39.7 hours per week compared to 37.7 hours worked by female dentists, and more females (10 per cent) worked part-time compared to male dentists (2 per cent) (Table 2). This finding compared with that of a previous study which indicated that females work fewer hours per year than males.<sup>12</sup> Those people in the workforce with children, both males and females, also worked less hours than those without children. This finding is supported by previous research.<sup>12</sup>

The profile of Government and non-Government dentists differed in this survey, but the number of respondents working in Government clinics was low (only 10), and this makes definite conclusions regarding their profile and practice activity unreliable. However, the trend in this survey of more females working in the public sector confirmed the results of several international studies where more females opt for public sector work.<sup>13-15</sup> As more women are entering the dental profession,<sup>3</sup> and with the knowledge that there exist differences in the practising of dentistry between the genders, this needs to be considered when workforce strategies are planned for rural and remote regions. Part-time employment packages, especially in the public sector, may encourage more practitioners to

rural areas, as it will allow them more time to fulfil family or personal commitments.

Rural dentists share very similar characteristics as rural general practitioners. As with the medical workforce, the dental workforce capacity and demographic distribution need monitoring and analysis. This will determine the dental workforce's future ability to deliver the necessary services in rural and remote regions, where at the moment, there is a dental workforce shortage.

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