Exploration of dentists' characteristics associated with caring for disadvantaged patients using a mixed-methods approach

Suzanne Gardner
Cert DT, B Ed (Adult & Voc), B Sci Dent (Hons)

A thesis submitted for the degree of
Doctor of Philosophy

School of Dentistry, The University of Adelaide

January 2015

Principal supervisor:
Professor Kaye F Roberts-Thomson
Australian Research Centre for Population Oral Health

Co-supervisors:
Associate Professor Tracey Winning
The University of Adelaide

Associate Professor Ray Peterson
The University of Adelaide

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All references in the Bibliography are arranged in order of the author's surname. In the case where there is more than one reference by the same author, they are listed in chronological order. All references to published works cited in the text, appear in the text by author(s), followed by the year of publication, in parentheses. If there were three authors, reference was made to all three in the text. In the case where multiple authors were cited, the primary author's name was listed in the text, followed by 'et al.', however, all authors were named in the Bibliography. Percentages in the text are abbreviated by the symbol '%' unless at the beginning of a sentence. The terms 'underserved' and 'disadvantaged' are used interchangeably throughout this thesis. Tables and figures are presented immediately following the corresponding text, where practicable. Some statements in the tables are abbreviated in order to fit with the table formatting. The full wording of statements appears in the Appendix. Direct quotations from the researcher's memos and dentists' interviews are reported verbatim in this thesis.

Abbreviations

α	Cronbach's alpha
ABS	Australian Bureau of Statistics
ACT	Australian Capital Territory
AHPRA	Australian Health Practitioner Regulation Agency
AIHW	Australian Institute of Health and Welfare
ARCPOH	Australian Research Centre for Population Oral Health
ASGS	Australian Statistic Geographical Standard
ATAR	Australian Tertiary Admissions Rank
BDS	Bachelor of Dental Surgery
CD_RISC 10	Connor Davidson Resilience Scale 10 items
cf.	compared with
CI	Confidence interval
DP	Disadvantaged patients
DMFT	Decayed, Missing, Filled permanent Teeth
EC	Empathic concern
e.g.	for example
GPA	Grade Point Average
IADR	International Association for Dental Research
KMO	Kaiser Meyer Olkin
MD	Mean Difference
Med	Median
Min	Minimum
Mn	Mean
n	sample size
ns	not significant
NSW	New South Wales
NT	Northern Territory
OHT	Oral Health Therapist
OR	Odds ratio
PD	Personal distress
PS	Positive sharing
P	p-value

PAL	Primary Approach Letter
PAF	Principal Axis Factoring
PCA	Principal Component Analysis
QLD	Queensland
R^2	% variance explained
RCF	Residential Care Facility
REF	Reference category for odds ratio
SA	South Australia
SD	Standard Deviation
SES	Socio-Economic Status
SHCN	Special Health Care Needs patients
Sig	Significant
Tas	Tasmania
UK	United Kingdom
UMAT	Undergraduate Medicine and Health Sciences Admissions Test
US	United States of America
Vic	Victoria
WA	Western Australia

Research Outcomes

Dissemination of these research findings has already commenced in order to create discussion and debate to inform agencies with influence over oral health policy, curriculum, selection, workforce recruitment and retention. Oral presentations to local, national and international audiences, poster presentations, journal publications and funding bodies associated with this study, are listed below.

Oral presentations during time of candidature

11 July 2014: **S Gardner**, T Winning, R Peterson, K Roberts-Thomson, 'Career motivation associated with orientation of dental practice toward disadvantaged groups'. Research Day, School of Dentistry, Adelaide Convention Centre, Adelaide.

27 June 2014: **S Gardner**, T Winning, R Peterson, K Roberts-Thomson, 'Recruiting dentists for underserved populations: do we simply ask them?' IADR Africa/Middle East Division Regional meeting, Cape Town.

06 June 2014: **S Gardner**, T Winning, R Peterson, K Roberts-Thomson, 'Recruiting dentists for underserved populations: do we simply ask them?' Research meeting, ARCPOH, Adelaide.

25 May 2014: **S Gardner**, 'Getting the facts right: Dentistry and Oral Health', Tertiary Careers Expo, Convention Centre, Adelaide.

25 Oct 2013: **S Gardner**, T Winning, R Peterson, K Roberts-Thomson, 'Understanding why some dentists work with underserved groups' Research meeting, ARCPOH, Adelaide.

11 Sep 2013: **S Gardner**, T Winning, R Peterson, K Roberts-Thomson, 'Personal reward working as a dentist with underserved groups' Journal Club presentation, ARCPOH, Adelaide.

17 May 2013: **S Gardner**, T Winning, R Peterson, K Roberts-Thomson, 'Dentists' motivation to work with underserved groups and undergraduates' desire 'to help'', Med Dent Selection Forum, Flinders University, Adelaide.

04 Mar 2013: **S Gardner**, 'Scope of Practice: One dental therapist's journey', BDS1 Class Meeting, School of Dentistry, The University of Adelaide.

25 Sep 2012: **S Gardner**, T Winning, R Peterson, K Roberts-Thomson, 'Understanding what drives dentists to work with disadvantaged groups' IADR Australian/New Zealand Division, Regional meeting, Denarau Island, FIJI.

31 Aug 2012: **S Gardner**, T Winning, R Peterson, K Roberts-Thomson, **'**Serving the underserved: Why do some dentists do what they do?' Three Minute Thesis Faculty Final, Research Day, Faculty of Health Sciences, Adelaide Wine Centre, Adelaide.

17 Aug 2012: **S Gardner**, T Winning, R Peterson, K Roberts-Thomson, 'Understanding what drives dentists to work with disadvantaged groups' Research Day, School of Dentistry, Adelaide.

02 Mar 2012: **S Gardner**, 'Scope of Practice: A Dental Therapist's Perspective', BDS1 Class Meeting, School of Dentistry, The University of Adelaide.

Poster presentation during time of candidature

24 Sep 2012: **S Gardner**, T Winning, R Peterson, K Roberts-Thomson, 'Dentists who serve the underserved: a qualitative study', IADR Australian/New Zealand Division, Regional meeting, Denarau Island, Fiji.

Publications of research findings

Gardner SP, Roberts-Thomson KF, Winning TA, Peterson R. 'Intrinsic reward received by a group of dentists who work with underserved groups', *Aust Dent J*, 2014;59:1-7 (see Appendix A.1, pp. 180-186).

Gardner SP, Roberts-Thomson KF, Winning TA, Peterson R. 'Serving the underserved: Why do some dentists do what they do?' *Aust Dent J*, 2013; 58(4):S14-S15.

Published abstracts for conference presentations during candidature

Gardner SP, Winning TA, Peterson R, Roberts-Thomson KF. 'Recruiting dentists for underserved populations: do we simply ask them?' *J Dent Res*, 2014 (Spec Iss B):93, 779. (IADR 92nd General Session).

Gardner SP, Winning TA, Peterson R, Roberts-Thomson K. 'Understanding what drives dentists to work with disadvantaged groups'. *J Dent Res*, 2012 (Spec Iss C):91,169292. (IADR/ANZ Div, 52nd Annual Mtg).

Grants and awards received

Nov 2013: Australian Dental Research Foundation Grant $10,000 (Project code: 6-2013).
S Gardner, K Roberts-Thomson, T Winning & R Peterson.
Project title: Characteristics and motivation of dentists who provide care to underserved populations. A mixed-methods study Stage 2.

Nov 2012: Australian Dental Research Foundation Grant $5,000 (Project code: 2-2012).
S Gardner, K Roberts-Thomson & T Winning.
Project title: Characteristics and motivation of dentists who provide care to underserved populations.

July 2012: Colgate Travel Award $7,000 to attend IADR Australian/New Zealand Division, Regional meeting, Denarau Island, Fiji.

Feb 2011: Divisional Scholarship (3 years full time), Faculty of Health Sciences, University of Adelaide.

Abstract

Disparities in access to dental services have been reported for particular groups of Australians. Consequently, these groups suffer a greater burden of oral disease when compared with the general population. The reasons why dentists do not undertake and/or sustain working with disadvantaged patients are well known but not so well known is what drives those who do. This project aims to better understand the characteristics of dentists whose practice orientation is focused on care for disadvantaged groups. This will supplement existing knowledge of dentists' career decision making, allow more targeted recruitment of dental applicants, and inform admissions committees and dental educators about how best to prepare students with the skills, attributes and experiences necessary to serve all Australians.

The aim of this research project was to explore the characteristics, values, beliefs, and motivations of dentists who work with disadvantaged patients and compare the findings with those who treat mainly general patients.

A sequential mixed-method study design was undertaken. Dentists who worked with underserved groups were purposefully recruited using the 'snowballing' technique and interviewed. Thematic analysis of the transcripts followed; the findings of which formed the basis of the questionnaire sent to a random sample of registered dentists in Australia. Univariate, bivariate and multivariate analyses were performed on the data. The categorical outcome variable was 'dentists treating ≥ 50% or < 50% disadvantaged patients'.

Sixteen dentists were interviewed in the qualitative stage for an average of 47 minutes (range 22-81). Five key themes emerged: 1) 'Tapped on the shoulder'; dentists were personally approached to work with disadvantaged patients; 2) 'Dental school challenges'; challenges faced during training, e.g. assessment, bullying and delayed completion; 3) 'Empathic concern'; the non-judgmental concern for patients when relieving pain and improving their wellness; 4) 'Intrinsic reward'; the personal gain in receiving simple, unexpected rewards that made a difference; 5) 'Resilience'; the

overarching theme, derived from personal experiences and challenges of the work environment.

In Stage 2, 1523 questionnaires were returned, yielding an adjusted response rate of 62.6%. The adjusted odds of dentists' treating disadvantaged patients, was around twice that for those treating < 50% disadvantaged patients for being motivated by 'status' (OR 2.4, 95% CI: 1.32, 4.35), 'to help' (OR 1.8, 95% CI: 1.03, 3.16), 'a challenging career' (OR 2.1, 95% CI: 1.01, 4.40) and 'second choice to medicine' (OR 2.1, 95% CI: 1.11, 3.95). They were 11 times more likely to work in government clinics (OR 11.6, 95% CI: 5.2, 26.0) and had three times the odds of working in the Defence Force or tertiary institutions (OR 3.0, 95% CI: 1.0, 9.2) than in private solo practices. Treating disadvantaged patients was associated with neutral attitudes towards oral health therapists being employed to do so (OR 2.31; 95% CI: 1.09-4.91), being religious (OR 2.23; 95% CI: 1.12-4.42) and working in remote locations (OR 8.60, 95% CI: 2.21-33.48).

The conclusions from Stage 2 were consistent with the qualitative study. Stage 2 showed that career choice motivation, religious affiliation, type and location of practice were associated with a practice orientation toward disadvantaged patients. However, empathy and resilience, key themes from the qualitative study, and socio-economic factors, demographics and dental school experience were not found to be associated after adjusting for other variables.

Declaration

I certify that this work contains no material which has been accepted for the award of any other degree or diploma in any university or tertiary institution and, to the best of my knowledge, contains no material that has been published previously or written by anyone else, except where due reference has been made in the text.

In addition, I certify that no part of this work will be used in a future submission for any other degree or diploma in any other university or tertiary institution, without prior approval from the University of Adelaide and where applicable, any partner institution responsible for the joint award of this degree.

I give consent to this copy of the thesis, when deposited at the University of Adelaide library, being made available for loan and photocopying according to the Copyright Act 1968. In addition, I give permission for a digital version of this thesis to be made available on the World Wide Web under the University of Adelaide's Australasian Digital Thesis Program in accordance with their access and restrictions criteria.

Signature……..

Date …….

Acknowledgements

There are many people whose support and encouragement throughout the four years of conducting this study cannot go without mention because without them, this thesis could not have been completed. Firstly, I extend my sincere thanks to Professor Kaye Roberts-Thomson, my principal supervisor, to whom I owe it all. If it were not for her faith in my ability to undertake this project, it would not have happened. I am indebted to my co-supervisor, Associate Professor Tracey Winning, for her thoroughness in professional guidance throughout the study duration and the timely, meticulous, critical appraisal during the writing of this thesis. Such commitment led to the final submission of this work. To co-supervisor, Associate Professor Ray Peterson, whose support and friendly, relaxed style of communicating came at the right time when my direction had hit a roadblock, I will remain forever grateful.

I wish to acknowledge the support of statistician Ms. Suzanne Edwards, from the Department of Public Health and Mr Sergio Chrisopoulos from ARCPOH, who provided assistance and guidance with aspects of the statistical analysis, and to Ms Ching Wong and Miss Catherine Offler for assisting with the formatting of this thesis. I sincerely thank you.

To my colleagues and friends Dr Xiangqun Ju (Nancy), Mr Kostas Kapellas, Dr Eleanor Parker, Ms Katrina Plastow, Dr Archana Pradhan, Dr Sutee Suksadaj and Dr Wanlapat Suksawas; I am very grateful for the much needed emotional support and timely encouragement you gave throughout my candidature.

I gratefully acknowledge the participation of the dentists in this study who generously gave their time to be involved. Without them, the project would not have been possible.

The unwavering support and understanding of my family particularly that of my husband, during the period leading up to and throughout my candidature, was paramount in seeing this project reach its conclusion. This support and the joy of experiencing the arrival of my grandchildren Harry, Davey, Ellie and Max during this same period, kept the intensity and purpose in perspective.

This work could not have been undertaken without the receipt of a Divisional Scholarship from the Faculty of Health Sciences, the University of Adelaide. In addition, I am grateful to the Australian Dental Association Research Foundation for providing financial support which partially funded this project, (Project ID's 2-2012 and 6-2013), and Colgate Oral Care for supporting my travel costs to present findings to an international audience.

It certainly has been a very enriching experience over these past few years.

Chapter 1. Introduction

1.1 Background

Access to oral health services and receipt of care is not automatic for all Australians. Disparities in access to dental services have been reported for particular groups of Australians and consequently, these groups suffer a greater burden of oral disease when compared with the general population. For example, people living outside capital cities, with less schooling, no health insurance, or eligible to receive public dental care, were less likely to have visited a dentist in the past 12 months (ARCPOH, 2005; National Advisory Committee on Oral Health, 2004; Slade, Spencer, & Roberts-Thomson, 2007). Access is poorer for people living in rural and remote locations where the distribution of dentists is fewer than in urban areas (ARCPOH, 2006a; ARCPOH, 2005). The severely disabled, such as those suffering physical, intellectual or psychiatric impairments, and the infirm elderly, are often reliant on others for their basic oral health care needs. New migrants and refugees facing language barriers are very often neglected when it comes to receiving dental care. Similarly, socially marginalised people (e.g. alcoholics, homeless and illicit drug users), and Aboriginal and Torres Strait Islanders, have poorer oral health, due to long waiting lists for general dentistry (ARCPOH, 2005; Slade, Spencer, & Roberts-Thomson, 2007; Brennan & Spencer, 1999; National Advisory Committee on Oral Health, 2004; Maas, 2006).

Despite strategies in Australia and overseas to address inequalities in access (Fitzgerald, Cunich, & Clarke, 2011; Johnson & Blinkhorn, 2011; Kruger, Jacobs, & Tennant, 2010; Levesque et al., 2009; McQuistan et al., 2010; Medicare, 2008; Price et al., 2008), this problem remains. Therefore the need to bridge the gap between access to care for the dentally disadvantaged and the general population remains critical. The dental profession, as part of a collective of expert service providers, is "jointly responsible to relieve the needs of all people with dental problems, not just those patients that each individual dentist elects to treat" (Welie, 2004, p. 600). Therefore, as a professional, a dentist's primary obligation is "service to the patient" and through that obligation, they must use their 'knowledge, skills and experience to improve the oral health of the public" as part of their "broad responsibility to the community in which he or she practices" (American College of Dentists, 2012, p. 1). The equivalent body in Australia, The Australian Dental Association Inc., states that:

> *Dentists should act at all times in a manner that will uphold and enhance the integrity, dignity and reputation of the profession" and that "Except in emergencies, or where they would be failing in their duties on humanitarian grounds, dentists have a right to decline to treat a patient provided that the reason for refusal does not contravene any legislation or principle of law.*
>
> (Australian Dental Association Inc, 2012, p. 2)

This statement however, does not clearly define the responsibility that dentists have to the community. Instead, the emphasis appears to be the profession to which dentists belong. The greatest proportion (77%) of registered dentists in Australia, work solely in private practice, and around 11% in the public sector only (Chrisopoulos & Harford, 2013; AIHW, 2014). The projected dental workforce in the next 10 years is expected to increase, however the increased demand for dental services is likely to add to the burden of those who currently suffer inequalities in access to care (Luzzi & Spencer, 2011). The majority of care provided for those who have restricted access occurs in the public sector. Reasons why dentists do not sustain working with underserved populations have been reported (Borreani et al., 2008; Chambers, 2001; Hopcraft et al., 2010; Pradhan, Slade, & Spencer, 2009) but little is known about what drives those who do. So, what is it about the few dentists who choose to work with disadvantaged populations? Do they differ from dentists who work in mainstream private practice?

This study will provide the basis for the first systematic steps in examining the complexity of workplace choice for those practitioners who work with underserved populations. The lessons learnt through these findings will be particularly useful for workforce planning, dental educators and for those graduates embarking on a career of this nature.

1.2 Context of the research

In the mid-1960s, the South Australian Government at the time initiated a School Dental Therapy program in South Australia. This program involved the training and employment of a 'low cost auxiliary' to help combat the growing rate of dental disease in school children. I was one of those early dental therapists who, in 1971, commenced employment in Whyalla, a large regional city in country South Australia. The disease rates

in children have fallen dramatically since then due to the application of prevention strategies and water fluoridation (AIHW, 2014b). What has not changed however, are the unmet needs of other identified groups of Australians who suffer disparities in oral health outcomes because of problems with accessing care. Now, 40 years later, as a tenured staff member at the University of Adelaide, I am greatly concerned that the selection process, education system and policy makers are failing to encourage an interest and commitment in enough dentists to serve such groups.

So why are there so few dentists who work with underserved groups of Australians? Is it because dentists are mainly interested in the business of dentistry? Is it because university dental admissions committees are failing to select from a diverse group that represents the breadth of contemporary Australian society? Is it because dentists are conservative by nature and reluctant to face the unknown including challenges associated with working in isolated areas, with elderly people, or with Australian Aboriginal and Torres Strait Islander people? On the other hand, is it that the support systems have not been adequate to allow for continuity of care provision rather than just short-term care or not at all? Why are the same issues being raised about inequalities in access to dental care?

These questions have resonated since I commenced involvement with undergraduate education for dental students in the mid-1990s and provide the basis of my research in an attempt to understand or explain this complex issue.

1.3 Framework for the study

1.3.1 Mixed-methods design

To explore this issue, both qualitative and quantitative approaches were considered necessary as the methodological foundation for this study. The inclusion of a qualitative approach was a way of broadening the evidence base (Barbour, 2000). It was descriptive rather than explanatory, exploratory rather than testing, and less concerned with the causality factor (Begley, 1996). The paradigm for both the researcher and the interview participants in this study was similar, with both parties sharing a basic understanding of the phenomena in question (Morse & Niehaus, 2009).

The main reason for conducting a sequential mixed-method study was that the methodological triangulation was complementary, more robust and expansive in studying this research problem (Daly, Kellehear, & Gliksman, 1997; Denzin, 1989; Greene, Caracelli, & Graham, 1989; Morse & Niehaus, 2009; Tashakkori & Teddlie, 1998). It meant exploring the unknown territory of dentists' deep insights and then using the results of that exploration to design the quantitative stage of the study (Tashakkori & Teddlie, 1998). Together with the analysis of the quantitative data, the interpretation of the findings enabled answers to the research question (Figure 1.1).

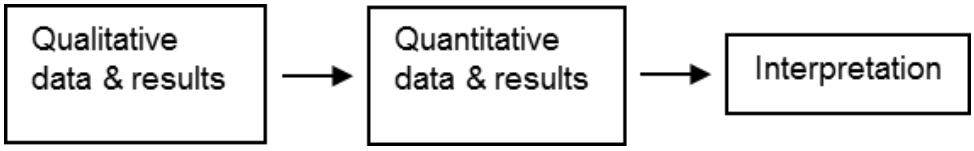


Figure 1.1: Exploratory design direction of mixed-method study

The first stage of this study, data of which included the interview transcripts, was an adaptation of an empirical investigation using Thematic Analysis methodology in which the epistemology is underpinned by the constructionist (or constructivist paradigm) (Braun & Clarke, 2006; Crotty, 1998; Denzin & Lincoln, 2005; Howitt & Cramer, 2009) (Figure 1.2). Thematic Analysis reports on people's experiences and realities using "a constructionist method, which examines the ways in which events, realities, meanings, experiences and so on, are the effects of a range of discourses operating within society" (Braun & Clarke, 2006, p. 81). The social theory of symbolic interactionism stems from the sociologist Blumer's assumptions of how human beings react on the basis of what the meaning of things is to them, the derivation of that meaning, and how that meaning is modified and interpreted (Crotty, 1998, p. 6). The themes in this study were to become obvious as the dentists' reality of their career motivation and workplace choice, including the range of patients for whom they regularly provided care, was explored through semi-structured interviews.

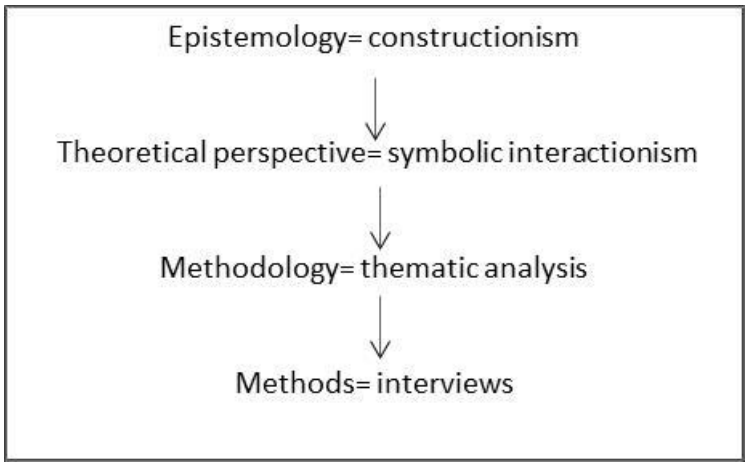


Figure 1.2. Research process for the qualitative study
Adapted from (Crotty, 1998, p. 6)
Note. The terms constructivist and constructionist are often used interchangeably.

The study design for the second or quantitative stage, sometimes referred to as the supplementary stage (Morse & Niehaus, 2009), was a cross-sectional survey using a self-report questionnaire as the data collection instrument. The epistemological view for this stage is objectivism and the theoretical perspective is one of positivism (Crotty, 1998, p. 6). Themes and patterns that became evident from the interview interpretation informed the questions for the questionnaire (Figure 1.3).

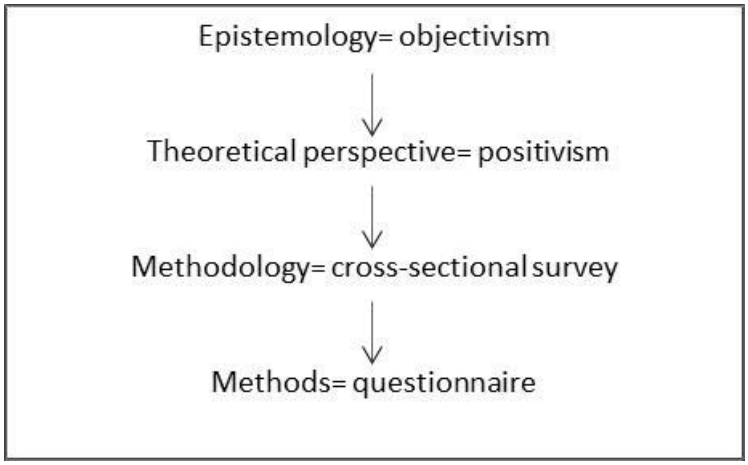


Figure 1.3. Research process for the quantitative study
Adapted from (Crotty, 1998, p. 6)

1.3.2 Alternative approaches considered

The mixed–method study design was always the researcher's preferred approach to answer the research question but an alternative data collection method for the qualitative phase was considered. Focus groups were a feasible alternative to face-to-face interviews, because they are relatively efficient and inexpensive in terms of time and money (Walter, 2010). However, this method was rejected on the grounds that groups could be dominated by one or two individuals with strong opinions and thus disempowering others to speak freely about deep personal views on the subject being explored (Charmez, 2006; Cresswell, 2007; Walter, 2010). Grounded theory was also considered for the methodology but the researcher concluded that the flexible approach of thematic analysis, based on grounded theory principles rather than pure grounded theory, was best suited to answer the research question. It can be argued that the deficiencies of one approach can be overcome by another by combining methods. This combination of methods has become more common in recent health research. Further rationales for the methodological approaches chosen for this study are described in Chapters 3 and 5.

1.4 Researcher's position

My position as the researcher with a long history of practising dental therapy in the public dental system and as an educator of students enrolled in dentistry and oral health programs provided a sound foundation for understanding the complexities associated with practice activity. My working knowledge and application of the principles of communication sensitively allowed the participants to answer questions freely in their own words. In my position as the researcher, I was able to respect and interpret the data collected in the qualitative stage and bring them together in the written form to allow the reader a close connection with the views and experiences being studied (Crotty, 1998; Grbich, 2007; Kitto, Chesters, & Grbich, 2008). Whilst I have stated my previous experience and interest preceding this research (see Section 1.2), I am confident that this did not hinder the questions asked of the participants. Trust was established and the verbal and written reassurance that confidentiality would be maintained at all costs was made very clear. My position was that of a learner in qualitative techniques which meant I required direction and support throughout the duration of this study.

1.5 Significance and purpose of the study

To the best of the researcher's knowledge, the literature that exists does not fully explain the characteristics and attributes of dentists who work primarily with disadvantaged members of the Australian population. The disparities in access continue to occur and if these characteristics of dentists were clarified, it would supplement existing knowledge of dentists' career decision making, allow for a more targeted recruitment of dental applicants, and inform admissions committees and dental educators in how best to prepare students with the skills, attributes and experiences necessary to serve all Australians. Therefore, the purpose of this study was to explore the characteristics, values, beliefs, and motivations of dentists who work with disadvantaged patients and to compare findings with those who treat mainly general patients.

1.6 Outline of the thesis

This chapter and the next (Chapter 2), provide an overview of the study, the background on disparities in access to dental care for disadvantaged groups, and the researcher's perspective of the problem, which led to this investigation. The second part includes an in-depth review of the published literature, emphasising the disparities in oral health outcomes for underserved or marginalised groups. It provides an account of the oral health status of disadvantaged groups of Australians, a comprehensive review of barriers to access, and the solutions and strategies that have been applied to address these barriers. It highlights the gaps in the literature, supporting the need to investigate the problem through a mixed-method approach using a sequential qualitative/quantitative design.

Chapters 3 and 4 specifically relate to the qualitative component of the study (Stage 1). The first of these two chapters includes the rationale for the study design, data collection, and recruitment of dentists treating primarily disadvantaged patients. Chapter 4 follows with the characteristics of the participating dentists, and the coding and categorising of interview information, leading to the deduction and validation of meaningful sub-themes and key themes.

Chapters 5 and 6 are dedicated to Stage 2 of the research project. Chapter 5 provides a description and rationale for the questionnaire as the survey instrument, followed by the sampling frame, sample size calculation, the pilot study verification to support the sample size, and ethical considerations. Chapter 6 presents the results from the analysis of data

collected from the questionnaire. These results include response rates, a description of the dentist respondents, data reduction, and bivariate and multivariate associations between characteristics of dentists with the outcome variable.

Detailed discussion of the findings is presented in Chapter 7. This discussion includes comparative studies to draw together the main findings from the mixed-method study, implications of the study, limitations and areas for further research. Concluding statements addressing the main aim of the research are summarised in the final chapter of this thesis (Chapter 8).

A complete list of all citations contained in the text, ordered alphabetically by the author/s' last name, follows the conclusion chapter. The appendices section contains examples of all correspondence and material sent to participants for both Stages 1 and 2 of the research project, supplementary tables and graphs and published material pertaining to this study.

Chapter 2. Literature Review

Disparities in access to dental services leading to poorer oral health outcomes are a global phenomenon (Petersen, 2008; Sheiham et al., 2011; U.S. Department of Health & Human Services, 2000). However, the focus of this literature review is to define dentally disadvantaged community groups in Australia, the oral health status of these groups, and the measures that have been implemented to attempt to overcome oral health and health disparities amongst these groups. It also provides an overview of the theories that could potentially be aligned to the research questions, the definitions of components of the research questions and lastly, it reveals the gaps in the knowledge that led to the rationale for conducting this study.

2.1 Defining dentally disadvantaged groups

In Australia, people identified as having poorer oral health outcomes than the general populations can be classified into the following groups; Aboriginal and Torres Strait Islander people, the frail elderly and dependent 'others' living permanently in residential care facilities (RCF), people with special needs, prisoners, new migrants and refugees and people who live in rural and remote areas. Other low-income earners and socially marginalised people (e.g. the homeless and alcoholics), are also defined as underserved community groups in the context of experiencing disparities in access to dental services.

2.1.1 Aboriginal and Torres Strait Islanders

The total estimate of people who identified as being of Aboriginal or Torres Strait Islander descent in 2006 was 517,200, which was around two per cent of the total population of Australia (ABS, 2007). The states of New South Wales and Queensland had the largest estimated resident populations of Aboriginal or Torres Strait Island people, followed by Western Australia and the Northern Territory. The lowest proportions of Aboriginal and Torres Strait Islander people were reported in Victoria. The geographic distribution of this group had a major influence on their disease experience (Figure 2.1). For example, in 2005-2007 the life expectancy at birth for an Aboriginal and Torres Strait Islander person was estimated to be 67 years for males and 73 years for females, which respectively, was 11.5 years and 9.7 years less than for non-Aboriginal and Torres Strait Island males and females (ABS, 2010b). Whilst the majority live in urban areas of

Australia, it is the 25% of these people who live in remote communities (ABS, 2010b) who have the greatest general and oral health needs (Steering Committee for Indigenous Health Equality, 2010). These Australian citizens are under-represented in undergraduate university courses resulting in education inequity in addition to having poorer health outcomes (Murray & Wronski, 2006). Being constrained by availability of resources has contributed to untimely access to dental care for Aboriginal and Torres Strait Islanders resulting in the progression of dental disease and compromised treatments (Roberts-Thomson, Spencer, & Jamieson, 2008).

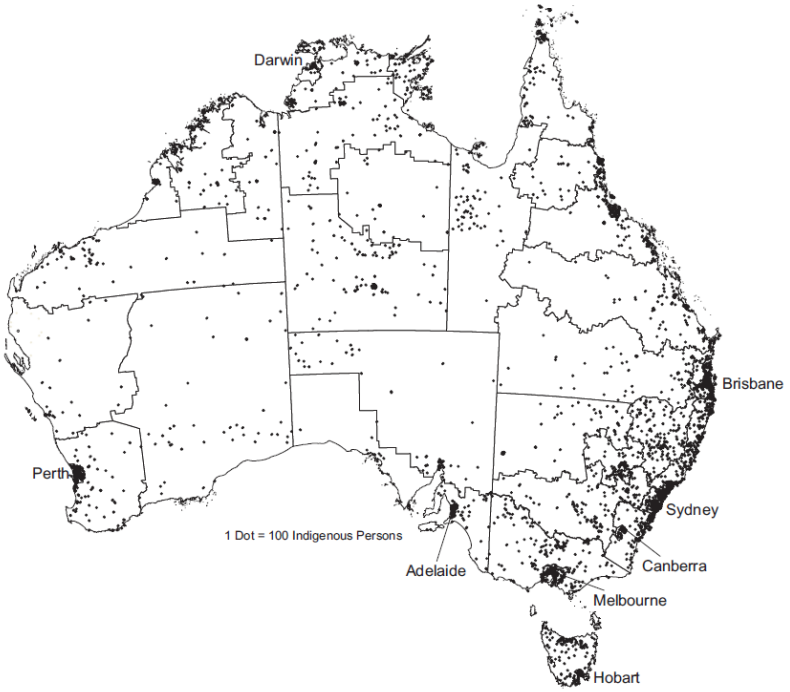


Figure 2.1: Population distribution of Indigenous people 2006
Indigenous region boundaries. (ABS, 2007)

2.1.1.1 Oral health status of Aboriginal and Torres Strait Islanders

Aboriginal children have almost twice the levels of dental caries and more untreated decay than non-Aboriginal Australian children (Roberts-Thomson et al., 2008). Aboriginal and Torres Strait Islander adults have a greater edentulous rate and experience more periodontal disease than non-Aboriginal and Torres Strait Islander Australians (Roberts-Thomson, 2004; Roberts-Thomson et al., 2008). Severe oral health impairments such as dental pain, dental dysfunction and issues with appearance are prevalent amongst young indigenous Australian adults (Jamieson, Roberts-Thomson, & Sayers, 2010). In a small study of a sample of Aboriginal and Torres Strait Islander people in two correctional

service facilities in the Northern Territory, untreated caries and periodontal disease were significantly more prevalent compared to national-level estimates (Kapellas et al., 2014).

2.1.2 People with special needs

Special needs dentistry is the delivery of care tailored for individual needs of patients with disabling medical conditions or those with mental or psychological limitations that require consideration above the routine approach (Davis, 2009; Dolan, 2013; Ettinger, 2010). In Australia, special needs dentistry refers to

> *That part of dental practice, which deals with patients where intellectual disability, medical, physical or psychiatric conditions require special methods or techniques to prevent or treat oral health problems, or where such conditions necessitate special dental treatment plans.*
> (Australian Dental Association Inc., 2010, p. 5)

The Australian National Oral Health Plan for 2004-2013 stated 'it is estimated that around one million people would be in the 'special needs' category for oral health' (p. 31) and a workforce skilled in the area to meet the treatment needs of this group is needed (National Advisory Committee on Oral Health, 2004). Increasing numbers of people are experiencing severe mental illnesses, and these people are often left largely unsupported when it comes to receipt of community mental health services (McFadyen & Farrington, 1996). Some of the problems associated with patients with mental, intellectual and physical disabilities accessing care, are the lack of awareness of what services are available, not being able to communicate their needs, and the insufficient numbers of dentists prepared to provide that care (Pradhan, 2008; Pradhan, Slade, & Spencer, 2009; Tsai et al., 2007). Limitations in dentists' skills and interest, cost factors, the need for extra time, transportation problems and policy barriers all contribute to poor oral health outcomes which are further compromised by the complexities of the patients' medical histories requiring an interdisciplinary team approach (Butler, Chilvers, & Cane, 2007; Davis, 2009; McQuistan et al., 2008; Waldman & Perlman, 2002b; Wolff et al., 2004). Despite these challenges, dentists have reported feeling enriched by helping patients with special needs and 'feeling at peace with oneself' when doing well for others (Berthelsen et al., 2010). In Taiwan for instance, where financial incentives are provided to dentists to treat 'special needs' patients, dentists reported being driven by the desire to help a minority

group, they had friends or family members with disabilities, and they wanted to improve their own experience of treatment provision (Tsai et al., 2007).

2.1.2.1 Oral health status of people with special needs

A study of children with disabilities in Melbourne revealed that 41% aged from 9-13 years required simple treatment and had significantly more unmet restorative, periodontal and preventive treatments and more malocclusions than children without disabilities (Desai, Messer, & Calache, 2001). In South Australia, around 19% of adult patients with special needs required general anaesthesia for an oral examination and treatment and 13% required oral sedation for the same procedures (Pradhan, 2008; Pradhan, Slade, & Spencer, 2009). This rate is very high compared with less than one percent of Australians in general, who required hospitalisation for dental procedures (AIHW, 2014b).

2.1.3 Residential Care Facility residents

People in residential care facilities are mainly elderly or suffering from dementia and are therefore dependent on others for their day-to-day care. Delivery of oral care for geriatric patients is complex. Practical issues relating to levels of training and feeling comfortable around elderly patients have been reported (Strayer, 1999). Care is further complicated where the physical and cognitive faculties of elderly patients is impaired (Matear & Gudofsky, 1999). The cost of dental care, accessibility, availability, and denture wearers' perceived lack of need for care have been identified as barriers to dental care for older persons (Borreani et al., 2008). Some elderly patients reliant on public dental services felt 'intimidated by younger, inexperienced dentists' with whom they 'lacked the opportunity to develop relationships' (AIHW, 2010). In addition, many dentists felt they lacked the skills, while others were not interested in treating patients in elderly care facilities (Borreani et al., 2008; Chalmers et al., 2001; Hopcraft et al., 2008; Nitschke, Ilgner, & Müller, 2005).

With the growing numbers of adults who will require assisted care in the future, greater accessibility to such services will be needed (ARCPOH, 2010). The complexities of the medical conditions in the elderly and their social needs will remain a challenge to the dental profession (Strayer, 1999). With older adults retaining more of their teeth, they are at greater risk of periodontal disease and caries due to a decline in their functional abilities in maintaining sufficient oral hygiene practices (Strayer, 1999). Meeting oral

health needs of the geriatric populations has been highlighted and recommendations have been developed to address some of the issues (Bullock, Berkey, & Smith, 2010). For example, under the Residential Care Accreditation Standards (Item 2.15) (Australian Government, 2013), it is mandatory that residents in aged-care facilities have their oral and dental care maintained. This right to access appropriate quality care in relation to oral health is in accordance with the Charter of Residents Rights and Responsibilities.

2.1.3.1 Oral health status of Residential Care Facility residents and the elderly

People with dementia have more root and coronal caries, more retained roots and more missing or filled teeth than the general population (Chalmers et al., 2005; Ettinger, 2010). The elderly in Residential Care Facilities have a significantly greater risk of developing complex dental problems that are exacerbated by 'abundant general health, functional, cognitive, social and financial problems' (Chalmers et al., 2010, p. 6). Edentulous people over 60 years of age were more likely to seek extractions for relief of pain because of the lower cost in comparison to having restorative treatments (ARCPOH, 2010).

2.1.4 Prisoners

It is estimated that there are 30,000 incarcerated people in Australia including young people in juvenile detention (ABS, 2011c; AIHW, 2009). The highest imprisonment rates are in the Northern Territory and Western Australia and of the total prison population, 26% identified as being Aboriginal or Torres Strait Islander people (ABS, 2011c). Aboriginal and Torres Strait Island juveniles were 30 times more likely to be in detention than non-Indigenous youths (AIHW, 2009).

Dentists working in prisons face challenges of prisoners' dental anxiety, frequent security checks and being surrounded by guards, and being unable to freely administer pain relief or provide particular oral hygiene products (Smith et al., 2011). Despite having to overcome these challenges associated with delivering care, Smith and colleagues (2011) found that the dentists were motivated in their work by the hope that prisoners' oral health may be improved whilst realising that other social and addiction problems were likely to remain.

2.1.4.1 Oral health status of prisoners

Ninety-three percent of incarcerated adults in NSW required some form of dental treatment–mostly in the 25-40 year age group (Osborn, Butler, & Barnard, 2003). The National Oral Health Survey of Australia conducted between 1987 and 1988, revealed that there was almost five times the number of tooth extractions in the prison population than in the general population (Osborn, Butler, & Barnard, 2003). A systematic review of 21 studies conducted since 1990, found the oral health status of institutionalised prison populations to be poorer than the non-institutionalised populations (Walsh et al., 2008). Adolescents in juvenile correctional facilities in Australia had poorer periodontal health than their aged-matched community peers (36% cf. 0.3% with periodontal pockets ≥4mm in depth) (Robert-Thomson & Spencer, 2006). However these authors did not find a significant difference in the mean caries experience (DMFT) with their community peers.

2.1.5 New migrants/refugees

Whilst there has been limited research on the oral health status of new migrants and/or refugees, their focus on surviving past experiences and trauma and difficulties accessing professional care resulted in a reduced focus (Finney Lamb, Klinken Whelan, & Michaels, 2009). Differences in service provision have been reported amongst non-Australian born patients and therefore potentially could result in inequality in dental services based on culture (Brennan & Spencer, 1999). With a growing number of culturally diverse groups settling in Australia, it is likely that this group will continue to suffer disparities in accessing dental services due to language barriers, communication issues and cost (Mariño, Minichiello, & MacEntee, 2010).

2.1.5.1 Oral health status of new migrants/refugees

Newly arrived refugees in Australia have more untreated decay than the general Australian population and receive more emergency care resulting in them being a specific group at risk of having poorer dental outcomes (Davidson et al., 2006; Kingsford Smith & Szuster, 2000). In a recent study, Hazara refugees to Australia were found to have poor oral health and multiple extractions (Finney Lamb et al., 2009). In contrast, the oral health status of Vietnamese people did not reflect the findings of other migrant groups in terms of caries experience; however they did reflect having more unmet dental needs than those who had spent most of their time in Australia (Mariño, Wright, & Minas, 2001).

2.1.6 People with low socioeconomic status (SES)

People with low SES are defined as those who are disadvantaged in accessing material and social resources thus affecting their ability to participate in society (ABS, 2011b). This status would also apply to many of the people identified in the previously mentioned groups. In Australia, 13.9% of people live in poverty, 17.7% of all children live in poverty and people from outside capital cities are worse off than those living in capital cities (Australian Council of Social Service, 2014).

2.1.6.1 Oral health status of people with low SES

Government concession cardholders in Australia have poorer oral health (AIHW, 2014b), a greater incidence of toothache and poorer self-rated oral health than non-card holders (ARCPOH, 2005). High dental disease prevalence (high DMFT scores) have been found to be associated with lower household income (Chrisopoulos & Harford, 2013). A national oral health survey of Australian children found that both 5-6 year olds and 12 year olds from low SES status areas had around 70% more decayed missing and filled deciduous teeth and permanent teeth respectively than those from the highest socioeconomic status areas (AIHW, 2011). Economically disadvantaged people in the US also have more periodontal disease than the general population (Garfinkle, Richards et al. 2010). Australians without dental insurance have more untreated decay, missing teeth and fewer filled teeth than those with insurance, which is a reflection of experiencing delays in receiving dental care (Chrisopoulos & Harford, 2013). The same study showed that a higher income was associated with fewer missing teeth due to caries than those in the lowest income groups.

2.1.7 People living in rural and remote areas

Access to dental services is problematic for people in rural and remote areas because of very large distances required to reach clinics, infrequent visits of mobile services and the lack of specialists' services available to them (ARCPOH, 2006a; ARCPOH, 2005). One third of all Australians live outside the major cities thus making access to general health services and health outcomes generally poorer relative to those living in metropolitan areas (Wakerman et al., 2008). According to the national survey conducted in 2002, one in three persons from remote areas had not visited a dentist in the last two years, which was significantly higher than for those living in urban areas (ABS, 2010a; ARCPOH, 2005).

2.1.7.1 Oral health status of people living in rural and remote areas

Older people from rural areas have higher rates of edentulism than those from urban areas (35% cf. 29%) (ARCPOH, 2005). Recent figures show that Australian dentate adults living in major cities had more favourable dentist visiting patterns than those from remote areas (52.7% cf. 34.1%) (Chrisopoulos & Harford, 2013). Similarly, this study reported that dentate urban adults had the lowest rate of unfavourable attendance (14.8%) compared with those in outer regional areas (26.2%). Visiting a dentist for a problem increased the likelihood of having extractions as opposed to restorative care (ARCPOH, 2005). The proportion of people, including children, with untreated decay was significantly less for people living in major cities compared with those in remote areas (23.5% cf. 37.6%) (AIHW, 2014b; Ha, Crocombe & Mejia, 2014).

2.2 Barriers to access to dental services

A common issue faced by disadvantaged groups is one of limited access to dental services which has been highlighted in the previous chapter (see Section 1.1, p. 1). Various barriers contribute to these groups accessing dental services. These barriers have been associated with structural, personal and professional issues associated with particular groups of Australians not receiving adequate care and are describe in more detail in the following sections.

2.2.1 Structural

The disproportionate distribution of the dental workforce based on geographic location is a major contributor for lack of access to dental services in Australia (ARCPOH, 2008). For example, the number of dentists per 100,000 people in 2012 was 72.3 in capital cities, 45.6 in inner regional areas, 39.0 in outer regional and 22.7 in remote areas (AIHW, 2014a). The number of dentists employed as clinicians in each state or territory in 2011 is shown on the following map, making a total of 12,767 dentists (Figure 2.2) (AIHW, 2014a). There was just over a five per cent increase in the number of dentists employed in the dentist workforce from 2011 to 2012 (AIHW, 2014a).

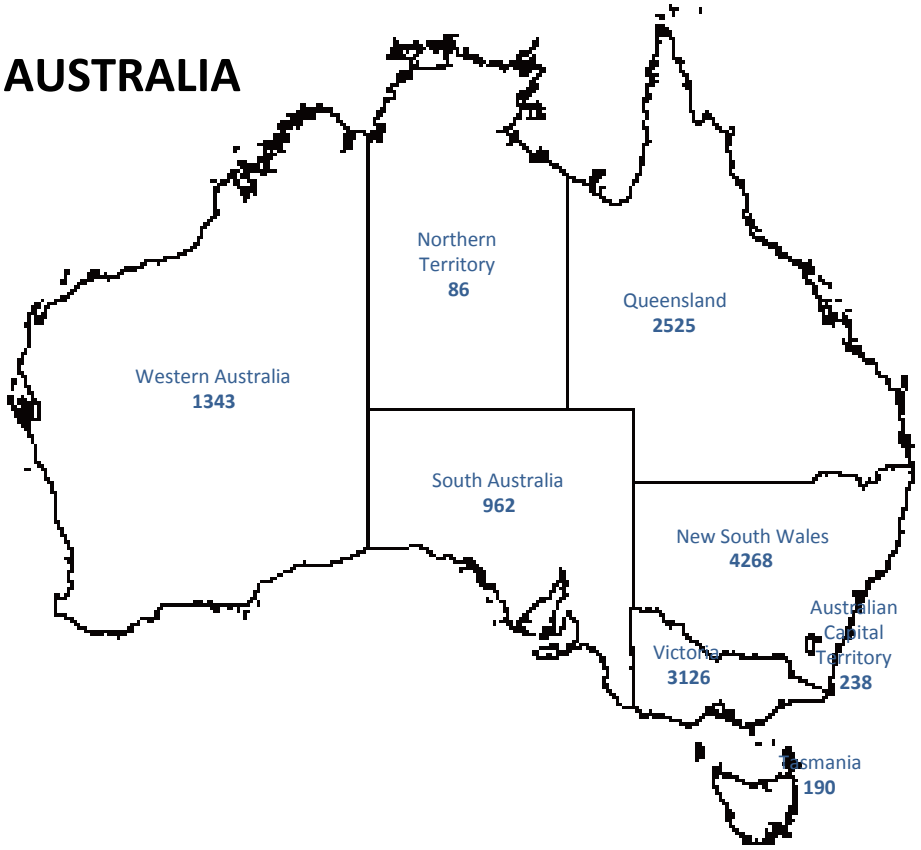


Figure 2.2. Employed dentist clinicians by state and territory in 2012
(AIHW, 2014a)

Note: Derived from state and territory of main job where available; otherwise, state and territory of principal practice is used as a proxy. If principal practice details are unavailable, state and territory of residence is used. Records with no information on all three locations are coded to 'Not stated'. Source: NHWDS: dental practitioners 2012.

Further to the distribution of workforce numbers contributing to access difficulties, the mean hours worked by dentists also contribute to dentists' availability to see disadvantaged patients. In 2012, clinicians in private practice worked the most hours with fewer hours worked by dentists in residential care facilities and correctional services (Table 2.1). Dental office design and transportation of patients and/or portable equipment is a barrier for some, particularly those with special needs, including institutionalised patients (Borreani et al., 2008; Hopcraft et al., 2010; Pradhan, 2008; Pradhan, Slade, & Spencer, 2009).

Costs of establishing and providing maintenance to dental clinics in rural and remote regions are higher than the costs in more populated regions (Hopcraft et al., 2010). Dentists working in rural and remote regions have reported feeling professionally isolated, and lacking the support of mentors (National Rural Health Alliance, 1998). These factors

are associated with the recruitment and retention of the dental workforce in non-capital cities.

Remuneration disparities, being restricted in the scope of service provision, the high administrative component and limited autonomy, particularly for dentists working in the public sector, affect job satisfaction and hence the dentist-patient relationship (Hopcraft et al., 2010; Li, Williams, & Scammon, 1995; Luzzi & Spencer, 2011; Myers & Myers, 2004; Smith et al., 2011). Many patients, particularly those in institutions, are often unaware of services available to them, and this, along with staff apathy, uncooperative administrators, and lack of organisational support, often results in patients not receiving timely dental care (Chalmers, 2001; Cumella et al., 2000; Pradhan, 2008; Pradhan, Slade, & Spencer, 2009).

Table 2.1: Employed dentists by work setting of main job, clinician status and hours worked per week in 2012

	Clinician[a]		All dentists	
Work setting of main job	**n**	**hours[b]**	**n**	**hours[b]**
Private practice	10,179	37.4	10,254	37.3
Aboriginal health	49	33.3	54	32.5
Community healthcare	409	34.6	435	34.5
Hospital	698	36.7	773	36.4
Residential healthcare	15	31.0	15	31.0
Commercial/business	51	37.6	66	38.1
Education facility	92	35.1	282	35.9
Correctional services	10	31.4	10	31.4
Defence Force	109	35.7	118	36.1
Other government department	85	36.0	109	36.1
Other	113	32.9	147	31.4
Not stated/inadequately described	956	37.1	1,001	37.3
Total	12,787	37.1	13,288	37.0

[a]A clinician is a practitioner who spends the majority of their time working in clinical practice
Source: Adapted from NHWDS: dental practitioners 2012
[b]Mean hours worked per week
(AIHW, 2014a)

2.2.2 Personal factors for the patient and dentist

Many reasons have been reported by both dentists and patients to result in particular groups of patients not receiving adequate dental services.

2.2.2.1 Dentists

High levels of anxiety, lack of confidence treating patients with complex medical histories, and the practical issues with caring for patients with physical and cognitive impairment have affected dental care provision (Bedi, Champion, & Horn, 2001; Davis, 2009; Matear & Gudofsky, 1999; Tsai et al., 2007). Dentists in the US were more than twice as likely to feel comfortable treating 'low-income' patients if they worked in a non-solo practice (McQuistan et al., 2008). Uncooperative patients, incompetent staff, low wages and having a lack of control over the process of delivering care, have been personal barriers expressed by dentists (Chambers, 2001).

2.2.2.2 Patients

People without dental insurance do not have as favourable dental visiting patterns compared with those with insurance (Luzzi & Spencer, 2011; Spencer & Harford, 2007). In a study by Levesque et al (2009), it was reported that for some welfare recipients, day-to-day survival was a priority, so being able to predict where they might be in the future, makes scheduling and keeping appointments difficult. This same study sample also reported a feeling of shame and embarrassment; they preferred privacy when completing forms and relaying histories, rather than doing so in a common waiting room. Other issues identified were a need for patients being involved with treatment planning and for practitioners not to assume what patients could or could not afford. These issues were confounded by not knowing what services they were entitled to and feeling too embarrassed to ask (Levesque et al., 2009). People living in poverty have described their feelings and frustrations in accessing dental services, such as having to wait to access dental care for six months after qualifying for welfare (Levesque et al., 2009), and then only being provided a limited coverage of dental services.

Other factors reported by patients that have affected access to dental services include not being able to afford dental care; their perceived need for care may differ from their actual need, and their willingness to seek care (Borreani et al., 2008). Many people, particularly new migrants and refugees, have reported a lack of trust in the provider or the

health system (Finney Lamb et al., 2009; Matear & Gudofsky, 1999). New arrivals have also reported feelings of cultural isolation such as language barriers, and having different political status and/or values until they 'attain integration into the health care system' (Guay, 2004).

2.2.3 Professional

A lack of training, education, knowledge, interest and exposure are reasons reported by some dentists for not providing treatment for particular groups of patients (Bedi et al., 2001; Borreani et al., 2008; Davis, 2009; McQuistan et al., 2008). Furthermore, dentists are more likely to provide care to the same ethnic group as themselves (Davis, 2009). However, variations in educational opportunities for ethnic and cultural minorities, has resulted in an underrepresentation of dental health workers from these minority groups in the health workforce (Murray & Wronski, 2006; Price et al., 2008). The disconnectedness of dentistry from other health care such as medicine, such that it is practised in isolation, has not contributed to a united front for wanting to reduce health disparities (Rule & Welie, 2009).

In the private sector, service provision varies due to socioeconomic and geographic barriers. Practice beliefs and patient preferences, including patients' oral health status, have impacted on the types of services provided (Brennan & Spencer, 2005). Dentists prefer compliant patients, who value and maintain their oral health, who are on time for appointments, and accept the treatment plan proposed (Brennan & Spencer, 2006).

2.3 Solutions and approaches

Several approaches to change the inequalities in dental service access for disadvantaged groups have been tried. Examples such as changes to dental education curricula, selection procedures, and workforce and government policies are described in more detail in the following section.

2.3.1 Dental education

Exposing undergraduates to specific knowledge and interventions has recently been introduced in dental education and found to be positively associated with alumni behaviours (Levesque et al., 2009; McQuistan et al., 2010). Dentists, who perceived their community-based rotations as dental students beneficial, were more likely to feel

comfortable treating patients from low-income groups (McQuistan et al., 2008). If their dental school experience was positive in terms of providing care for underserved populations, the more likely they were as graduates to treat these populations (Smith, Ester, & Inglehart, 2006). However, it was clear that exposure to diverse groups of patients during dental school, particularly those from underserved groups, did not automatically result in graduates choosing to work with these groups (Smith, Ester, & Inglehart, 2006). Recent studies exploring new dentists' depth of understanding of treating underserved populations have been conducted (Berthelsen et al., 2010; McQuistan et al., 2008; McQuistan et al., 2010). These studies addressed the degree to which community-based clinical rotations in dental schools prepared dentists to work with specific population groups. Dental students generally regarded the patients they treated in the community-based clinics as a whole, rather than representatives of specific groups (ie., elderly or special needs patients), and therefore reported a positive association. The studies did not however target dentists with prolonged experience working with disadvantaged groups to gauge their attitudes and motivation.

Dentists from underrepresented minority backgrounds were more likely to see patients from similar backgrounds and from the same ethnic groups as themselves (Smith, Ester, & Inglehart, 2006). Introducing rural experience for undergraduates has been undertaken in the hope that they will return to practise in rural centres (Johnson & Blinkhorn, 2011). The number of years since dentists graduating was not significantly associated with their comfort levels in treating specific population groups, along with gender (except in the case of incarcerated patients), in McQuistan et al's (2008) study. The feeling of safety may have influenced comfort levels in this latter case (McQuistan et al., 2008). It has been reported that the better the dentists were educated in the treatment of SHCN patients, the more likely they were to treat them with confidence and with a positive attitude (Dao, Zwetchkenbaum, & Inglehart, 2005; Vainio, Krause, & Inglehart, 2011). The typical learning experience is that dental educators assist in developing the students' belief in the 'social justice imperative' to provide care to underserved populations upon graduation (Graham, 2006). Whilst exposing students to community clinics and low SES groups can have a positive influence, it can also mean that educators, at times, expose students to negative role modeling. For example, this can subtly reinforce the idea that patients' neglect of oral care and missing of appointments means they are not deserving of the care available to them (Graham, 2006).

2.3.2 Selection

Students selected for dentistry are not representative of a wide pool of applicants; rather, they are likely to come from 'more privileged' backgrounds with few from rural areas, low SES backgrounds and Aboriginal or Torres Strait Islander groups (Mariño et al., 2006). Despite attempts for rural recruitment and rurally based education and training, this education disadvantage only adds to poorer health outcomes for these people (Davidson et al., 2006; Murray & Wronski, 2006). Whilst there is no clear evidence that dental students from rural areas return to work in the rural areas, there is some evidence that suggests that medical graduates are more likely to want to return to their rural origins (Braunack-Mayer, 2005; Laven & Wilkinson, 2003).

The intention of selection also has been that the dental schools belong to a moral community, providing a platform from which graduates can apply their knowledge and skills with moral integrity, demonstrating fairness and equality in the care they deliver (Nash, 2010). Because of this, it has been recommended that dental educators consider assessing empathy in the admissions process (Nash, 2010). The positive association between empathy and moral integrity increases over time, according to Hoffman's research (cited in Vogt, 2003). The selection process appears to be failing to select enough students with the intrinsic traits of wanting to provide care to underserved populations, which suggests that the applicant criteria should be validated to determine whether the societal needs of accessing dental care are being addressed (Ranney, Wilson, & Bennett, 2005).

In Australia, selection processes rely on traditional methods of scoring applicants based on academic merit (e.g. Grade Point Average (GPA), Tertiary Entrance Rank (TER) or Australian Tertiary Admissions Rank (ATAR)), psychometric testing (e.g. Undergraduate Medicine and Health Sciences Admissions Test (UMAT)) and oral assessments. Whether these methods recruit suitable applicants, who will make suitable dentists, is constantly being questioned (Barbour & Sandy, 2014; Edwards, Friedman, & Coates, 2011; Gardner & Roberts-Thomson, 2014). Changes to admission processes in the US have been implemented to recruit from underrepresented minority groups in the hope of 'influencing workforce diversity and reduce oral health disparities' (Price et al., 2008, p. 1275). This has been necessary because ethnic and racial diversity in dentistry has been attributed to oral health disparities experienced by minority ethnic and racial groups in the US (Bailit, 2008; Edmunds, 2006; Price et al., 2008).

2.3.3 Dental workforce

As noted previously, there is a maldistribution of practising dentists in Australia by location (see Section 2.2.1., pp. 16-17). For example, in 2012, Australian capital cities had 72.3 dentists per 100,000 population, 45.6 dentists per 100,000 in inner regional areas, 39.0 dentists per 100,000 in outer regional areas and 22.7 dentists per 100,000 in remote areas (AIHW, 2014a). There are large deficiencies in the numbers of dentists working in Tasmania and even fewer numbers working in rural areas when compared with the rest of Australia (Cane & Walker, 2007). To improve the services to Aboriginal and Torres Strait Island communities in remote Western Australia, a threefold approach of a sustainable model (e.g. integrating education, service and research) has been implemented (Kruger, Jacobs, & Tennant, 2010). This initiative, called the Centre for Rural and Remote Oral Health (CRROH), offered a flexible model of service delivery that is well supported by strong mentorship, opportunities for research and the increased use of experiential learning in undergraduate dental education. Dental schools in regional universities of Australia have recently been established in the belief that graduates would most likely remain working in regional areas (Insight Economics, 2012).

In 2013, the Voluntary Dental Graduate Year Program (VDGYP) was introduced to Australia. The purpose was to increase the experience of new graduates whilst working in a 'structured and supported' environment, which would in turn, increase workforce capacity, particularly in the public sector (Australian Government Department of Health, 2013). A similar graduate year for oral health therapists (OHTs), known as the Oral Health Therapists Graduate Year Program (OHTGYP), was introduced in 2014. Once again, the purpose was to provide a 'structured transition to practice' whilst increasing the workforce and delivery of dental services, mainly in the public sector (Australian Government Department of Health, 2013). Opportunities to work with underserved populations would be encouraged through these programs. The effectiveness of these initiatives in reducing disparities in access to services is yet to be evaluated due to the recent roll out of these programs. Likewise, the evaluation of the outcomes of the overseas-trained dentists employed through the Public Sector Dental Workforce Scheme (PSDWS) in an attempt to alleviate dentist workforce shortages in rural and remote areas (Australian Dental Council, 2011) is yet to be conducted. To be eligible, dentists must have graduated from specific

universities from Canada, USA, UK, Republic of Ireland, Hong Kong, Malaysia, Singapore, or South Africa.

In an attempt to recruit more dentists to provide care to disadvantaged groups, in-depth interviews have been used to gather evidence from these dentists, focusing on the positive aspects of their work, rather than on the disadvantaged patients they treat (Berthelsen et al., 2010). This study was a qualitative exploration where the intent was to gain a deeper understanding of what general dentists regard as 'good work'. It found that the dentists' clinical component was very satisfying whilst allowing engagement in good patient relations at the same time. The balance between work and private life provided the moral foundation of their professional conduct. Loignon and colleagues (2010) also used a qualitative approach to explore the motivations of dentists who provided humanistic care to people in poverty. The main elements which emerged from their study were: (1). understanding the social context of the patient (family violence, cultural factors, not stigmatising) (2). taking time and showing empathy (not being judgemental, not complaining about extra time to show empathy) (3). avoiding moralistic attitudes (recognising that following treatment plans and preventive advice is difficult or challenging for those living in poverty), (4). overcoming social distances (despite dentists being privileged, regarding themselves as human beings just like their patients; extending a warm welcome) and (5). favouring direct contact with patients (answering the telephone, establishing trust and negotiating ways of payment) (Loignon et al., 2010). The study demonstrated that social competency of dentists can be attained and the authors suggested that openness to working with disadvantaged may have been linked to the dentists' own social and cultural backgrounds.

2.3.4 Policy changes to improve access to dental care

Several policies have been implemented by both State and Commonwealth governments to improve access to dental care for low income Australians. These have included the school dental services, free or subsidised public dental care to Health Care Concession card holders, private health insurance rebate for dental ancillary benefits, the Medicare chronic disease dental scheme and the Teen Dental program (Fitzgerald, Cunich, & Clarke, 2011; Medicare, 2008). Insufficient time has lapsed since the implementation of the latter initiatives to allow for a thorough evaluation. Targeted programs such as the community-orientated primary health care intervention, specifically designed to improve

the oral health of Indigenous pre-school children, have been tried. This approach was found to have no significant effect on health behaviours although the fluoride varnish application was effective in reducing caries (Roberts-Thomson et al., 2010). A social insurance scheme known as Denticare Australia has been proposed by The National Health and Hospitals Reform Commission (Biggs, 2009; Spencer, 2010). This scheme would aim to allow all Australians a fairer system in being able to access and afford basic dental services.

Other initiatives to address inequalities include broadening of the scope and practice of dental auxiliaries (e.g. removing the age restrictions for patients treated by dental therapists). Supervision requirements for dental hygienists have changed enabling them to address inequalities in access to dental care for aged-care residents and children from low income families (Nash, 2010). 'Mid-level' practitioners have been utilised to provide primary care to underserved groups and this continues to be a topic of interest in health reform policy in the US (Evans, 2011; Gelmon & Tresidder, 2011; Williard & Fauteux, 2011). An intern year, similar to the VDGYP (see Section 2.3.3, p. 23), for Australian graduate dental students and overseas-trained dentists has been proposed (Australian Dental Association Inc, 2010). Offering incentives for rural and regional employment is also expected to reduce the waiting lists and address maldistribution problems of the dentists' workforce (Australian Dental Association Inc, 2010).

A systematic review of medical care has identified issues associated with primary health care provisions in geographically large countries such as Australia and Canada (Humphreys et al., 2008). These issues relate to growing patient demands, increased technology, and increased burden of chronic disease (due to an ageing population), which are worldwide issues with health systems. Given that the disease patterns are different to those of the larger city dwellers, a different model of delivery should be considered for communities dispersed over large distances (Taylor, Blue, & Misan, 2001). *Teledentistry* is a model of care being used in rural and remote regions of Northern America to improve access to services provided by dental hygienists and other local members of the dental team (Fricton & Chen, 2009; Mariño & Ghanim, 2013). This model relies on electronic health records, the Internet, digital imaging and other forms of telecommunication to consult with specialists about accessing appropriate care for these patients. Non-oral health professionals have also been used in community-based settings to improve the oral health for immigrant older adults (Mariño et al., 2014).

2.4 Challenges and solutions reported for other health care providers

Some parallels can be drawn from the medical literature when searching for solutions in overcoming dental care disparities.

2.4.1 Challenges and solutions from medical health

Recent Australian research has focused on supply, recruitment and retention of a medical workforce in Australia but with limited success in rural and remote communities where many of the Aboriginal and Torres Strait Islander people live (Humphreys et al., 2008; Wakerman et al., 2008). Various solutions to these challenges have been trialled. For example, different models for delivering primary health care services in small rural and remote communities have been evaluated (Humphreys et al., 2008) as has the integrated approach of providing flexible health care (Taylor et al., 2001). GP Super clinics in non-urban areas allow for a more integrated, multidisciplinary approach (Alfred & McIntyre, 2008). This reduces reliance on the General Practitioner for all services, whilst striving for better health outcomes.

It has been reported that doctors were more likely to practise medicine in a rural environment if they had spent more than 10 years of their childhood in a rural area (Colditz & Elliott, 1978), were from a rural background (Braunack-Mayer, 2005). If students had been involved in the Rural Pipeline program where a component of the medical students' formal education was undertaken in rural areas they were more likely to practise there (Humphreys et al., 2008; Murray & Wronski, 2006). Medical providers working with urban underserved people in Salt Lake City in the US found that the participants had very supportive work teams sharing similar values, and held deep philosophical orientations toward humanity and service ethics (Li et al., 1995). They also reported having exposure to underprivileged people growing up and strong family role models which may have influenced their decision to work with underserved people. Other evidence from a qualitative investigation into Australian doctors working with socially marginalised groups, found that the doctors were driven by a locus of control (Stevenson, Phillips, & Anderson, 2011). They were able to sustain their practice without being burdened by functional, structural and organisational issues whilst they were doing what they believed to be 'the right thing' (Stevenson, Phillips, & Anderson, 2011, p. 407).

2.4.3 Challenges and solutions related to the nursing workforce

The nursing workforce in very remote Australia is diminishing, with nurses ageing and losing work time due to physical and mental fatigue, which is having a negative effect on health outcomes for Aboriginal and Torres Strait Islander people (Lenthall et al., 2011). A literature review on workplace stress in nursing (McVicar, 2003) reported that the key causes of stress were lack of reward, high workloads, professional conflict, leadership/management issues and emotional demands of caring for the patients. In addition, the review reported that the trends in more holistic care have altered the relationship between the caregiver and patient, however it has also been suggested by Phillips (1996) (cited in McVicar, 2003), that these extra demands about delivering health care may be reducing the objectivity of caring. The latter paper reports on the individual's resilience and how stress thresholds are dependent on the individual's characteristics, experiences, coping mechanisms and the circumstances leading to the stress.

A recently implemented solution to the shortage of nursing workforce has involved the use of nurse practitioners and midwives with prescribing rights. These workforce changes have assisted with overcoming workforce shortages in particular settings and some of the health disparities in primary health care (Raven, 2012).

2.5 Theories relevant for this research

To understand why people choose to work in a specific field, various theories have been used to explain employment status and maintenance of job retention and satisfaction. Relevant theories include Herzberg's Motivation to Work Theory (Herzberg, Mausner, & Snyderman, 1959), Harren's Occupational Choice (Harren, 1979), and Vroom's Expectancy Theory of Work Motivation (Davis & Newstrom, 1989; Newstrom, 2007; Vroom & MacCrimmon, 1968). Whilst the early seminal work by Super and Holland has studied the link between personality types and job characteristics (Super, 1939), job satisfaction is beyond the scope of this thesis. In order to understand the terms used in the following situations, where these theories have been applied in the study of dentists and how they might closely relate to this current study, the key terms in the research question are also defined in this next section.

2.5.1 Herzberg's Motivation to Work Theory

Herzberg's theory (Herzberg et al., 1959), describes motivation as a concept, which relates to an 'action' taking place. This action is both internally and externally driven, and can affect the direction or choice, the intensity or effort and the duration or persistence of that action or one's resilience (Locke & Latham, 2004). For example, decisions to act in a particular way are made on balancing the short-term and long-term considerations. Motivation to become a dentist may result from shadowing other dentists and engaging in volunteer activities, which may assist in determining non-academic characteristics in applicants to dental schools (Mentasti & Thibodeau, 2006). Non-academic attributes such as 'commitment, perseverance, leadership, professionalism, and dedication' are important personal qualities considered necessary for dental school applicants (Mentasti & Thibodeau, 2006). Volunteering could indicate a degree of social awareness and interpersonal skills, and a sense of 'dedication to the community or humanity', and hence could be useful if these traits could be quantified (Mentasti & Thibodeau, 2006). It is important for dental schools to advise applicants to participate in a broad range of experiences that indicate their commitment to dentistry as well as their devotion for personal growth and to society (Mentasti & Thibodeau, 2006).

Curlin and colleagues (Curlin et al., 2006) refer to Herzberg (1954) and the analysis of workers' satisfaction when exploring the differences between secular and faith-based motivators to work as physicians with underserved patients. They found that the intrinsic motivators led to their job satisfaction for both secular and faith-based groups and that their 'calling' to this activity had a different meaning.

Another study measuring job satisfaction on physicians working in a prison environment (Lichtenstein, 1984), found that it was likely that these physicians who were faced with 'pressures of the physical surroundings' had 'different attitudes' to those who worked in other types of practice (p. 66).

2.5.2 Harren's Occupational Choice Theory

Harren's (1979) early work on occupational choice describes career decision-making frameworks, firstly, by identifying the important personality characteristics of the person making the decision. It then takes into account the important immediate and environmental factors necessary for the process. Singh and Greenhaus (2004) believe that

one's approach to career decision-making is a strategy rather than a person's 'trait or disposition style'. Strategies such as seeking recognition, financial gain, lifestyle, and promotional opportunities could be applicable to dentists' career choice to work with underserved groups.

2.5.3 Vocational Development Theory

Super's early Vocational Development Theory found that the maintenance of occupational status was important 'in the relationship of change of occupational level to job satisfaction' (Super, 1939, p. 562). The most frequent reasons for disliking a job, was 'the nature of the work, itself', 'economic reasons' and 'managerial policies' (Super, 1939, p. 562). Research by Holland and Super (Holland, 1959) focused on personality and the characteristics of the job itself and one's self concept. Other researchers such as Cable and Judge (1997), Dawis and Lofquist (1984), and Muchinsky and Monihan (1987) (cited in Singh and Greenhaus 2004) proposed that there was a specific match between one's knowledge, skills, attitudes and needs, with the needs of the organisation, as elaborated in job specifications. Singh and Greenhaus (2004) showed a high level of 'person job fit' with the selection of a job, which was a finding consistent with prior assertions from others such as Harren (1979), Holland (1985) and Super (1980). The authors suggested that the action of asking people to describe in their own words what led to their career decision was necessary to 'fully understand the dynamics of effective career decision making' (p. 217). This is the approach being undertaken in this current study, using in-depth interviews to explore the dentists' worldviews of working with underserved groups.

2.5.4 Vroom's Expectancy Theory of Work Motivation

This theory recognises three factors which led to motivation to work, namely valence, expectancy and instrumentality. Valence relates to how much a reward is wanted and refers to the extrinsic and intrinsic 'wants' from the job such as money, holidays, rewards, and satisfaction. Expectancy relates to the probability that the 'effort will lead to successful performance' and the expectation of reward will result from that performance. Instrumentality relates to the performance such that it will result in getting the reward. This theory was used in a study conducted on dentists' motivation to work in prisons (Blinkhorn, 2011; Smith et al., 2011). Over time, the 'wants' from the job became secondary by comparison with the sense of 'self-worth' experienced by the dentists working with their prison patients. The following equation summarises how these three

factors explain motivation using Vroom's model (Davis & Newstrom, 1989; Newstrom, 2007).

> *Performance will result in getting the reward (instrumentality) - explained as 'Valance ×Expectancy × Instrumentality = Motivation'*
>
> (Newstrom, 2007, p. 115)

2.5.5 Korman's Self-consistency Theory of Work Motivation and Occupational Choice

Korman's Self-consistency Theory of Work Motivation and Occupational Choice (Dipboye, 1977) refers to the use of an individual's positive and negative characteristics and occupational choice. For example, people with low self-evaluation will look for ways to use their negative characteristics in their job. On the other hand, people with high self-esteem perform more effectively, tend to like what they do, and anticipate rewards, ultimately leading to greater fulfilment and satisfaction.

2.6 Key terms used in defining the research questions

2.6.1 Characteristics

A characteristic is 'a feature or quality belonging typically to a person, place, or thing and serving to identify them' (Oxford Dictionary, 2012). For this thesis, the term 'personal characteristics' relates to the relatively lasting personality traits such as patterns of thinking and feelings that can be understood and which are consistent from an early age to late adulthood (Donnellan et al., 2009). These authors define personality traits as also capturing an individual's cognitive abilities, values and beliefs. Together these attributes help define the individual, remain relatively stable through development and are relevant to how well one adapts to work and relationships. Particular characteristics of an individual have been linked to resilience (Masten, 2001). Specifically, these are the psychological qualities relating to one's cognitive and self-regulatory skills, one's view of self and one's effectiveness in one's environment. Examples of these personal characteristics within the context of this study are the dentists' values, attitudes, beliefs and motivation to want to work with disadvantaged groups for a sustained period of time.

Previous studies have referred to particular personality traits of dentists and dental students and how these differ slightly depending on age and stage of dental education

experience (Chambers, 2001; Grandy et al., 1996; Westerman, Grandy, & Erskine, 1991). These studies have described dentists as being more introverted, more 'thinking' and more 'judging' than the general population. It has been reported that dentists prefer 'concrete, utilitarian, unambiguous, and conventional situations' judged on their 'potential for power and control of the profession' and for 'helping others' whilst 'avoiding mutual dependency' (Chambers, 2001, p. 1430). This may help explain why the majority of dentists work in private practices preferring independence and autonomy (Gardner & Roberts-Thomson, 2014; Mariño et al., 2006; Over, Spencer, & McDougall, 1984).

A recent publication reported on the development of a dental values scale, which related to the professionalism and the practice of dentistry (Langille et al., 2010). The underlying factors associated with dental values were found to be altruism, personal satisfaction, conscientiousness, quality of life and professional status. The dental values statements in the scale were compared with the American Dental Education Association value statements on professionalism, namely service-mindedness, respect, competence, integrity, fairness and responsibility. However, despite the low response rate in the study, the researchers did recognise the need to explore whether the values of private practitioners vary from those in public health and other specialties (Langille et al., 2010). Such a question is closely aligned to the focus of this mixed-method study. In a study of Australian dental students to determine their value orientation and differences between ethnic backgrounds (Mariño et al., 2004), a scale was developed based on the Kluckhohn and Strodtbeck model for value orientation developed in the 1950s. More contemporary views of values have been published and one definition is that "values are desirable trans-situational goals, varying in importance, that serve as guiding principles in the life of a person or other social entity" (Schwartz, 1994, p. 21). It is, therefore, implied that these goals serve the purpose of a particular social entity, can motivate action, which can be judged and justified.

2.6.2 Motivation

Motivation can be described as 'a reason or reasons for acting or behaving in a particular way' (Oxford Dictionary, 2012). In other words, motivation is the driving force or impulse to act in a certain way or the process that instigates a particular goal-orientated behaviour. It is that 'which energizes (sic), directs and sustains behavior (sic)" (Steers & Porter, 1975, p. 553). Steers and Porter (1975) propose that motivation depends on the

attitudes, interests and particular needs unique to the individual; the level of responsibility or control one has and the job itself; and at a larger level, the organisational environment. In the context of this study, both extrinsic and intrinsic motivation is of interest because it relates to what influencing factors are present to make dentists do what they do, and both enjoy and sustain their working activity. The extrinsic motivations could include rewards such as money, recognition, praise or awards. Intrinsic motivation, on the other hand, could relate to altruism, personal satisfaction and raised self-esteem in knowing that the efforts have done some good and have been worthwhile. An example of 10 motivational types of values used by Schwarz (Schwartz, 1994) is depicted in Table 2.2.

Table 2.2: Example of motivational types of values

Definition	**Exemplary values**
Power: Social status and prestige, control or dominance over people or resources	Social power, authority, wealth
Achievement: Personal success	Successful, capable, ambitious
Hedonism: Pleasure and gratification for oneself	Pleasure, enjoying life
Stimulation: Excitement, novelty and challenge	Daring, varied, exciting life
Self-direction: Independent thought and action, choosing, creating, exploring	Creativity, curious, freedom
Universalism: Understanding, appreciation, tolerance and protection of all people and for nature	Broad minded, social justice, equity
Benevolence: Preservation and enhancement of the welfare of people with whom one is in frequent personal contact	Helpful, honest, forgiving
Tradition: Respect, commitment and acceptance of customs and ideas that traditional culture or religion provide	Humble, devout, accepting my portion in life
Conformity: Restraint of actions, inclinations and impulses likely to upset others or violate social norms	Politeness, obedience, honouring parents and elderly
Security: Safety, harmony and stability of society, of relationships and of self	National security, social order, clean

Note: Adapted from (Schwartz, 1994, p. 22)

2.7 Rationale for the research

Selecting enough students with the desirable characteristics and personality attributes, and with an interest in providing care to underserved community members, does not appear to be effective, as the gap between the oral health status between underserved groups and the general population remains wide (see Section 2.1.1.-2.1.7., pp. 9-16).

Dental curricula do not appear to be sufficiently addressing the skills necessary to provide this care either (see Section 2.3.1., pp. 20-21). Policy decisions are not resulting in the recruitment and retention of dentists working with underserved groups in challenging environments (see Section 2.3.4., pp. 24-25). University admissions and selection committees have not yet been able to incorporate a tool to assess the traits identified as essential to treat minority groups, and hence there will continue to be growing numbers of people suffering inequalities of dental care (Ranney et al., 2005). McQuistan and colleagues (2010) have studied the likelihood of dental students serving these populations following participation in community-based rotations whilst at dental school (McQuistan et al., 2010) (see Section 2.3.1., pp. 20-21). They acknowledge the health services' deficiencies in rural and remote Australia and that lifestyle is an important characteristic in workplace choice. These authors also acknowledge the work done by trying to predict dentists likely to serve specific populations such as the elderly and children with special needs. They also refer to the willingness of dentists wanting to serve the other groups such as the homeless and infirmed. To the researcher's knowledge, this type of investigation has not been conducted with dentists who work with disadvantaged groups in Australia.

Currently, a complete method of evaluating and measuring the intrinsic and extrinsic motivation of dentists who choose to work with underserved communities, has not been reported in the literature. Most of the available research reports on the negative aspects experienced by dentists working with underserved patients (see Section 2.2., pp. 16-20), with only a few studies discussing the positive aspects associated with providing appropriate care to disadvantaged groups. Several studies have sampled select groups of dentists such as prison dentists and aged-care dentists, but have not involved the broader dental community. Different measuring instruments have been used and adapted for specific studies. For example the dental values scale (Langille et al., 2010) and dentists' job motivation scale (Shugars et al, 1991).

2.8 Research objectives

The purpose of the conceptual framework (Figure 2.3) is to synthesise the review of the literature reported in the preceding sections and from other research conducted. It presents conceptual links between dentists' career choice, their motivation to study, factors influencing career choice, and career pathways available to qualified dentists. The framework also includes extrinsic and intrinsic factors leading to the sustainability of

service provision with specific reference to the different types of patients seen in public, private, specialist and other practices. The figure shows that questions remain about whether there is a difference in the characteristics of dentists who treat underserved patients when compared with those who treat mainly general patients.

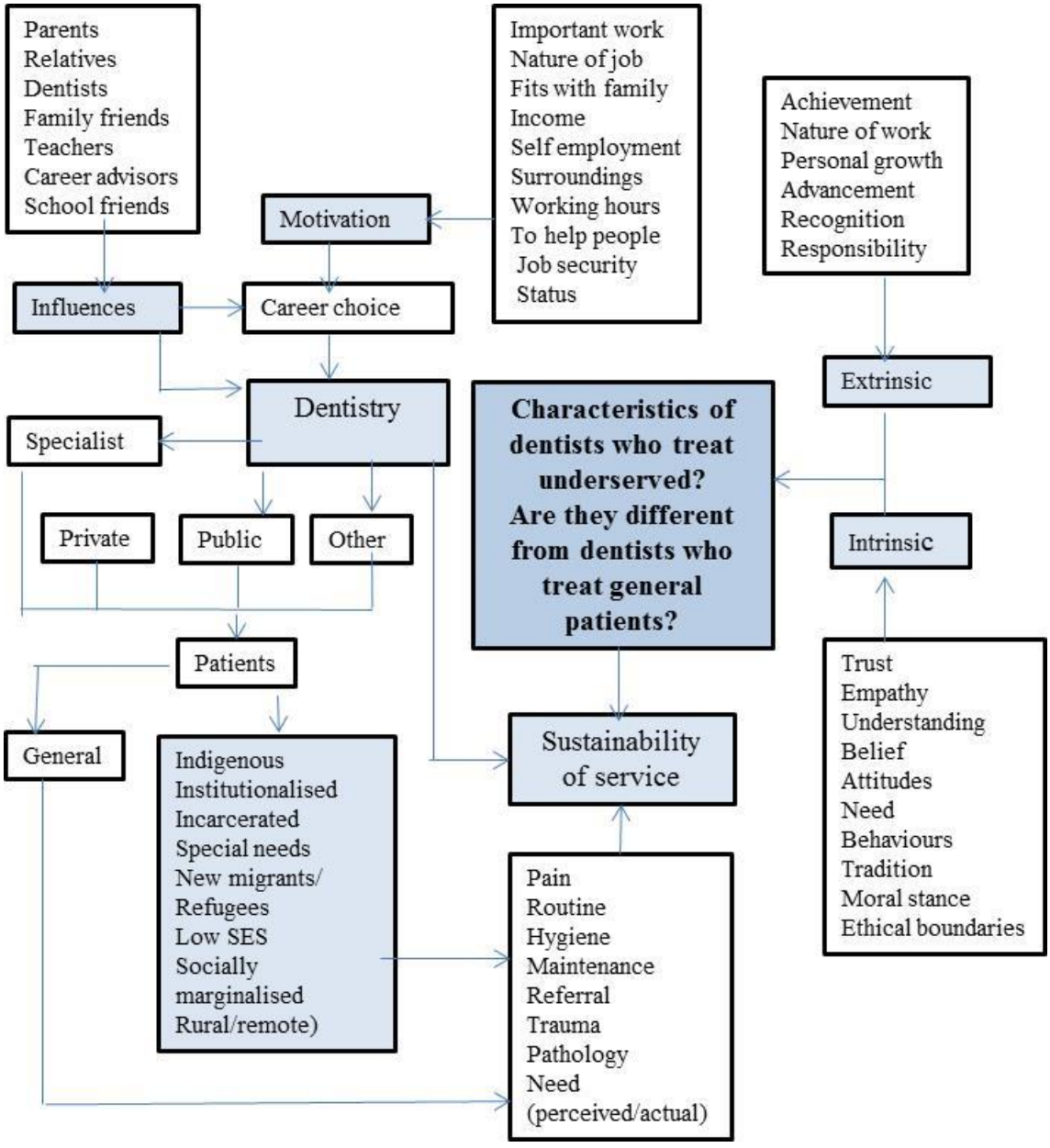


Figure 2.3: Conceptual framework leading to the research question

With this framework as a reference, the research objectives for this study were:

- To explore and better understand why dentists choose to work with disadvantaged groups using a qualitative approach

- To compare the characteristics of dentists who work with underserved groups with those who do not, using a self-report questionnaire.

The specific research questions (RQs) were:

- RQ1.1. What are the characteristics of dentists whose practice is orientated towards disadvantaged groups?
- RQ1.2. Do these characteristics differ from dentists who work primarily in mainstream private dental practices seeing mainly general patients?

The purpose of this proposed study was to conduct a two-staged data collection procedure. Firstly, by interviewing dentists who primarily provide care for disadvantaged groups (Stage 1); and secondly, by designing a questionnaire (based on the analyses of the interview transcripts) to survey dentists working in Australia (Stage 2). Once the data were collected, an assessment, through rigorous evaluation, comparing the characteristics found to be in common, was conducted.

2.9 Significance of the study

Based on the conceptual framework (Figure 2.3) of what is known about dentists and their motivation to work in their chosen field, it is clear that a gap in our understanding remains, in relation to personal qualities, characteristics and motivation levels of dentists who work with underserved populations. This study will firstly identify these characteristics and then will compare them with dentists who work in mainstream general practice. It is expected that there will be an association between the characteristics of dentists and their choice of working with underserved patients.

2.10 Summary of chapter

The definition and a general description of disadvantaged people for the context of this study have been defined, namely, Aboriginal and Torres Strait Island people, RCF permanent residents, those with special needs, incarcerated groups, new migrants and refugees, and people living in rural and remote area locations. The oral health status of these groups is reported to be poorer than it is for general Australians. Various structural, personal and professional issues from the patients' and practitioners' perspectives have been given to assist with explaining this outcome. Brief comparisons relating to other health provisions such as medicine and nursing were identified, such as the Rural Pipeline

program for medical education and prescribing rights for nurse practitioners and midwives (see Sections 2.4.1., pp. 26-27). Elements of the research question were defined. The conceptual framework leading to the research questions (see Section 2.8. p. 34), led to the decision to conduct the study and the basis for the design and methodological approach to be used. It is evident there is a clear need to learn more about dentists who work with disadvantaged groups, as there are many of these groups in the Australian population. The literature, also, does not clearly explain the reasons why dentists are able to sustain their activity in caring for these groups. The methodology used to conduct this investigation is presented in detail in the next chapter.

Chapter 3. Methodology (Stage 1)

This chapter presents an overview of the qualitative stage of the mixed-methods approach used for the design of this study, the rationale for the methodology and the processes and sequencing of stages followed. It refers to the plan of action or strategy which lies behind the choice and methods (i.e., interviews) used to meet the desired outcome (Crotty, 1998), or the 'worldview lens' through which the research question is viewed and 'translated into the research approach' (Walter, 2010). The interview is the first of the qualitative paradigm of the sequential 'triangulation' approach which precedes the quantitative paradigm of equal importance and is useful when there is no guiding theory (Cresswell 2007).

3.1 Design and implementation of the interview

The aim of conducting interviews was to take the constructivists' approach 'to show the complexities of particular worlds, views and actions' (p. 132) of the participants (Charmez, 2006). In this study, the focus is on dentists who work with underserved populations. The phenomena being studied were the factors that drove dentists to act in a particular way; namely, providing humanistic dental care to disadvantaged groups of patients. The following paragraphs describe the design, rationale and development of each stage leading up to the interview protocol. The flow chart (Figure 3.1) summarises specific steps in the research process once ethics approval by the appropriate body had been obtained.

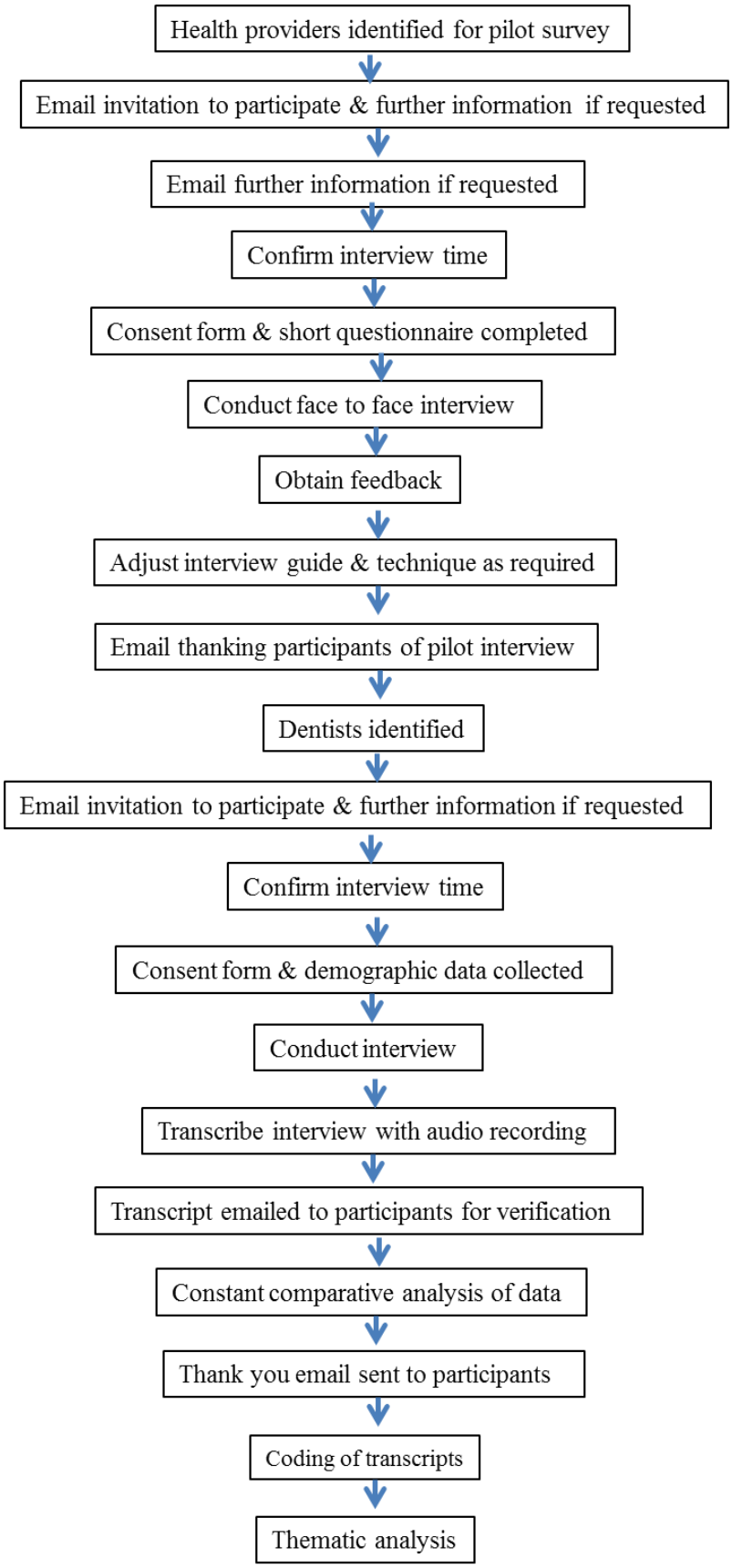


Figure 3.1: Flow chart showing steps used in Stage 1 (in-depth interview process)

3.1.1 Rationale for interviews

The use of in-depth interviews for data collection was selected to provide an avenue for a deeper exploration of the phenomena of interest, guided by the participant. It allowed the "interviewee to frame their responses carefully, articulating their views in ways that maintain a valued identity in the eyes of the interviewer" (Green & Thorogood, 2009, p. 104). It allowed the dentists to freely express their perspective, and judgments on their perspectives and experiences, using their own words and own terms of understanding, which is fundamental to qualitative interviewing (Morse & Niehaus, 2009; Patton, 2002). Of interest to the researcher were the participants' voices and expressions and how their experiences were constructed, as well as their perspectives on why they do what they do (Green & Thorogood, 2009). Because the number of dentists treating disadvantaged groups was estimated to be very small, interviews were a convenient way of targeting them for data collection. Conducting a one-on-one interview assumes that the individual will not be hesitant in speaking and sharing ideas if the setting is conducive to such (Creswell, 2007).

3.2 Ethics approval

Ethics approval for the qualitative study (Project number H-172-2011), was obtained by the University of Adelaide Human Research Ethics Committee (see Appendix B.1, p. 188). The nature of the study was deemed low risk, with the types of questions unlikely to evoke highly emotional responses. Dentists' details were obtainable via the public domain. However, it was decided that contact be made only through email or mail unless invited to do so by the referring person. The tapes were erased after each interview once the audio files were downloaded and securely stored at ARCPOH, along with the notebook and de-identified verbatim and coded transcripts. Each audio file was labelled using a unique pseudonym known only to the researcher.

3.2.1 Development of interviews

The semi-structured nature of the interview was based on Kvale's principles and techniques endorsed by Minichiello and colleagues (cited in Minichiello et al., 2008). These principles were based on the researcher's knowledge of the content (why the researcher wants to know what is being asked), communication skill (how to structure the questions) and human experience (what the researcher wants to know about the person being interviewed). All questions were designed to be short, clear, sensitive to the

respondents' world view and free of jargon as recommended by Kvale (1996) (cited in Minichiello et al., 2008). Face-to-face interviews as the main method of data collection were preferred over telephone interviews because of the personal nature and informal communication that occurs when face-to-face. Skype interviews were employed for interstate interviewees for practical reasons and telephone interviews were used as a backup when maintaining a clear Skype connection was difficult. In preparation for the interviews, the researcher viewed a training video and followed the guidelines highlighted for conducting a successful interview (Professional Development Centre University of New South Wales, 1994). These related to commonly referred to processes when considering in-depth interviews for data collection, for example, timing, phrasing questions, linking, probing, summarising, using signposts, avoiding 'roadblocks', reflective listening, clarifying, reinforcing, confidentiality and respect (Creswell, 2007; Fowler & Mangione, 1990; Miller & Rollnick, 2002; Minichiello et al., 2008).

3.2.2 Interview questions

The types of questions asked related to the dentists' work and education experiences, knowledge of the research issue, behaviours and opinions of dental care provision, personal values and demographic background. These questions were based on the researcher's prior knowledge, experience and background and on the review of the literature, which led to the research question. Specific note was taken of other studies that used qualitative methods to explore factors associated with dentists treating particular populations (Gallagher et al., 2007; Gallagher et al., 2009; Kruger & Tennant, 2005; Loignon et al., 2010; McQuistan et al., 2008; Pradhan, 2008; Smith et al., 2011; Waldman & Perlman, 2002a, 2002c). The researcher followed an introductory protocol, or checklist, prior to commencing the recording of the interview (see Appendix B.2, p. 189). At the same time demographic data were collected by completing a short questionnaire (see Appendix B.3, p. 190). This enabled consistency at the time of conducting each interview.

3.2.3 Interview guide

To assist the researcher in maintaining consistency with each interview, an interview guide was developed (see Appendix B.4, p. 191). It consisted of topics around themes rather than actual questions. The topics from which each questioned stemmed, represented the researcher's basic knowledge and experience of extrinsic motivations associated with practising dentistry, but were not sufficient to anticipate all possible responses (Morse &

Niehaus, 2009). As recommended in the literature, the order of topics/questions was discussed and defined as the conversation progressed (DePoy & Gitlin, 2005; Minichiello et al., 2008).

3.2.4 Pilot interviews

Pilot interviews were conducted with four volunteers who had experience working as health providers but who were not dentists. The subjects were chosen based on convenience, accessibility and proximity to the researcher. Trialling the semi-structured interview enabled the researcher to practise the interview technique, establish the clarity of questions and responses, and monitor the timing and recording of the interview. Additional questions were added to the interview guide which reflected the topics that became apparent from this pilot study. Specifically, these additions included questions relating to political persuasion, religious affiliations, boarding school experience and whether or not the interviewee had siblings. Based on participant feedback, minor adjustments were also made to the preferred order of the questions, and how they appeared on the guide.

3.2.5 Sample size

It was planned to approach four dentists, whose primary work involved providing care for underserved patients from each of the following six groups; namely, Aboriginal and Torres Strait Island people, people with special needs, those in RCFs, incarcerated patients, new migrants and refugees and dentists working in rural or remote locations. It was also likely that some dentists may have worked with more than one of the targeted groups. This number was considered sufficient to satisfy the epistemic community to which the researcher belonged, the time allowed and resources available (Baker & Edwards, 2012). The aim was to strive for quality in the research rather than quantity in the numbers interviewed (Baker & Edwards, 2012; Charmez, 2006; Mason, 2010). It was anticipated that patterns and repetitions were likely to arise to make sufficient claims about what the dentists were saying in their interviews as reported by Miller (2012) and Doucet (2006) (cited in Baker & Edwards, 2012).

3.2.6 Inclusion and exclusion

Dentists with a minimum of five years' experience working with one or more underserved groups was the criterion for inclusion. The researcher believed that there was

a greater likelihood that the work choice and location of practice would be established and the dentists would be under less pressure involved with becoming established, after five years (Luzzi & Spencer, 2011). In contrast, dentists with fewer than five years' experience working with these identified underserved groups may have been doing so to assist their promotion prospects or fulfilling bond requirements. For example, the Public Sector Dental Workforce Scheme (PSDWS) was introduced for eligible overseas graduates, in lieu of the Australian Dental Council's preliminary examination, as a way of addressing the public sector workforce shortage particularly in rural and remote locations (Australian Dental Council, 2011). Therefore dentists in these positions had other 'motives' for working with these patient groups, so were not included. The average tenure period of physicians working with disadvantaged and marginalised groups has been reported as three years (Singer et al, 1998, cited in Stevenson et al., 2011).

3.2.7 Recruitment

Snowball and purposeful sampling techniques were used to recruit dentists for interviews. The principle underlying the snowball and purposeful sampling was to select 'information–rich cases' that are purposefully selected 'to fit the study' (Coyne, 1997; Creswell, 2007; DePoy & Gitlin, 2005; Patton, 2002; Walter, 2010). Snowball sampling was used initially, where contacts with participants led to suggestions of other possible participants. Purposeful sampling was the 'deliberate selection of individuals' based on the researcher's 'predefined criterion' (DePoy & Gitlin, 2005). The predefined criteria were a minimum of five years working with underserved groups, selecting cases for contrasts and aiming for as much diversity amongst the group as was practically possible (Borreani et al., 2008). Consideration was given to diversity in gender, workplace location and age. South Australian dentists were contacted first, for convenience, and to gauge the rate of reply and positive responses to participating in the study. Dentists were identified by drawing on the researcher's knowledge of those well known in their area of service provision and who met the inclusion criteria.

Each contact was sent an email stating by whom they had been referred and inviting them to participate in the study (see Appendix B.5, p. 192). Once the dentist agreed, an information sheet detailing the study, a consent form and the complaints procedure were forwarded (see Appendix B.6, pp. 193-195). Hard copies of these documents were also available at the interview. The consent form was signed and witnessed at the time of the

interview, or prior to telephone or Skype interviews being conducted. In the event where dentists were not interviewed after expressing interest in the study, they were forwarded an email in appreciation (see Appendix B.7, p. 196)

3.2.8 Conducting the interviews

Dentists were given at least a week's notice confirming the date, time, and location of the interview by the researcher. Rapport was established to allow a 'productive personal climate' to assist the social experience of the conversation process to progress freely (Minichiello et al., 2008, p. 82). A location convenient to the dentist and free from distractions was chosen. This approach encouraged open discussion of information thereby allowing the dentists to speak with candor and frankness to the researcher. Two identical Olympus DS-4000 Digital voice recorders were used to record the interviews allowing a full description and account of what was said. Recording also allowed a natural flow of the interview process and the interviewer to be fully attentive and listen carefully (Minichiello et al., 2008, p. 117). Two devices were used as a safe guard to capture the interview on tape in case one recorder failed. The interviews were conducted over a six month period.

3.2.9 Transcribing the interviews

Immediately after the interview, the audio recordings were converted to a Digital Speech Standard (DSS) file, and emailed to a professional transcriber. Only the researcher and the professional transcriber had access to the recordings during this transcribing process. Approximately one week after each interview was transcribed verbatim, and the researcher was satisfied that the transcription was a true and accurate reflection of the interview, a copy was forwarded to the dentist seeking their confirmation, clarification and verification of accuracy (see Appendix B.8, p. 197 for an example of the email correspondence).

3.3 Data analysis plan

The data analysis involved a sequence of steps commonly followed in qualitative thematic analysis as displayed in Figure 3.2 (Green et al., 2007). The steps included immersion, coding, categorising and identifying themes inducted from the interview transcripts. NVivo 9 (QSR, 2010) software assisted in the organisation and management of the raw data during the analysis.

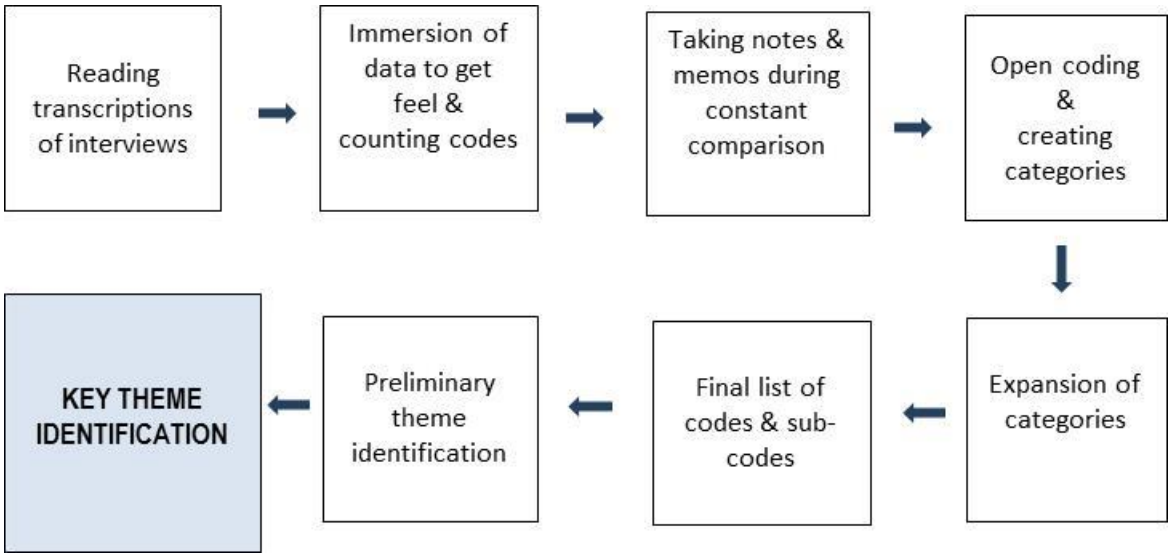


Figure 3.2: Process of data analysis leading to key theme identification

3.3.1 Data immersion

The first stage of data analysis for the qualitative research involved organising the information from the interview transcriptions by immersing oneself into the data (Braun & Clarke, 2006; Tashakkori & Teddlie, 1998). During this preliminary stage, counting the data codes provided an early insight regarding the frequency of particular codes in the database. This approach, recommended by Huberman and Miles (1994) (cited in Creswell, 2007) lays the foundation for connecting 'disjointed elements into a clearer picture of the research investigation' (Green et al., 2007). This process provided an early impression or an initial subjective assessment of the underlying meaning of the text (Tashakkori & Teddlie, 1998) whilst not disregarding the passages or codes of information that appeared less frequently. It makes the data more manageable and allows the researcher to contextualise the data for subsequent interpretation beyond the repeated reading of the transcripts (Green et al., 2007).

3.3.2 Coding of data

The next process was the assigning of descriptive labels or codes to the entire data set as a way of managing or organising the content by constant comparison as represented by Steps 2 and 3 in Figure 3.3. Constant comparison analysis began after the first interview using grounded theory principles used in thematic analysis methodology

(Charmez, 2006; Sbaraini et al., 2011). It meant comparing one interview with the previous interview and not considering them as individual pieces of data. It "enables the researcher to identify emerging/unanticipated themes within the research project" (Anderson, 2010, p. 2).

3.3.3 Creating categories

Categorising the data, or looking for patterns, followed the 'initializing (sic) process', developed by Glaser and Strauss (1967) and further refined by Lincoln and Guba (1985) (cited in Boyatzis, 1998; Braun & Clarke, 2006; DePoy & Gitlin, 2005; Tashakkori & Teddlie, 1998). This process involved specifying the conditions or giving an explanation as to how the categories were formed (Charmez, 2006), usually in the form of memos or notes.

3.3.4 Verification

Verification or validation of interpretation of the transcripts was a triangulation technique recommended for inter-rater reliability in qualitative research (Begley, 1996; Burnard et al., 2008; Kitto et al., 2008). An example of the coding from the transcripts was peer reviewed independently by three researchers; good agreement was reached. Despite subjectivity being impossible to dismiss in qualitative research, the process was employed to improve the rigor and reduce the element of bias in the interpretation.

3.3.5 Identifying themes

The interpretation of the categories or codes was the identification of themes linked to the theoretical concepts related to the study. Once themes were identified, the findings were ordered in a diagrammatic display as a demonstration of how these themes allowed the transformation of qualitative data into quantitative data as a basis for further exploration (Creswell, 2007; Dey, 1993; Tashakkori & Teddlie, 1998). Figure 3.3 is a schematic example of how themes were identified.

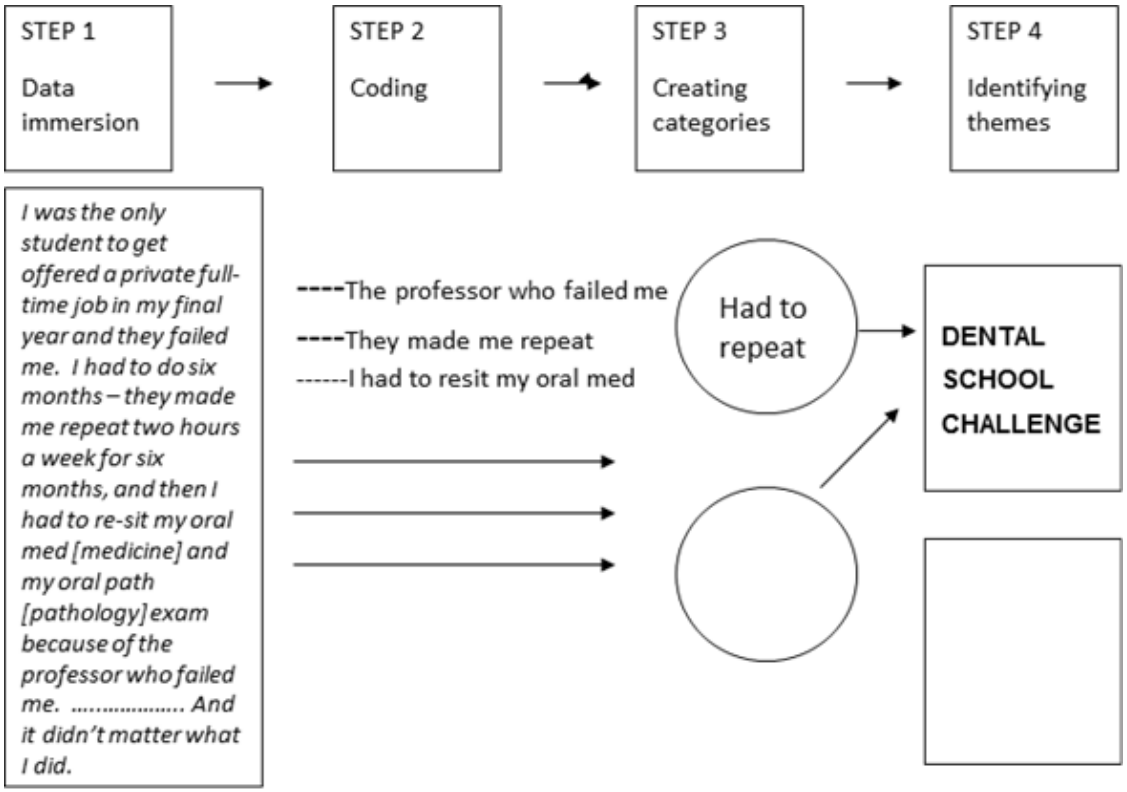


Figure 3.3: Four steps of data analysis to generate best qualitative evidence
Adapted from (Green et al., 2007, p. 547)

3.4 Summary of methodology for Stage 1

The methodological approach used for the qualitative study has been summarised (see Figure 3.1, p. 38), showing the order of events from the identification of the subjects for the pilot study, through to the thematic analysis. Semi-structured face-to-face interviews were the preferred method of data collection. Data analysis followed the principles of Braun and Clarke's (2006) Thematic Analysis, which included using a triangular approach for inter-rater reliability to validate the coding and the accuracy of the transcriptions (Braun & Clarke, 2006). Using the step-by-step process of analysing the data, the best possible evidence was generated. The next chapter provides an account of how the analysis led to the key themes being identified which subsequently provided the basis for the development of the questionnaire for the cross-sectional survey of practising Australian dentists (Stage 2).

Chapter 4. Findings and Discussion (Stage 1)

This chapter reports the findings of the data analysis consisting of frequency counts of the demographic characteristics of the participating dentists, the coding of the interview transcripts, and the categorising of the information leading to meaningful sub-themes until key themes emerged. It contains verbatim records of the researcher's notes in the form of memos and direct quotations from the participants, which provide evidence of the theme development and identification.

4.1 Data analysis

4.1.1 Participant characteristics

Data were collected from 16 dentists between September 2011 and March 2012. Eleven participants were male and the total ages ranged from 26 to > 65 years with six dentists in the 56-65 age range, five in the 46-55 range and three in the 36-45 age range (Table 4.1). Eleven interviewees practised in SA, two each in NSW and QLD and one in WA. The interview duration ranged from 22-81 minutes, resulting in average of 47 minutes.

Table 4.1: Summary of participants and their characteristics for the qualitative study

Characteristic	**n**	**Characteristic**	**n**
Gender		**Patient type***	
Male	11	Special needs	6
Female	5	Aboriginal & Torres Strait Islander	5
Age		RCF residents	5
Over 65	2	Incarcerated	2
56-65	6	Refugees	2
46-55	5	Patients living in rural/remote areas	2
36-45	3		
Location†			
SA, NSW, QLD, WA	16		

*Able to nominate more than one group of patients regularly seen

†SA=South Australia, NSW=New South Wales, QLD=Queensland, WA=Western Australia

4.1.2 Data immersion

This section shows how data immersion shaped some initial thoughts. As each interview was conducted, notes and memos were written immediately with a preliminary rationale for what appeared to be significant. Early impressions started to form as patterns and themes started to become apparent during the process.

The first interview (Dentist 1) was conducted at a mutually agreeable location and the researcher was interested to learn that the dentist, being female, was a minority in a culture where males were more highly regarded. She was from a family of three girls, and wanted to 'prove a point' and forge a career in a man's world, despite the obstacles and setbacks she encountered along the way. Her chosen area was Special Needs Dentistry.

> *I was a girl. ..... so constantly you would hear wherever you go "Why daughters, no son?"..... I think if I go back, a lot of my stuff, it's like only guys can do something, boys can keep up the family name, only sons can do whatever. That was the thing which is totally unrelated, but you know I wanted to prove a point that you know we are worth it too…. We can do it. (Dent1)*

There were also problems with unfair assessment in dental school for Dentist 1. This characteristic became common as more interviews were conducted. Dentist 2 also identified as belonging to a minority group, as he was living with HIV Aids. He described himself as being extremely shy and introverted. When asked about motivation, he was honest in admitting taking up some 'hard to fill' positions in the public sector for the money. The researcher detected great warmth despite the extreme nervousness of the participant and was left reflecting as to why this person agreed to be interviewed.

> *V. shy, introverted. Solo practice. .....treated all patients same. No more/less treat than anyone else. No volunteer work. Very shy of groups. Impressed with warm, respectful nature. (MemoDent2)*

The second, third and fifth interviewees were from 'humble' beginnings. Their parents were migrants. This background pattern became more obvious as the interviews progressed; dentists 8, 9 and 10 also had parents who migrated to Australia.

None of the first interviewees had children of their own. The researcher wondered whether this was going to become important in the findings. Dentist 3 admitted to having an 'initial hardness' as a practitioner and felt that he needed to be able to 'treat all conditions' for all his patients. In other words, he was reluctant to refer the difficult cases where management of the patient was an issue or complex treatment was required. However, he did report that this attitude and practice had since mellowed over time. Was this a trait to seek out in others still to be interviewed? The dentist could recall being advised to 'give a little back' to patients with special needs if working in private practice, and to even consider providing the service free of charge. This idea was to be expanded upon when questions were asked about how the dentists saw ways in reducing the disparities between groups.

Dentist 4 was the first interviewed who worked in a remote location, providing dental services to Aboriginal populations. He understated the work and the challenging environment he faced in carrying out his work. There was no mention of being frustrated with work; when probed, he only commented about systems (Memo4). Similar responses were received from Dentist 7.

> *At no stage did dentist think of what they did as special. Very understated about their work. No mention of the work being frustrating until probed and then respectful of cultural frustrations. (MemoDent4)*

> *The systems and the paperwork and the hoops and the red tape working for the Public Health Service is extremely frustrating…I can quite easily sit in my office here and have at least two support staff and we're working our arses[sic] off and there's no patients being seen. And I find that absolutely phenomenal that you can run a clinical service quite happily without seeing any patients. (Dent7)*

Dentist 4 had one sibling who also worked with disadvantaged groups. Was this going to be important? He took longer than the normal time to graduate and confessed to being very unfairly treated during dental school as did Dentists 1, 2 and 3 and did not hesitate when reflecting on the actions of some of the tutors and lecturers he encountered.

> *..today, they would be in court. The University would be paying compensation because they taught by fear and they were just bastards, to some people. I wasn't*

victimised like some people were but I missed these tests and I also failed…..they were bullies, they stood behind their authority and maybe they'd been bastardised by the medical professions, I don't know, I don't want to dwell too much on that. (Dent4)

Similarly, Dentist 5 was much understated in the type of work he engaged in which was working with intellectually disabled patients. He, too, was very critical of his dental education experience, felt very unfairly treated, and had to repeat a year.

I had some pretty cheerless tutors who just, you know, you'd ask them a question and think oh, you know, they look down on you rather than giving an encouraging atmosphere, if you ask[sic] a question and they thought 'well you're an idiot',…… I felt concerned to actually ask the tutors anything because that's the way they seem [sic] to behave. I had a couple okay tutors but the rest were basically pretty.., they shouldn't have been tutors. (Dent5)

The sixth participant was very shy and quiet, with strong religious practices. The researcher was surprised that another dentist, working with disadvantaged groups, took longer to reach their degree. At first, the researcher felt that it was just the males who had to repeat part of their education requirements, but later learnt, that the last three female dentists interviewed, also did.

I found [dental] school difficult. I suppose I'm introverted. I've got a very, very small group of friends, and not good at necessarily making friends…… Yes, I found [high] school was difficult. Bullying was quite common. Anyone who's out of the norm, you know, would get bullied ……(Dent6)

When asked about his motivation, this dentist (Dentist 6) 'fell into' the type of work by chance but admitted that money was a major influence.

Dentists 8, 9 10 and 11 had migrant parents which seemed quite a high proportion of those interviewed. Their parents had to strive hard to make a better life for them. These dentists were encouraged by their parents to seek out high paying jobs or professions.

I can't talk on behalf of him [father] but I think he often says about how he's had missed opportunities…and I think that's where he doesn't want us to have missed opportunities. So he's always been supportive, very supportive because it's like unfinished jobs academically sort of thing, so that my children don't sort of [miss out] yeah... (Dent1)

I found … that image of a dentist quite unattractive….. initially before I did dentistry, I was going to do medicine, oh sorry, my dad was wanting me to medicine, and I wanted to go to art college and dentistry was a compromise between the two…..(Dent11)

Dentist 9 was different in that he came from a higher SES background than most of the others interviewed previously. He was older, quite reflective and philosophical about his views and experiences. The researcher wondered if all dentists interviewed were in the later or end stage of their careers, whether their impressions and responses may have been different. Most dentists interviewed to date came from small families. Was it a sign of the times? Also, several had no children of their own.

Dentist 13 appeared well prepared and had given thought to the questions to expect. Initially the responses appeared rehearsed. The dentist had a lot of experience lecturing and supervising undergraduate students, creating an awareness of the special needs of particular patients, and so the content of the interview frame was very familiar to her. The dentist came from a strong religious background and was one of the few interviewed who still 'practised their faith'. She 'fell into' the career of working predominately with residents in Supported Residential Facilities (SRF) and did not comment on frustrations that may have existed carrying out her work. Was this due to her religious following, gender or the individual's coping mechanism?

The researcher was forming the impression that dentists working with underserved groups were likely to: have had to repeat a year, describe themselves as perfectionists, prefer to keep actions of generosity to themselves, have had a religious upbringing, and lastly, have 'fallen into' the type of work by 'chance'. The last three participants confirmed the researcher's perceptions because none finished their degree in the usual time and two dentists had a strong religious upbringing.

Because of the constant comparison during the interview process, and evidence in the examples given, the researcher's prior assumptions that could not be dismissed were religion, resilience, and the effect of these on the individual.

4.1.2.1 Religion

Religion played a role in shaping the individual. Most of the dentists described themselves as atheists or having no religious belief or following. The extracts presented below are examples of the responses when asked about whether they followed a particular religious faith.

> *I would say that, I'm embarrassed by the fact that the church would have to say I'm not really a follower, but I consider myself an infrequent follower. (Dent15)*

> *Yes. I'm an atheist…….My father is a lapsed Catholic. My mother's a lapsed Lutheran and my sister is a Church of England/Uniting. (Dent10)*

Five dentists still practised their religious faith as indicated in the following examples.

> *Not strongly, but Anglican, yes. And I have followed that perhaps more strongly than they have, so I'm quite involved in our church. (Dent6)*

> *I don't follow, I mean I don't go to church but I still have a fairly strong Christian belief. (Dent8)*

Whilst most dentists no longer followed a particular faith, they did indicate that they were raised by parents or grandparents who held particular religious beliefs and therefore were exposed to religious practices during their upbringing. The majority, as indicated earlier, admitted they had abandoned their faith completely or almost completely. Dentist 7's response is a typical example of this.

> *I went to a private school for I think two years so we had, you know, Chapel every day and religious education…so, yes we had religious education in primary school*

as well. My mother took us to church probably while we were you know, at the private school and then gave up on us after and went by herself. (Dent7)

4.1.2.2 Resilience

The dentists experienced high levels of resilience in their formative years and beyond. As each interview progressed, the researcher noted the degrees of resilience that were reported. This resilience stemmed from hardships experienced growing up, during their time as a student, and in the workplace. For example, Dentists 1 and 6 provided care to patients with special needs. Dentist 1 recounted difficulties she faced not being recognised as a high-achieving student and Dentist 6 recounted how he felt about others not willing to even try treating patients with disabilities.

… I was a frustrated student because I was a high achiever, I always topped the class and you come here and you do your best and you're told –I don't know…you do your assessment over there in a clinic, you think great, great, great but then awards go to somebody else and you think, didn't I deserve this too? (Dent1)

A lot of people look at someone's disability and say "Oh I can't treat you; you've got to go to the hospital". They don't even want to try…. (Dent6)

Three dentists working in remote and very remote locations made the following comments which also demonstrated a strong degree of resilience, for example, tolerating the isolation and having to undertake tasks not considered a normal part of dentistry practice.

We almost run our own race out here. We're really isolated. We get on with it and I guess I try myself to be the person who models behavior…..And you just keep on keeping on. There are people that need help, there are things that need to be done and you just do them. (Dent7)

There is a lot more after hours work. Like, where we worked, you're basically 24 hours a day. There weren't too many weekends where I wouldn't get called in...(Dent16)

4.1.3 Other emerging patterns

Aside from the religion and resilience that appeared to be consistent in these dentists' lives, many additional themes emerged that were not anticipated. This affirms what the study set out to explore; namely, to better understand dentists who serve the underserved. These initial impressions and observations from conducting the interviews and listening to the recordings revealed the following:

-the majority did not reach their dentist qualification in the allocated time (11 of the 16).

-the majority was asked to join their current workplace rather than actively seek out working with the special groups of patients themselves (nine of the 16).

-very few were actively involved in volunteering outside dentistry.

The researcher expected the volunteer activity to be higher, however it was noted that often, the family (spouse) was involved in volunteer work. For many dentists it may have been the lack of time available to devote to volunteer activities, as the examples below seem to confirm.

> *... I guess work is pretty consuming for me, I suppose that's my, my wife's a serious volunteer, but that's a completely different story. (Dent4)*

> *When I was a student at university, my wife and I did volunteer work. (Dent6)*

Political advocacy was not important or apparent, with half the dentists not aligning themselves to any particular major party. Five said that they were swinging voters. Dentist 9 described himself as being 'a-political' saying that he was 'above politics'.

> *I tend to vote for the people I think who do the less damage, so the least worst. That's how I put it….. I don't have any regard for politicians……, they're just there for themselves and they're not in it for the good of mankind. (Dent5)*

> *I had a working class background, always voted Labor but now I'm a swinging voter and don't really pay much attention to politics……I consider myself a-political….. I'm above politics. (Dent9)*

Siblings were also employed in health related fields in many cases, ranging from pharmacists, pharmacy assistants, doctors, practice managers, nurses, speech pathologists, dentists, dental therapists, social workers and physiotherapists. Several siblings also had careers as school teachers.

Despite the formation of these early impressions through constant comparison of the recordings and transcripts, the coding stage involved validation and confirmation of emergent patterns and themes.

4.1.4 Coding

After each interview, the transcript was read several times whilst listening to the audio tapes and corrections made where necessary. This process enabled the researcher to become familiar with the apparent nuances in the data that allowed further memos and flagging of information to occur. Each line, phrase and paragraph was carefully examined and coded into general categories that related to the broad topic headings that were asked during the interview (Table 4.2).

Table 4.2: Broad categories after first stage of open coding

Type of workplace	Motivation/drivers	Background
Dental education experience	Volunteering	Personality
Perceptions of work by other dentists	Political persuasion	Parents' occupations

Following the establishment of these broad categories, the text was examined more closely and more codes, each representing a category or subcategory, became apparent, resulting in 28 categories (Table 4.3).

Table 4.3: Expanded codes representing categories

Type of workplace	Personality	Gender differences
Motivation Drivers	Perceptions of work by other dentists	Keen to learn
Frustrations	Tutoring experience	Summarising the interview
Reward	Political persuasion	Trust in interviewer
Closing the gap	Religious following	Critical
Background	Immediate family	Persistent resilient
Dental education experience	Motivator	Staff relations
General role models	Sense of social justice	Experience injustice
Volunteering	Reflective	Miscellaneous
Exposure		

Critical analysis of the data continued, with a particular focus on self-reported personality traits, and the researcher's observation and interpretation, resulting in a final 62 codes (Table 4.4.). It became obvious that there was a doubling up of codes such as '*motivation drivers*' and '*motivator*'. The code '*persistent- resilient*' was made a sub category of '*personality*'. '*Immediate family*' was placed under '*background'*. Table 4.4 indicates how the revised count of 62 codes were assigned more specific titles and grouped to represent more homogeneity. Some overlap in the assigning of codes was present because many of the participants' responses represented more than one code. Examples of how the quotations were assigned codes are in Appendix B.9 (pp. 198-199).

Table 4.4: Final list of codes and sub codes

Type of workplace	General role models	Resilience
Physical work	Volunteering	Persistent
Environment	Other interests	Experience of injustice
Patient type	Exposure	Staff relations
Motivation Drivers	Perceptions of work by other dentists	Religious following
Tapped on shoulder	Envy	Immediate family
Monetary	Crazy	Motivator
Helping less fortunate	Little respect	Gender differences
Lifestyle	Tutoring experience	Summarising the interview
Frustrations	Personality	Trust in the interviewer
Reward	Honest and truthful	Critical views
Closing the gap	Cautious	Miscellaneous
Sense of social justice	Friendly	Political persuasion
Background	Insecure	Liberal voter
Sibling occupation	Patient	Labour voter
Schooling	Focussed	Other
Place growing up	Accepting	
Parents' occupations	Self-reliant	
Mother's occupation	Outspoken	
Father's occupation	Reflective	
Dental education experience	Keen to learn	
Support through dental school		
Time to reach degree		
Difficulties in dental school		
Role models in dental school		

4.1.4.1 Verification

Two verbatim transcripts totaling 15,194 words were reviewed independently by three researchers for inter-rater reliability as recommended (Begley, 1996; Burnard et al., 2008; Kitto et al., 2008; Pope, Ziebland, & Mays, 2000). A consensus that the categories were representative of the transcripts was reached.

4.1.5 Identifying themes

The process of theme development occurred in stages. It involved the early identification of repeated dialogue with similar meaning, followed by a further refinement.

4.1.5.1 Preliminary themes

After the first stages of data analysis, each of the 62 codes and sub-codes were re-examined and grouped together to form preliminary themes (Figure 4.1). This process involved checking that each code contained data that reflected the code accurately (see Appendix B.9, pp. 198-199). Similar codes were grouped together, clusters of sub codes were formed and renamed, and memos and notes were kept to assist with the process. The preliminary themes that emerged from the analyses are discussed further, along with supporting statements.

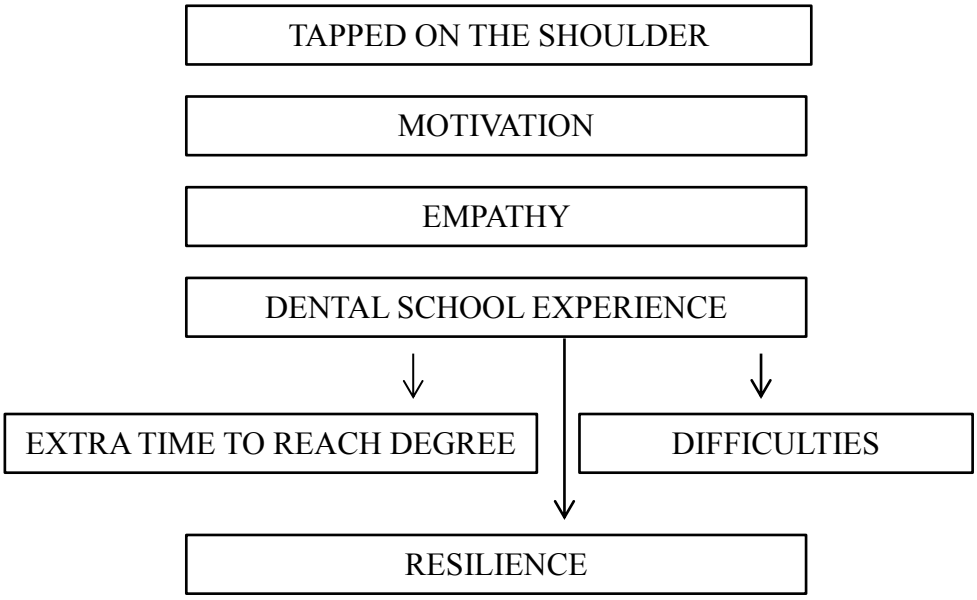


Figure 4.1: Preliminary themes following analysis of interview transcripts

4.1.5.1.1 'Tapped on the shoulder'

The theme 'Tapped on the shoulder' relates to statements indicating that the participant was approached directly by another person to work with the underserved group for whom they, at the time, provided care. It includes statements where the dentist 'fell into' the job by chance, without having any prior intention of doing so. This category was initially a sub code of 'motivation' (see Table 4.4, p. 57). The main motivation or reason for workplace choice by the majority of the participants was coded under this heading, and

hence it became obvious that 'tapped on the shoulder' was a standalone theme in the early stage of the analysis. Ten of the 16 dentists interviewed were 'tapped on the shoulder'. Examples that follow, in support of this theme, are statements from dentists who work with special needs patients and prisoners.

> *The dentist had resigned and someone came up to me and said "would you do the prisons for a while?", so I said "mmm, okay". (Dent14)*

> *Basically it all started accidentally. There was another dentist who was ……..working here at [clinic for intellectually disabled] …..Then she left and asked me "would I be prepared to do it"' and I said "yes". (Dent5)*

4.1.5.1.2 'Motivation'

The preliminary theme of 'Motivation' derived from the code Motivation Driver and directly related to the research question (RQ 1.1) in broad terms; "why you do what you do and what keeps you doing what you are doing?" This category contained the code 'Motivator' and sub codes 'monetary', 'helping less fortunate' and 'lifestyle' (see Table 4.4, p. 57). Examples in support of this theme are presented in the following statements.

> *It's always been that ability to get people out of pain and make people feel better about themselves. It's not the prettiest, you know, you're not in some salon doing it, but it's so worthwhile. It's incredible. I have huge job satisfaction every day. I would say every day I'm happy with the job that I do. (Dent11)*

> *Looking after people, looking after them whether they had money or didn't have money, follow-up care, getting in with the community, not just sort of 'in, do your work and go', trying to get involved ..... I thought all those things were important. ...and good dentistry. (Dent16)*

After consideration, this theme was renamed 'Intrinsic reward' because it referred to recognition of the service, effort and achievement rather than purely being the main motivating factor. From the examples given by dentists when asked to explain why they work with disadvantaged groups and the rewards they expected in doing so, it was the feeling of 'making a difference' and relieving people from pain which were overriding.

The reward was often personal. Dentists were driven by meeting and overcoming the challenges such as the isolation, having to repair broken equipment, and managing patients with special needs when others were unable or unwilling to try to do the same.

4.1.5.1.3 'Empathy'

'Empathy' was originally coded as a subcategory of 'personality'. However, the examples of empathic concern for others emerged strongly; hence 'Empathy' was given its own category, and was subsequently renamed "Empathic concern'. The codes included in this category were 'empathy/altruism', 'helping less fortunate', and 'sense of social justice'.

Yeah…... quite a few of them [patients] are born with disability. Us [sic] or any of our people we know, it [becoming disabled] can happen like that……People just need to realise that it could happen to you, to me, to someone you know, and yeah. That's all I'm saying, so if you believe in that, if you realise that, then hopefully people work to be fair, enough to bring back the equality... (Dent1)

I think there is something with empathy, relating to somebody and being at where somebody's at. I think that's very important in my job because if you've got that, the rest is a doddle. (Dent11)

When referring to treating refugees who have experienced torture and trauma, the following comment was made about their dental fear and anxiety.

I think the fear and anxiety of the general population is different to these people because these people actually, you know, receive torture at close hand. (Dent10)

Similarly, Dentist 11 also referred to the importance of being able to support all patients' transitions from being very frightened special needs patients to being grateful for the treatment received.

There is a lot of satisfaction from the patients' feedback, especially when patients are so nervous and you manage to change that behaviour before your eyes. They come in petrified and you just use all your behavioural skills and you make it as pleasant

an experience as possible and they often will comment at the end of the appointment. (Dent11)

The difficulties of how to manage the emotions evoked from empathy were reported.

Sometimes I've got to be careful not to take home the emotion from finding people in poor situations. So that's a thing I've had to learn to do. (Dent13)

Responses to the action of helping others, and whether or not it was egoistic, is summarised by Dentist 13 who assists Supported Residential Facilities (SRF) to manage patients' oral care.

I like to have friends and I like people to think I'm good but my drivers are more, or the reason I do something, the reason I am there to help the SRF is not to make me be seen to be good, it's more to help them. (Dent13)

4.1.5.1.4 'Dental school experience'

Most dentists interviewed indicated that they experienced challenges during the period of their dental education. Many had spent additional time to gain their qualification and felt they had been unfairly treated, at times, as a student. The following extract and others (see Section 4.1.2., pp. 49-50) are examples of dentists' challenges during the time of their dental education when asked to comment on their experience.

I was top of my clinical group for at least one of the terms. Children's dentistry was what I loved, that was what I enjoyed. Apart from the fact that a lot of the other disciplines were sort of run by complete sociopaths…… (Dent4)

4.1.5.1.5 'Resilience'

'Resilience' was identified as a theme and related to examples of experiences where the dentists were able to overcome difficulties or challenges they faced in their lives. It is reasonable to assume that not all individuals would react in the manner that these dentists have reacted. However, the following examples of resilience are unique to the dentists in this study and have occurred during their childhood, high school period, undergraduate dental study and later in the workplace. For example:

..The gerodontologist .... I liked his approach. It was quite fierce though, it intimidated a lot of the students. And that was the other problem I think, that I didn't show any fear..... There is that sort of dominating lecturer and professor..... not very nice at all. But you have to kowtow to get through and I didn't do that and that was actually one of the reasons that my friend, who was a teacher there [at university], said that I wasn't liked....., he said "you don't behave how you should behave" ....(Dent11)

Another gave a recount of an experience being overlooked in the press despite winning a prestigious sporting award. Dentists reported unfair treatment in high school. One was bullied for being different and another received punishment for the apparent trivial action of drawing characters in class (see below).

I would draw characters and he [teacher] took me in front of class,... broke the yard ruler on me and then sent me to the other guy who was the English teacher and he was ... seriously sympathetic and couldn't believe what had happened. (Dent4)

Further barriers were encountered by organisational management.

I remember a manager said..... that I wasn't loyal to the organisation..... and I just thought well - do you know I am quite happy - I like to talk about stuff. ....but I am quite happy to talk around ideas and it's like the idea that you're either with us or against us and if you challenge something the organisation is doing, somehow you are a traitor. (Dent4)

All the examples given confirm a trait of resilience or mental toughness in the dentists, enabling them to carry on with their endeavours, despite the difficulties faced at the time.

4.1.6 Discussion of key themes

Following the identification of common patterns, conceptual groupings and preliminary themes, five key themes were refined in the final analysis. These were given the names 'Tapped on the shoulder', 'Dental school challenges', 'Empathic concern',

'Intrinsic reward' and 'Resilience'. Figure 4.2 shows the association between each of the key themes stemming from the broad headings of background, dental school, drivers and personal qualities. In the following sections, each theme is described in context, drawing on comparative studies to support the qualitative evidence derived from the analysis.

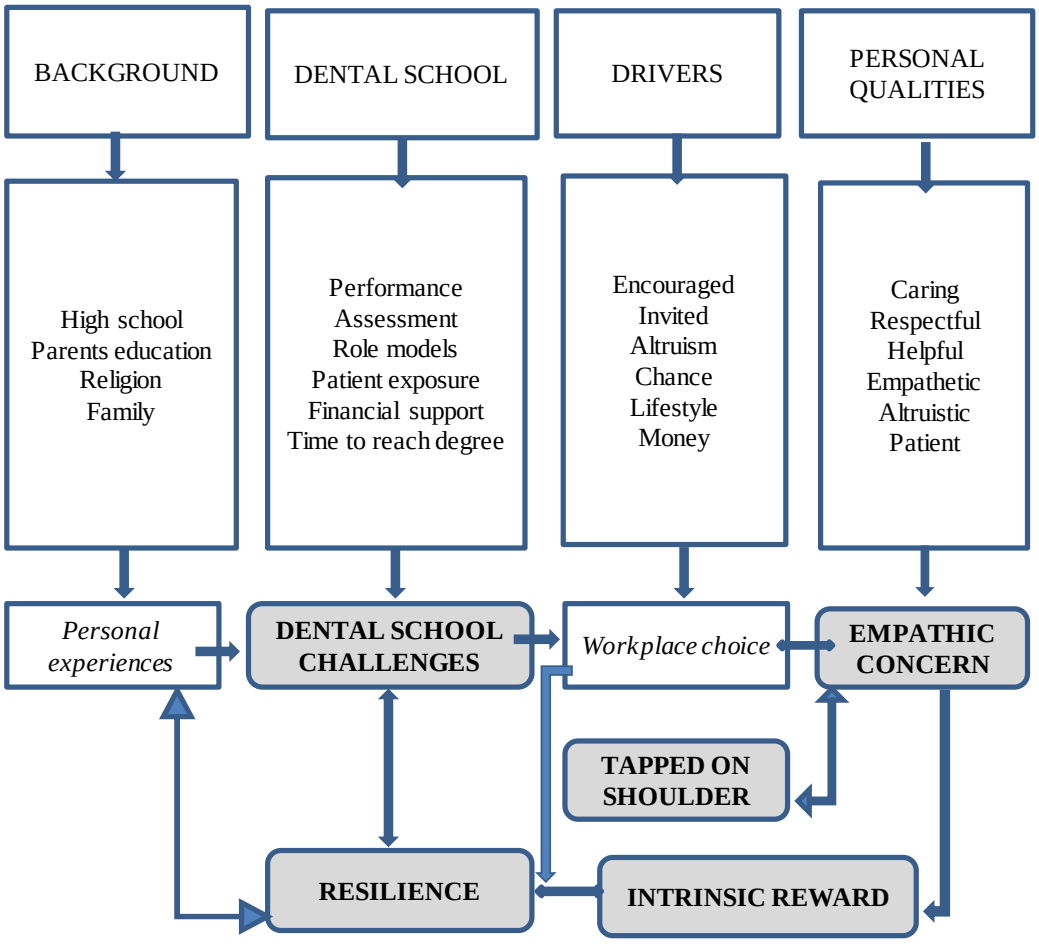


Figure 4.2: Five key themes associated with dentists treating disadvantaged patients

4.1.6.1 Tapped on the shoulder

The description of 'Tapped on the shoulder' in the context of this analysis, was that the dentist was either personally approached, asked or invited by another dentist to consider working with a particular underserved group. For example, being asked if they were interested in working in the prisons, when they had not previously done so, or working with intellectually disabled people.

Most dentists revealed that they were approached or invited to join the practice where treating disadvantaged patients was the main activity. There may have been several reasons for this. Perhaps the opportunity for a change in direction was timely. Perhaps it

said something about their personality. Perhaps they were looking for a sense of 'kudos' or recognition for moving into an area of dentistry not considered 'mainstream' practice. It is interesting that a small group of doctors working for marginalised groups obtained their jobs through serendipitous opportunity similar to the dentists in this study (Stevenson et al., 2011).

4.1.6.2 Dental school challenges

This category, in the context of this study, contained dialogue of challenges that dentists faced as students. The challenges were, perceived unfair assessment, being bullied or a witness to bullying by academics or tutors, spending additional time to gain the dental qualification, coping with sickness and failing to meet particular requirements of the course.

For this study population, the time for completing their formal education occurred, on average, 25 years ago. Since then, attitudes toward learning and teaching have shifted from the lecturer-based, teacher-focused approach, to a more student-centred focus. Policies such as students' rights of appeal, bullying in the workplace and assessment criteria are more clearly defined and publicly accessible these days. Students are now able to evaluate their own experience of teachers' performances. However, a major source of dental students' stress has still been attributed to supervisors (Alzahem et al., 2011; Heath, Macfarlane, & Umar, 1999). These challenges may also be linked to resilience, that ability to bounce back from stressors, that many of the dentists alluded to when interviewed for this current study.

4.1.6.3 Empathic concern

This theme became apparent and included examples where dentists reported a display of empathy toward their individual patients and the population they were serving. This empathic concern was generally without judgement and their references were made in a caring, respectful manner. They gave examples of their willingness to relieve patients from pain and improve their wellness. The theme also included examples where dentists demonstrated the qualities of patience and altruism.

It has been reported that individuals with high levels of empathic concern are more likely to expose themselves to needy targets, by charitable giving, and, this concern for

others, can "influence an individual's willingness to enter potentially empathy-arousing situations" (Davis et al., 1999, p. 472).

There is a commonly held belief that prosocial action, or voluntary behaviour without reward, is driven by empathy and that ability to regulate and control emotions necessary to act altruistically (Vreeke & van der Mark, 2003). Batson et al (1991) believe that emotional congruence is when one regards a person's emotional state as one of need, and then responds to that perceived need by providing the appropriate help (Batson et al., 1991). Their view is that 'empathetic emotion evokes altruistic motivation'. In contrast, other authors (Cialdini, 1991; Cialdini, 2004; Cialdini et al., 1987) believe that there is a 'merging of conceptual identities', for example, 'other' and 'self' and therefore empathy involves a desire to help the 'self' which is the part of them located in the 'other'. When empathy for a person's suffering or need is heightened, it creates uneasiness and therefore this discomfort and anxiety towards that person's stress becomes self-focused resulting in an action of helping behavior. A need to relieve the stress of the one feeling the empathy is what motivates this helping behaviour. This resulting action or 'beneficence' then becomes 'non-altruistic' rather than 'altruistic' (Cialdini, 1991; Cialdini, 2004; Cialdini et al., 1987; Glannon & Ross, 2002) and lends support to the association that dentists' motives can be status driven. In the same way, prosocial behaviours of doctors could explain why they are able to sustain working with socially marginalised groups as opposed to be motivated by altruism (Stevenson et al., 2011). The argument exists too, that measuring, testing and defining empathy is problematic, and that a more qualitative approach should be taken (Gould, 1990). Drawing on the link between empathy and prosocial action, patients from different cultures, religion, social class, (e.g., the elderly, alcoholics, psychiatric and disabled patients) have been studied, and all have reported being 'poorly understood, patronised, feared, prejudiced and unsupported' at certain times when receiving health services (Gould, 1990, p. 1174).

4.1.6.4 Intrinsic reward

Any reference to what sustained the dentists to keep doing what they were doing, or any benefit or recognition they received for their efforts, led to the reward theme development. This included monetary reward, lifestyle advantages and the pleasure of seeing positive changes to peoples' lives and in their suffering. It was very apparent in the

analysis that rewards were not expected and when received, they were often simple. These simple rewards were what continued to drive the dentists in the work they were doing.

This study identified a range of explanations to the meaning of 'personal gain' and 'reward' for a small group of dentists who provided care for underserved groups of Australians, and how each of these elements were received, anticipated and interpreted. The underlying message was the sense of helping those unable to help themselves, which led to their self-satisfaction and feeling rewarded. Providing dental services, under less than ideal conditions, such as in remote locations or in institutions, did not hinder the sense of fulfilment and purpose felt by the dentists interviewed (see Section 4.1.5.1.2., pp. 59-60, and Appendix A.1, pp. 180-186).

It is fair to say that dentists working in general practices, seeing mainly 'general' patients, would also feel that same sense of satisfaction when relieving people of pain and feeling they had made a difference to a patient's wellbeing. However, the degree of emphasis on the types of challenges dentists face may be different. Dentists are attracted to public sector dentistry in the first instance because of the potential to receive mentoring and a desire for helping those in need (Hopcraft et al., 2010). Whilst job satisfaction amongst practitioners has been associated with autonomy and clinical freedom (Luzzi & Spencer, 2011), the dentists in this current study were largely restricted in their range of clinical skills, because of their patients' inability to cope with certain procedures, and the limited resources available to provide care. It has also been shown that higher levels of job satisfaction was experienced by dentists with special areas of interest, whilst income, respect, professional time and being in private practice, also rated highly (Gilmour et al., 2005). It could be argued that participants in this current study had special areas of interest and that income and respect were not major recurring themes.

According to Herzberg's Theory of Motivation to Work, 'hygiene factors' relating to salary, remuneration, supervision, interpersonal relations, working conditions and feelings of job security, need to be met in order to gain fulfilment (Herzberg et al., 1959). It is theorised that the motivators towards job satisfaction include personal achievement, growth, responsibility, recognition, in the presence of a challenging and stimulating work environment. Because all dentists interviewed in this current study had at least five years' experience working with underserved groups, their responses indicated that the 'hygiene factors' had been met, which ultimately led to their sense of fulfilment. Similarly,

Vroom's Expectancy Theory of Motivation was used to explain why dentists worked with prison populations in Scotland (Smith et al., 2011). Whilst the study was specific to an organisational setting (e.g. a prison), comparisons can be made with this current study of dentists working with different underserved groups in a range of settings. Regardless of the setting, Dentist 13 felt as though, most of the time, she could 'make a difference' and Dentist 5 believed he was 'doing some good' for people who 'find it difficult to get their medical, dental and other needs met'. There was the 'expectancy' of other dentists, who identified in others, essential qualities needed to work with underserved groups, which through encouragement, led them to take up this type of practice.

Additionally, when referring to Korman's Self-consistency Theory of Work Motivation and Occupational Choice (Dipboye, 1977), it is suggested that people with high self-esteem perform more effectively, tend to like what they do, anticipate rewards and success, hence leading to greater fulfilment and satisfaction. The phrase, 'I have huge job satisfaction everyday' (Dentist 11), clearly summarises the passion felt by all dentists in this current study, and that it is the 'daily stuff…..doing what we try to achieve' which is most rewarding (Dentist 4).

4.1.6.5 Resilience

Resilience was demonstrated by dentists giving examples where they were able to overcome a range of obstacles faced in their family lives, as a dental student, or when working in harsh environments under challenging conditions. This appeared as the overarching theme. All dentists were able to 'bounce back' from these issues they faced as students, and from their other personal experiences. In addition, they were able to overcome the daily challenges going about their work whether it was working in isolated areas, working with patients' complex medical histories or working with patients with multiple social problems. Feeling the occasional wrath of particular lecturers and professors in dental school, at that time, may have been quite typical experiences, but it is not known whether all dentists felt the same as those interviewed in this study. It is reasonable to expect a degree of discontentment for those who failed or had to repeat parts of their program. This supports the findings that characteristics of resilient people are, those having commitment, self-efficacy, humour, patience, optimism, faith, the adaptability to change, a realistic sense of control, personal and collective goals, a healthy regard for stress and change, and being action-orientated (Rowe & Kidd, 2009; Wagnild,

2010). These salient characteristics of resilience people, synthesised by Connor and Davidson (2003), have also been identified by others (Table 4.5).

There is a tendency to report higher levels of resilience in a self-report scale (Campbell-Sills et al., 2009) and that the higher the level of education and economic status, the higher the recording of resilience levels (Campbell-Sills et al., 2009). Dentists, in general, are from higher SES backgrounds (Mariño et al., 2006) so the high levels of resilience demonstrated by the dentists interviewed in this study, may well reflect the levels of those found generally in dentists. Resilience has enabled doctors to 'derive strength from working with marginalised groups' (Stevenson et al., 2011, p. 408), in the same way that dentists, having a sense of control, a respect for patients and a keen interest in their work, supports the key theme of resilience deduced from this current study. On the other hand, stress and anxiety have been felt by dentists treating patients with learning difficulties (Bedi et al., 2001), working long hours, feeling dissatisfied with their job and treating mostly NHS patients (Myers & Myers, 2004). Whilst coping styles vary between individuals and are associated with burnout amongst dentists (Gorter, 2001), it was the hardiness and the ability to bounce back after diversity, and coping with challenging situations treating disadvantaged patients, that was of interest to the researcher in this study.

Table 4.5: Characteristics of resilient people

Reference	Characteristic†
Kobasa, 1979	View change or stress as a challenge/opportunity Commitment Recognition of limits to control
Rutter, 1985	Engaging the support of others Close, secure attachment to others Personal or collective goals Self-efficacy Strengthening effect of stress Past successes Realistic sense of control/having choices Sense of humour Action oriented approach Adaptability to change
Lyons, 1991	Patience Tolerance of negative affect
Current‡	Optimism Faith

† Adapted from the table by Connor and Davidson (2003, p. 77)
‡ Optimism and faith were important factors in Sir Edward Shackleton's survival of the 1912 heroic expedition in the Antarctic and hence considered salient features of Resilience

4.2 Summary and discussion of thematic analysis

The comprehensive process of thematic analysis was conducted in stages as indicated in Figure 3.1 (p. 36). It began with the first interview, using the constant comparison technique of data immersion, comparing each dentist's verbatim transcript with the next. The transcripts were listened to, read many times, and validated by the interviewee. Assigning of codes commenced broadly and became more refined as patterns became evident. Rigour was obtained by following the principles of credibility and confirmability (Grbich, 2007; Kitto et al., 2008; Pope et al., 2000). Specifically, credibility was achieved by three independent researchers validating the coding through reaching agreement, and confirmability was demonstrated by having the participants' verbatim quotes as evidence of the coding assignment.

The purpose of the qualitative study was to explore the meaning of 'why dentists do what they do'. In other words, the study was to deduce emergent themes from 'information-rich' interviews, conducted on a purposeful sample of dentists who worked with disadvantaged groups. The themes, 'tapped on the shoulder', 'dental school challenges', 'empathic concern', 'intrinsic reward', and 'resilience', formed the basis of the second stage of the study, namely, the questionnaire. An analysis of the subsequent

data collected, would, hopefully, identify common theme characteristics in dentists who orientated their practice towards disadvantaged groups, by sampling all registered dentists in Australia. The themes and sub-themes apparent after the interview analyses highlighted the need to explore the following sub-set of main research questions (RQs):

- RQ2.1. Was there an association between resilience and treating the underserved?
- RQ2.2. Was there an association between experiences in dental school and treating the underserved?
- RQ2.3. Was there an association between being motivated by the intrinsic reward received and treating the underserved?
- RQ2.4. Was there an association between empathy levels and treating the underserved?
- RQ2.5. Was there an association between having a faith or religious affiliation and serving the underserved?

Additional to these questions, the researcher set out to explore differences in demographic and socio-economic detail of dentists and serving the underserved:

- RQ2.6. Was there an association between demographic detail and treating the underserved?
- RQ2.7. Was there an association between socio-economic status and treating the underserved?

Whilst the findings of this qualitative study cannot be generalised, nor are they representative of all dentists working with disadvantaged groups, they do provide a rich account of dentists' experiences, how they started in their practice, and what their motivations were which influenced their decision to practise. The findings reinforce the importance of the dentists' role towards their community, such as, sharing of experiences and working towards the common goal of improving the oral health of all Australians, particularly those often forgotten or who have difficulties accessing care. It remains a concern however, that Australian dentists in an earlier study, reported a preference for compliant patients, ones who value and maintain their oral health, and accept the treatment plans proposed (Brennan & Spencer, 2006).

To test whether the receipt or expectation of rewards varies between dentists (including volunteers), irrespective of the type of practice and patients they see, a follow up survey of a representative sample of all practising dentists in Australia needed to be

conducted in order to investigate these questions. The findings from this qualitative study provided the basis of the second stage of this mixed-method study by extending the exploration. The themes deduced, supported the development and inclusion of questions and scales necessary to explore differences in the characteristics of dentists practising in variable settings (but not restricted to those working with disadvantaged patient groups). Chapter 5 describes the methods used in the quantitative study, a cross-sectional survey of registered Australian dentists.

Chapter 5. Methods (Stage 2)

Chapter 5 begins with the rationale, design and development of the data collection instrument. A description of the sampling frame, the sample size and eligibility for inclusion in the cross-sectional survey (Stage 2) of this mixed-methods study design, follows. The last part of the chapter includes reference to, the pilot study, the data management procedures, the analytical approach for statistical testing and the ethical considerations necessary to conduct the research.

5.1 Rationale, design and implementation of the questionnaire

5.1.1 Rationale for questionnaire

A self-report questionnaire was chosen as the instrument to collect data for the cross-sectional survey because it was relatively inexpensive when compared with other common methods (e.g. telephone surveys), and has been traditionally used for gathering information from large numbers of dentists. The questionnaire allowed for responses to be completed in private, at a time convenient to the respondent, and for the respondent to remain distant from the researcher (Dillman, 1978; Mangione, 1995). The questionnaire also allowed for statistical analyses to be carried out, leading to robust results pertaining to relationships between variables such as dentists' characteristics, (e.g., attitudes, values, beliefs, opinions and behaviours) (Walter, 2010) and practice activity. Although not without its limitations, such as, potential biases from personal interpretations, and errors with coding, editing and tallying, the questionnaire, for Stage 2, was chosen for practical reasons to build on the outcomes from the qualitative study (Stage 1).

5.1.2 Questionnaire design

The arrangement of each section of the questionnaire took into consideration the length of the groupings of questions and/or statements. The intention was, also, for the participant to begin the survey by completing relatively simple questions, whilst leaving the questions of a more personal nature towards the end. The wording of questions and scales used to measure characteristics were based upon themes that emerged from the data analysis of the qualitative interviews. Specifically, the five major themes were, 'Tapped on the shoulder', 'Dental school challenges', 'Intrinsic reward', 'Empathic concern' and 'Resilience'. They related to, the motivation to work as a dentist, reasons for working with

underserved groups, experiences as a dental student, empathy they showed towards others, and the resilience which enabled them to sustain their work. Other aspects included demographic detail and dentists' experiences prior to attending dental school. The following section briefly describes how each variable related to the key themes and the rationale for its inclusion in the questionnaire.

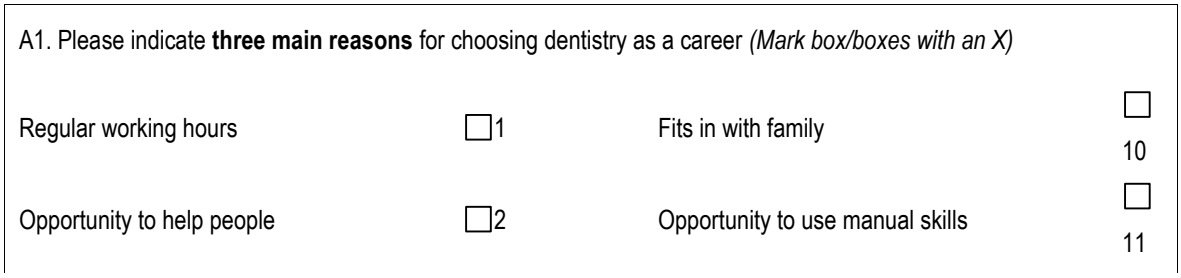
5.1.2.1 Socio-demographics and early life

Data, relating to dentists' schooling, parents' occupations at the time of studying dentistry, country of birth, age, sex and place growing up, were collected (see Section H Appendix C.1, pp. 207-208). The inclusion of these questions was to also allow for comparisons between socio-demographic data previously collected on dentists in Australia, and to determine whether the responses, in this study, were representative of the current population of dentists in Australia (ARCPOH, 2006b; Kruger & Tennant, 2004; Luzzi & Spencer, 2011; Luzzi et al., 2005; Spencer, Jones, & Teusner, 2005).

5.1.2.2 Career decision

5.1.2.2.1 Motivation

Motivation to pursue a career in dentistry has been extensively reported (Al-Bitar, Sonbol, & Al-Omari, 2008; Bernabe, Icaza, & Delgado-Angulo, 2006; Brand, Chikte, & Thomas, 1996; Butters & Winter, 2002; Gietzelt, 1997; Hallisey, Hannigan, & Ray, 2000; Luzzi et al., 2005; Mariño et al., 2006; Over et al., 1984) and the 17 options included in the questionnaire for this current study, were consistent with the afore mentioned studies. Dentists were asked to choose the three main reasons for choosing dentistry, as it was possible that all, or most, of the reasons would have had some influence on the dentists' choice (see Section A1, Appendix C.1, p. 201). An example of four of the options is shown in the following figure (Figure 5.1.)


A1. Please indicate **three main reasons** for choosing dentistry as a career *(Mark box/boxes with an X)*

Regular working hours	☐1	Fits in with family	☐ 10
Opportunity to help people	☐2	Opportunity to use manual skills	☐ 11

Figure 5.1: Example of main career choice data collection format

5.1.2.2.2 Influences

People who have influenced dentists' decisions to pursue a career in dentistry have been well reported and the results have been consistent (Brand et al., 1996; Coombs, 1976; Grogono & Lancaster, 1988; Mariño et al., 2006; Over et al., 1984; Sivaneswaran & Barnard, 1992). For this study, participants were asked to nominate the main person who influenced them in their decision to become a dentist (see Section A2, Appendix C.1, p. 201). An example of the format is indicated below in Figure 5.2.

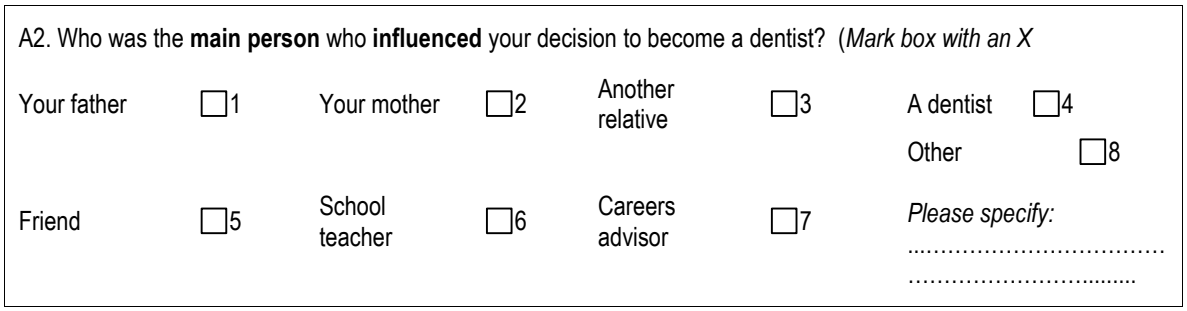


Figure 5.2: Example of career influences data collection format

5.1.2.3 Practice characteristics

Participants were asked to indicate, their main area of practice, the number of days they spent each fortnight at the practice, and how they came to be in the practice (see Section C1, Appendix C.1, p. 203). These options are consistent with other workforce data items (Australian Dental Association Inc, 2010; ARCPOH, 2005, 2006a, 2006b, 2010). Postcode details of each practice location were sought, as well as an estimate of the number of patients seen, in a regular fortnight, from each specific group. A further opportunity was given for dentists to indicate details of a third practice location and the main patient type, if it was relevant (see Figure 5.3).

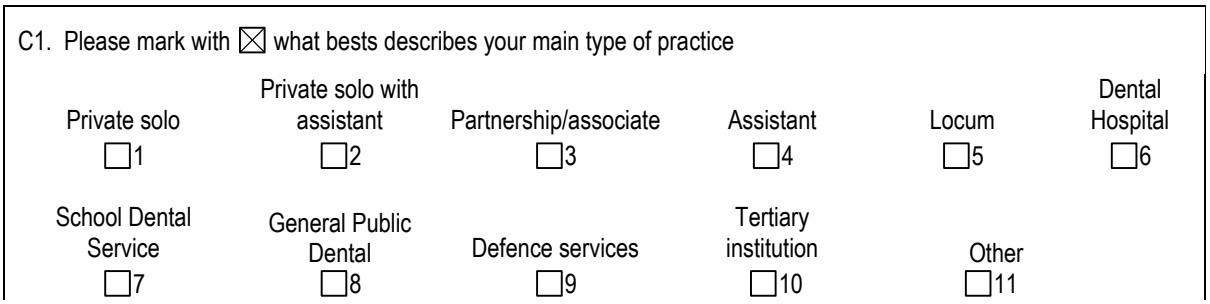


Figure 5.3: Example of data collection format for describing main practice

5.1.2.4 Patient characteristics

Dentists were asked to estimate the number of patients they would see on a regular fortnight from the following groups: Aboriginal and Torres Strait Islander people, incarcerated, recent refugees/migrants, Residential Care Facility patients, other special needs patients, other government funded adults and children, and other general private patients (see Section C13, Appendix C.1, p. 204). An example of how the data were elicited is presented below in Figure 5.4.

C13. Please estimate the **number of patients,** as **best described** from the list below, you would see from **each group** in your practice/s in a **regular fortnight**

Patient Group	C13-1. **Main** location no. of patients	C13-2. **Second** location *(if applic)* no. of patients	C13-3. **Volunteer** only or Pro bono no. of patients
a. Aboriginal or Torres Strait Islander people			
b. Incarcerated people			

Figure 5.4: Example of patient type and numbers data collection format

5.1.2.5 Dental education experience

Details pertaining to where the dentists' initial qualification was obtained, the time it took, whether they had part-time work during their studies, and whether this work affected their overall performance, were requested (see Section B, Appendix C.1, p. 202). Seven statements about their experiences at dental school, such as, their overall satisfaction with their preparedness for practice, the assessment, the diversity of patients seen, and how they perceived their treatment by tutors, were included. Participants were asked to rate on a likert scale of 1-5 their level of agreement with each statement (1=strongly disagree to 5=strongly agree) (see Section B7, Appendix C.1, p. 202). The influence of role models and exposure to disadvantaged groups were included because, these factors have been associated with dentists working with disadvantaged patients upon graduation (Dao et al., 2005; Smith, Ester, & Inglehart, 2006). Dentists' attitudes towards patients' access to dental care have also been linked to community-based rotations as dental students and the degree of exposure to underserved communities (Holtzman & Seirawan, 2009). An example of the statements is presented in Figure 5.5.

B7. Please **circle** the number which best describes your level of agreement/disagreement for each statement					
	Strongly disagree				Strongly agree
a. Overall, I would rate my dental school experience as **positive**	1	2	3	4	5
b. My dental education **prepared** me well for my current type of practice activity	1	2	3	4	5

Figure 5.5: Example of data collection format for dental school experiences

5.1.2.6 Attitudes toward service provision

Eleven statements associated with different models of care were included in the questionnaire. They were based on the responses provided by participants in the qualitative stage of this study (see Section D1-D12, Appendix C.1, p. 204). Specifically, these statements referred to the parties who should be responsible for providing care for dentally disadvantaged populations. A likert scale, requesting the level of agreement for each statement, was used (1=strongly disagree to 5=strongly agree). Figure 5.6 present an example of the data collection format used.

Please **circle** the number which best represents your level of agreement/disagreement for each statement					
	Strongly disagree				Strongly agree
D1. Public dental services should be directed to disadvantaged groups	1	2	3	4	5
D2. It is important to have a choice of dental provider for all Australians	1	2	3	4	5

Figure 5.6: Example of data collection format for dental service provision attitudes

5.1.2.7 Resilience

Resilience was a key theme arising from Stage 1, hence the inclusion of the Connor–Davidson Resilience scale (CD_RISC 10) (Connor & Davidson, 2003). Items were rated on a 5-point scale (0 - 4) (0='not true at all' to 4='true nearly all the time'), and the higher

the score, the higher the level of resilience (see Section E, Appendix C.1, p. 205). Characteristics of resilient people, including those working with special needs patients and disadvantaged groups, have been reported (Resnick & Inguito, 2011; Wagnild & Collins, 2009; Wagnild & Young, 1993) (Connor & Davidson, 2003; Earvolino-Ramirez, 2007; Rowe & Kidd, 2009; Smith, 2011; Stevenson et al., 2011; Wagnild, 2010; Weil, Bagramian, & Inglehart, 2011; Weil & Inglehart, 2010). These key characteristics have been described in the previous chapter (see Chapter 4, Section 4.1.6.5., pp. 67-68). Connor and Davidson (2003) summarised the salient features of resilient people drawing on the work of Kobasa (1979), Rutter (1985) Lyons (1991) and Alexander (1998) and used these in the development of the scale abbreviated to CD_RISC 10 (Connor & Davidson, 2003). The CD_RISC 10 has been tested for internal consistency and for convergent, discriminative and constructive validity (Campbell-Sills et al., 2009) and demonstrated good performance when tested on the general population and those working in clinical settings (Ahern et al., 2006; Smith et al., 2008; Windle, Bennett, & Noyes, 2011). An example of a section of the scale is presented below (Figure 5.7.).

Please **circle** the number, which best indicates how much you agree with the following statements as they apply to you over the last **month**. If a particular situation has not occurred recently, answer according to how you think you would have felt

	Not true at all	Rarely true	Sometimes true	Often true	True most of the time
E1. I am able to adapt when changes occur	0	1	2	3	4
E2. I can deal with whatever comes my way	0	1	2	3	4

Figure 5.7: Example of data collection format for resilience statements

5.1.2.8 Interpersonal reactions (Empathy)

Empathic concern was a key theme arising from Stage 1 (see Chapter 4, Section 4.1.6.3., pp. 64-65). Individuals with high levels of empathic concern are more likely to want to expose themselves to needy targets such as charitable giving, and this concern for others, can 'influence an individual's willingness' to put themselves in to 'potentially empathy-arousing situations' (Davis et al., 1999, p. 472). Likewise, a person's personal distress can lead to anticipated satisfaction once that distress is relieved resulting in a 'willingness to participate in the activity in question', in other words, the situational preference as indicated in the model (Figure 5.8) (Davis et al., 1999). The intention of the

model is to highlight that emotional reactions, such as feelings of 'anticipated sympathy' and 'anticipated distress', do not automatically cause one to help others ('situational preferences'), but rather, they are dependent on the anticipated emotional responses ('anticipated satisfaction') that are likely to be influenced by other variables (Davis et al., 1999, p. 473). Positive sharing is another emotional response associated with one being moved by the positive emotional experiences of others (Caruso & Mayer, 1998).

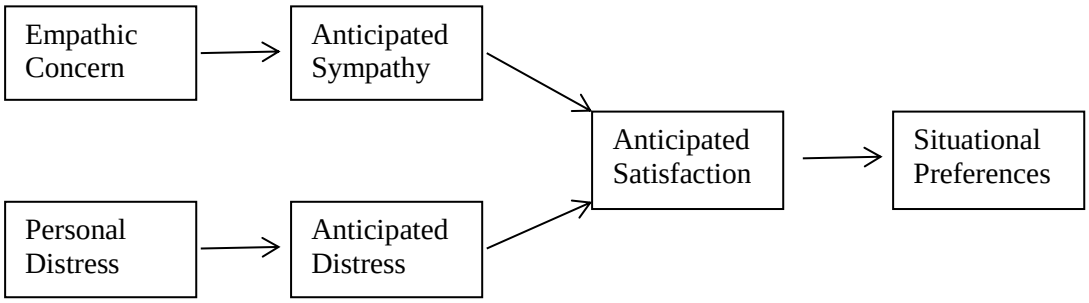


Figure 5.8: Theoretical model of dispositional empathy, anticipated emotional reactions, anticipated satisfaction and situational preference
(Davis et al., 1999, p 474)

Nineteen statements measuring empathy (interpersonal reactions) and personal distress were included (see Section F, Appendix C.1, pp. 205-206). Dentists were asked to rate their level of agreement or disagreement on a scale of 1 to 5 (1=strongly disagree to 5=strongly agree). Two of the four subscales developed by Davis (1980) in his Interpersonal reaction scale (IRI), were chosen to measure Empathic concern and Personal distress (Davis, 1980; Davis et al., 1999). Empathic concern measures a sense of wanting to help others, whereas Personal distress is a self-oriented trait which is not associated with wanting to help someone in need (Batson et al., 1991; Batson et al., 2007; Davis et al., 1999). Minor changes to the wording and phrasing from the original scale by Davis (1980) were made to reflect terminology familiar to an Australian audience (see Appendix C.2, p. 209). An example of items used to measure the empathy constructs, follows (Figure 5.9). In addition, five Positive sharing items, from the widely used Caruso's Multi-Dimensional Emotional Empathy Scale (MDEES), were included (Caruso & Mayer, 1998). These statements are supported by Holland (1990), suggesting that people who have an interest in social or helping careers, have higher emotional intelligence (cited in Caruso, Mayer, & Salovey, 2002). This emotion was highlighted by the dentists who were interviewed for

Stage 1. Figure 5.9 gives an example of how data were collected for the empathy construct.

Please **circle** the number which best indicates your level of agreement/disagreement with each statement in a **general** context					
	Strongly disagree				Strongly agree
F1. When I see someone get hurt, I tend to remain calm	1	2	3	4	5
F2. I feel concern for people less fortunate than me	1	2	3	4	5

Figure 5.9: Example of data collection format for interpersonal reaction (empathy) statements

5.1.2.9 Religious affiliation

Participants were asked to nominate which religious group, if any, they were currently affiliated with and when they were growing up, based on the ABS religious groups (ABS, 2011a). The groups provided were Buddhism, Christianity, Hinduism, Islam, Judaism, Other and 'No religion' (see Section H.13-H.14, Appendix C.1, p. 208). This question was included because of the connection between religious affiliation and health workers interviewed for the pilot study prior to Stage 1, and also because of the Stage 1 findings (see Section 3.2.4., p. 41, & 4.1.2.1, pp. 52-53). Faith-based and secular motivation was also explored in a qualitative study of health providers working with underserved groups (Curlin et al., 2006). The study found that faith-based workers were driven by a 'calling' to medicine whilst secular workers were driven more by the intrinsic nature of 'making a difference'. The example, in Figure 5.10, depicts the type of question used to obtain the information.

H13. Which religious group are you affiliated with currently?	**Buddhism**	**Christianity**	**Hinduism**	**Islam**	**Judaism**
	☐1	☐2	☐3	☐4	☐5

Figure 5.10: Example of data collection format for religious groups

5.1.2.10 Job satisfaction

Job satisfaction statements were included in the questionnaire (see Section G, Appendix C.1, pp. 206-207), however, these were not included in the subsequent analyses relating to the research question. These data will be used in further research.

5.1.2.11 Other

Other information was requested, namely, whether dentists had siblings or children of their own, whether dentists were actively involved in groups and whether family circumstances had influenced their current practice in any way (see Section H10 & H11, Appendix C1, p. 208). However, analyses of these data will also be used for future research along with job satisfaction (see previous Section 5.1.2.10).

5.2 Pilot survey

A small pilot survey was conducted in August 2012 using a convenient sample of 21 dentists, health researchers and education consultants in order to validate the scales in the questionnaire. The pilot study participants tested the instrument for its readability and understandability, which provided a guide in how well the participants might understand and perceive each question. Based on feedback received from the pilot, adjustments were made to the layout. This included; breaking up the pages to avoid long batteries of questions on a single page, being more specific with questions relating to career motivators, being specific about requesting the main person who influenced their career choice, and by providing clearer instructions on the personal nature of questions (see Section 5.1.2., pp. 72-80). The pilot study was used to calculate levels of variance in one of the constructs, Personal factors (Resilience), in order to calculate the sample size (see Section 5.2.1., Table 5.1). Pilot study calculations (see Appendix C.3, p. 210) of Section F, Interpersonal reactions (Empathy) and Section G, Job satisfaction, showed levels of variance on the total scores which also indicated that the estimations for the sample size, after accounting for 'Return to sender', could be verified.

5.3 Sampling

The sampling frame (N) used for Stage 2, was the total list of all available names and addresses of practising dentists in Australia. This list was generated and maintained at ARCPOH. The names were sourced from the 'Australian Dentist Association Directory

2011' and from the yellow pages telephone directory. It represented 82% of dentists according to the latest Australian dentists labour force census (AIHW, 2012). All 9,712 names of dentists on the list were assigned a computerised random number and then were sorted by random numbers. Potential participants were excluded namely:

- 16 dentists known to the researcher and who worked as university academics
- 100 dentists involved in either the pilot study for this project and another study of dentists being conducted for a concurrent project at ARCPOH
- 2,500 dentists randomly selected for the Relative Value Units (RVU) study also running concurrently at ARCPOH.

After these exclusions, a list of 6,581 dentists' names remained. The next 3,300 random numbers were ordered and subsequently formed the sample for this cross-sectional survey (Figure 5.11). This number included 10% over-sampling to allow for duplications and incorrect addresses.

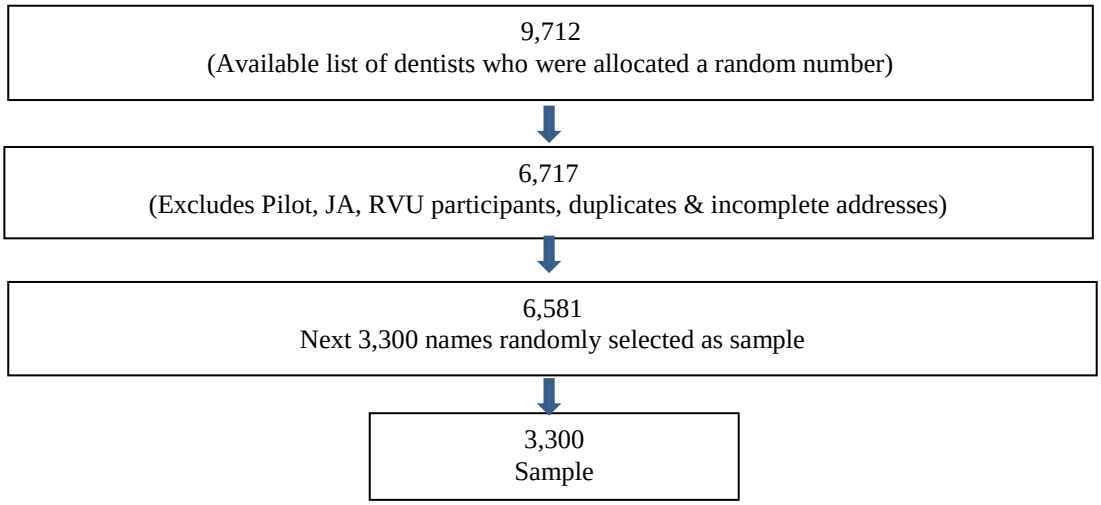


Figure 5.11: Sampling frame used for questionnaire sample size

5.3.1 Sample size for questionnaire

The sample size was calculated and adjusted for an expected response rate of 50% with 2-sided significance of 0.05 and a power of 80% (Bartlett 11, Kotrlik, & Higgins, 2001; Field, 2005; Chang, 2013) (see Table 5.1). The 50% response rate was a conservative estimate based on previous surveys (Luzzi & Spencer, 2011; Brennan &

Spencer, 2001; Brennan & Spencer, 2005; Luzzi et al., 2005) of Australian dentists. Based on these estimates the calculation was made using the following rationale:

1. Based on the formula, $sample\ size = \frac{(1.96*SD)^2}{(error*mean)^2}$

2. Using the SD =6.33 and mean =29.42 from the pilot study calculation of the Connor Davidson Resilience Scale (CD_RISC 10) (see Appendix C.3, p. 210)

3. Therefore the Unadjusted Sample size (n) = 1778.42 =. $\frac{(1.96*6.33)^2}{(.01*29.42)^2}$

4. After adjusting for a large sample size relative to the population

   n=1778.42/ (1 + (1778.42/10404))= 1519

5. Allowing for 50% response rate = 1519/.50=3037

6. Allowing for 10% Return to Sender =3037*1.10=3341, rounded to 3300.

Table 5.1: Sample size calculation summary for questionnaire

Sample size for sample mean of Connor Davidson Resilience Scale Width of confidence interval = 95% of observations Tolerable error = +/- 0.01 from the mean value Sample size required = 3300

5.3.1.1 Inclusion and Exclusion

Included in the random sample, were all dentists registered to practice in Australia, and who appeared on the dentists' register which was maintained and updated at ARCPOH. Once the survey was returned, dentists who were not practising clinical dentistry, and who had less than five years' experience since their graduation, were subsequently excluded from the analysis. This decision was based on a report which found that the average tenure for physicians working with disadvantaged and marginalised groups was three years (Stevenson et al., 2011). Another influencing factor to exclude dentists with less than five years experience, was supported by research which found that dentists' job satisfaction was positively associated with the number of years in practice (Wells & Winter, 1999). Dentists who were known to the researcher and who worked as university academics, dentists involved in the pilot study and dentists in the concurrent projects being conducted through ARCPOH, were excluded (see Section 5.3., previous page).

5.4 Ethical approval

Ethics approval for the questionnaire (Stage 2) was obtained from the University of Adelaide Human Research Ethics Committee in August 2012 (Project number H-2012-114) (see Appendix C.4, p. 211). Confidentiality was maintained by having unique identifiers on all data, using password protected computer files, and storing original data in a secure, password protected facility.

5.5 Data management

5.5.1 Data collection procedure

The data collection methodology followed the 'Total Design Method' developed by Dillman (Dillman, 1978; Hoddinott & Bass, 1986) and was used to maximise the response rate (see Table 5.3). In November 2012, 3,300 dentists, whose names were drawn from the sampling frame, were sent a personalised, advance-notice letter; otherwise known as a primary approach letter (PAL) (see Appendix C.5, p. 212). The purpose of the PAL was to inform dentists of their selection for the survey and for them to expect to receive a questionnaire shortly. The PAL also assisted in identifying the purpose of the survey and establishing its legitimacy. One week after the PAL was mailed; dentists received a package consisting of:

- a cover letter outlining the contents of the package (Appendix C.6, p. 213)
- an information sheet (Appendix C.7, p. 214)
- human research ethics detail and the complaints procedure (Appendix C.8, p. 215)
- the questionnaire booklet (Appendix C.1, pp. 201-208)
- Reply-paid return envelope.

After the first round, 10% of PALs and/or surveys were returned because of 'left addresses', or because the practitioner had retired or was deceased. It also became apparent that a few names and addresses were duplicated, thus leaving the total persons approached as being 3286. A week after the questionnaire was mailed, a friendly reminder card was sent to the sample (see Appendix C.9, p. 216). The card invited dentists to, complete and return the questionnaire soon, to indicate whether they had retired or no longer practised dentistry, and to return the card in the reply-paid envelope. Six weeks later (to allow for Christmas and the New Year holiday period), a second package, containing a slightly modified cover letter (see Appendix C.10, p. 217), was sent to those

who had not responded. A further follow-up mailing, once again with a different cover letter (see Appendix C.11, p. 218), was conducted to maximise the overall response rate for the Stage 2 study.

'Return to sender' correspondence was followed up by searching the Australian Health Practitioner Registration Agency (AHPRA) web-site, the yellow pages and the internet. The yellow pages and internet yielded 170 new addresses (new address 1) being found. The full approach strategy of, resending the PAL, the first approach, the friendly reminder and two additional approaches where warranted, were followed. Another round of searching recovered a third address (new address 2) for 33 participants, and subsequently, the Dillman method (Dillman, 1978) was applied once again. Table 5.2 shows the timeline of each approach made to the sample population.

Table 5.2: Timing and description of mail-outs to sample population

Date	PAL	Initial approach	First follow-up	Second follow-up
28-11-12	3,300 x PAL			
05-12-12		3,300 x 1st approach package (3,286 after duplicates identified)		
12-12-12		3,165 x Friendly reminders		
08-01-13	170 x PAL new address (1)			
18-01-13		165 x 1st approach new address (1)		
25-01-13			1,892 x 2nd approach package	
04-02-13		125 x Friendly reminder new address (1)		
15-02-13			100 x 2nd approach new address (1)	
21-02-13	33 x PAL new address (2)			
22-02-13				1,495 x 3rd approach package
01-03-13		34 x 1st approach new address (2)		
08-03-13		32 x Friendly reminders new address (2)		
15-03-13				67 x 3rd approach new address (1)
02-04-13			23 x 2nd approach new address (2)	
30-04-13				20 x 3rd approach new address (2)

5.5.2 Data cleaning

The data cleaning procedure commenced as raw data were being collected. Each variable was initially checked to confirm if data were entered into correct columns. Missing values were coded as 9, -9 or 9999. If postcodes were missing, a check was made against their address and the postcodes inserted. Likewise, if gender was missing, a check was made against their contact details and the gender inserted. Cases were removed from the data set if they did not meet the eligibility criteria.

5.5.3 Data reduction

5.5.3.1 Response formats

Most questions required the participants to tick one precoded response. Some questions needed numbers inserted as answers (for example post-codes, patient numbers, days worked per fortnight). Several data items were recoded and/or collapsed to reduce the number of variables used for analyses because the sample size, of the outcome variable, was expected to be small (Vittinghoff & McCulloch, 2007). Specific sections of the questionnaire (see Appendix C.1, pp. 201-208) where this occurred are noted below:

- In Section A2, which related to career decision, a new variable 'parent' was created by combining the responses of either 'father' or 'mother' to the question about who had the most influence over the participant's decision to become a dentist
- 'School teacher' and 'Careers advisor' were combined to form the new variable 'teacher/career advisor'. Where participants failed to nominate the main person who influenced their career decision, but gave a reason instead, such as 'Yr 12 score' or 'work experience', the response was deemed invalid. Because of the number of specific responses to 'Other' where participants answered 'self', 'no-one', 'no one in particular', or similar, a new variable 'Self' was computed (Section A2)
- Variables relating to the reason for being at the practice were condensed into two, namely, 'Sought opportunity self' and 'Other reason' (Section C)
- Dentists working in 'Defence services', 'Tertiary institutions' and 'Other' were combined to form one variable 'Defence/Tertiary/Other' for analysis because of the small residential groupings (Section C)
- Percentages of all types of patients were calculated by dividing the number of each patient group by the total number of patients seen in a regular fortnight (Section C)

- Scale responses ‘Disagree’ and ‘Strongly Disagree’ were recoded to form the new response variable ‘Disagree/StronglyDisagree’ (D/SD), and ‘Strongly agree’ and ‘Agreed’ were recoded to ‘StronglyAgree/Agree’ (SA/A) (Sections B, D, & F)
- The sum of the Resilience scale was calculated and then dichotomised into ‘High resilience’ and ‘Low resilience’, using the mean as the cut-off (Section E)
- The sum of the Interpersonal reaction (Empathy) scale was calculated and dichotomised into ‘High empathy’ and ‘Low empathy’, using the mean as the cut-off (Section F)
- School location was condensed into three variables; ‘Australian capital city’, ‘Australian country town/regional city’ and ‘Overseas’. The type of school attended was recoded into ‘Public’ and ‘Private’ (Section H)
- Age was calculated and grouped as < 40 years, ≥ 40-49 years, ≥ 50-59 years and 60+ years (Section H)
- Country of birth was grouped into eight regions; ‘Australia’, ‘Asia’, ‘United Kingdom & Ireland’, ‘Europe’, ‘Africa’, ‘Middle East’, ‘New Zealand & Pacific’, ‘North & South America’ (Section H)
- Education level attained by the participants’ father and mother was grouped into two variables; ‘Bachelor and above’ and ‘Diploma/AdvancedDiploma/Yr12/Certificate 3-4 and below’ (Section H)
- Religious affiliation variables for ‘current’ and ‘when growing up’ categories were condensed and dichotomised into ‘Religion’ and ‘No religion’ for each (Section H).

5.5.4 Factor analysis

Principal component analysis (PCA), with Promax and Varimax rotation (Costello & Osborne, 2005; Matsunaga, 2010), was conducted as a method of data reduction for dental education experiences (see Appendix D.1, p. 220) and dentists’ attitudes towards dental service provision (see Appendix D.2, p. 221). The PCA was used to ‘simply summarize (sic) many variables into fewer components’ because the latent constructs was ‘not the focus’ of this exercise (Henson & Roberts, 2006, p. 398). Items with a loading of 0.70 or greater on a principal component, and a loading less than 0.30 on any other component, were considered part of an orthogonal construct (Costello & Osborne, 2005). However, it was decided to analyse each of the variables individually, because of the meaningfulness associated with each statement, and the association of each statement with the Stage 1 findings. Principal Axis factoring (PAF) was conducted on the Resilience scale and the

Interpersonal reaction scale (Empathic concern, Personal distress and Positive sharing). PAF was used to determine the dimensionality of the sub-scales and was performed to confirm that items used to obtain Interpersonal reactions (Empathy) and Resilience, loaded highly on each respective dimension and sub-scale (de Winter & Dodou, 2011).

5.6 Data analysis plan

No formal hypotheses were offered because there was an absence of theoretical or empirical evidence on the reasons why dentists work with underserved groups in Australia. Therefore, the research questions were posed to explore interactive relationships between pairs of decision-making strategies and the dentists who work with disadvantaged groups. The raw data from the questionnaire was entered into an excel spreadsheet and then converted to a Statistical Package for the Social Sciences (SPSS) version 20 data file for cleaning. The next paragraphs describe how the independent and outcome variables used in the analyses were derived, provides an overview of the specific statistical tests performed in the univariate, bivariate and multivariate analyses, and how factor analyses was conducted and considered for data reduction.

5.6.1 Outcome variable

The main outcome variable used in the analyses, 'treating disadvantaged patients', was calculated by summing the number of patients seen from all of the eight patient groups presented (refer previous Section 5.1.2.4., p. 75 & Section C13, Appendix C1. p. 204). The sum of patients from the first five groups, namely, 'Aboriginal & Torres Strait Islands', 'Incarcerated', 'Recent refugees/new migrants', Residential Care Facilities, and 'Other Special Needs' was then divided by the sum of all groups, and then multiplied by 100 to give a percentage. A binary variable was then created, namely '$\geq$ 50% and < 50% disadvantaged patients seen'. If a dentist saw at least 50% of such patients, they were regarded as 'treating disadvantaged patients'. If the proportion was less than 50%, the dentists were categorised as treating general patients as their main activity.

5.6.2 Independent variables

Independent variables selected for analysis were determined by the themes which emerged from Stage 1, and were based on and/or adapted from previous research. They included Interpersonal reactions (Empathy concern & Personal distress & Positive sharing), 'Resilience', 'Dental service provision', 'Formal dental education' and 'Dental

school experience'. Variables such as, 'Age' (see footnote[1]), 'Gender', 'Socio-demographics' (e.g., dentists' schooling and parents' education) and 'Religious affiliation', were categorical predictor variables for the descriptive analyses. Other practice details such as, 'Practice type', 'Practice location', and 'Reasons for being at the practice', were also variables used in the analyses. The recoding of the independent variables has been described previously (see Section 5.5.3., pp. 85-86).

5.6.3 Bivariate analyses

Cross tabulations, using Chi square tests or Fisher's exact 'goodness of fit' tests, were performed using IBM SPSS Statistics 20 on all dependent and outcome variables to test the degree of relationship between each and to identify potential confounders. The Hosmer and Lemeshow 'Goodness of fit' test was performed on all logistic models with continuous predictors. If p-values were ≥ 0.05, the model therefore indicated having a 'good fit' (Field, 2005). Dimension or sub-scales mean scores were calculated by summing the values of all items in the Interpersonal reaction (Empathy) and Resilience scales, and then dividing the sum by the number of items. (Only those respondents who provided at least 75% of the responses for that sub-scale were included). These mean scores were analysed for associations with the outcome variable. Variables with a p-value of < 0.15 (Mesas et al., 2010), were subsequently entered into binomial logistic regression models to examine the independent contribution to variations in Interpersonal reaction (Empathy), Resilience, attitudes towards Dental service provision and Dental education experience measures. The p-value < 0.15 was chosen as an arbitrary cut-off to reduce the number of variables in the model to a number that did not give sparse data.

5.6.4 Multivariate analyses

Binary logistic regression was conducted using the statistical software SAS 9.3 (SAS Institute Inc., Cary, NC, USA). Models were used for each dependent variable followed by several combinations of dependent and explanatory variables. These analyses were completed to determine the level of effect that dentists' characteristics had on providing humanistic dental care. The backward step-wise technique was employed to create the final regression model. This method was used because the logistic regression models were data-driven explorations and interpretations, which were not testing a theory or causal

[1] Age was a continuous variable in the multivariable analysis

associations (Fitzmaurice et al., 1995). The relaxed convention of 10 events per variable in the logistic regression, was followed (Vittinghoff & McCulloch, 2007).

5.7 Summary of quantitative methods

The second stage of the mixed-method design used a self-report questionnaire for a cross-sectional survey of practising dentists in Australia. The questionnaire content was derived from themes, which became apparent after the analysis of the interviews conducted for Stage 1. Quantitative data analysis was presented in the form of descriptive statistics, followed by bivariate logistic regression. Selected variables were then entered into multivariate models to determine their predictability for dentists treating underserved patients, after accounting for potential confounders.

The next chapter reports the results following the data analysis of the questionnaire. It provides the statistical evidence for dentists' reasons for choosing to work with disadvantaged groups of Australians, and how these reasons differed from dentists who worked in 'mainstream' practice, treating mainly general patients.

Chapter 6. Results (Stage 2)

This chapter presents the results of Stage 2 of the mixed-methods study. The ordering of these results follows a logical sequence, which does vary from the way data were collected in the questionnaire (see Section 5.1.2., pp. 72-80). It begins with the unadjusted and adjusted response rate calculations of the study population. The total number of disadvantaged patients and the percentage of dentists treating them, follow. Univariate, descriptive analyses, which includes frequency distributions, and the bivariate associations, testing for interactions between the main outcome variable with selected independent variables, form the bulk of the chapter. Variables meeting the criteria for a logistic regression analysis are presented toward the end. This chapter presents tables for interpretation and makes reference to the exploratory factor analyses, using PCA, which was conducted for data reduction consideration.

6.1 Questionnaire response

6.1.1 Unadjusted response rate

Of the 3286 (p1) questionnaires that were initially distributed, the total numbers were reduced to 2933 (p2) because, either the dentist was deceased (as notified by the practice or family member), or the questionnaire was returned in the mail. Further reduction in participants occurred if dentists did not meet the study criteria (i.e., not practising, retired, volunteering only, less than five years' experience) or they elected not to participate by returning the blank questionnaire. This left an eligible sample of 2711 (p3). The unadjusted response rate (RR1) was calculated at 56.2% (Figure 6.1).

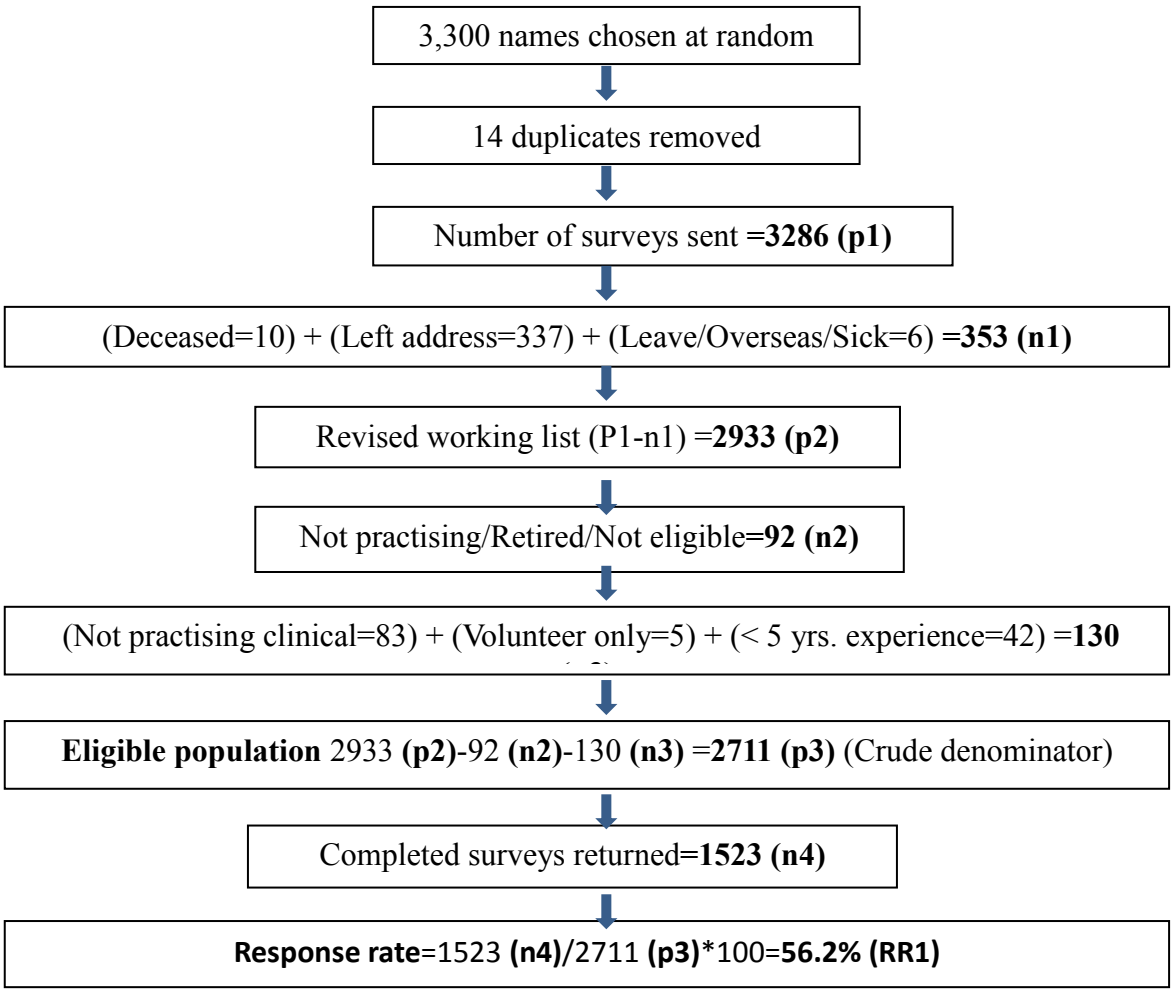


Figure 6.1: Flow chart from random selection to response rate

6.1.2 Adjusted response rate

To address the potential for ineligible participants being in the non-responder group, a random sample of non-responders and 'refusals' was investigated (Table 6.1) (n=220, 15%). Names were checked against the AHPRA list of registered dental practitioners to check the date of first registration (to indicate eligibility), and the currency of the dentist's practice. From this sample, 48 dentists were either not registered, non-practising, or had graduated fewer than five years from this study period, which amounted to 21.8% of the sample (48/220*100=21.8%).

Table 6.1: Summary of a random sample of 220 (15%) non-responders and refusals

Non-responders and refusals (n=220)	n	%
Not registered	22	10
Not meeting study criteria (< 5yrs since graduation)	21	9.5
Not practising	5	2.3
Total	48	21.8

This proportion (21.8%) of non-responders (n5) (Figure 6.2), was calculated to be 287 (21.8%*1318=287). This number was then deducted from the crude denominator (2711) (p3), giving an adjusted denominator of 2424 (2711-287=2424). Using the adjusted denominator of 2424, the adjusted response rate (RR2) (Returned completed forms (1523) divided by 2424) was calculated to be 62.8% (Figure 6.2).

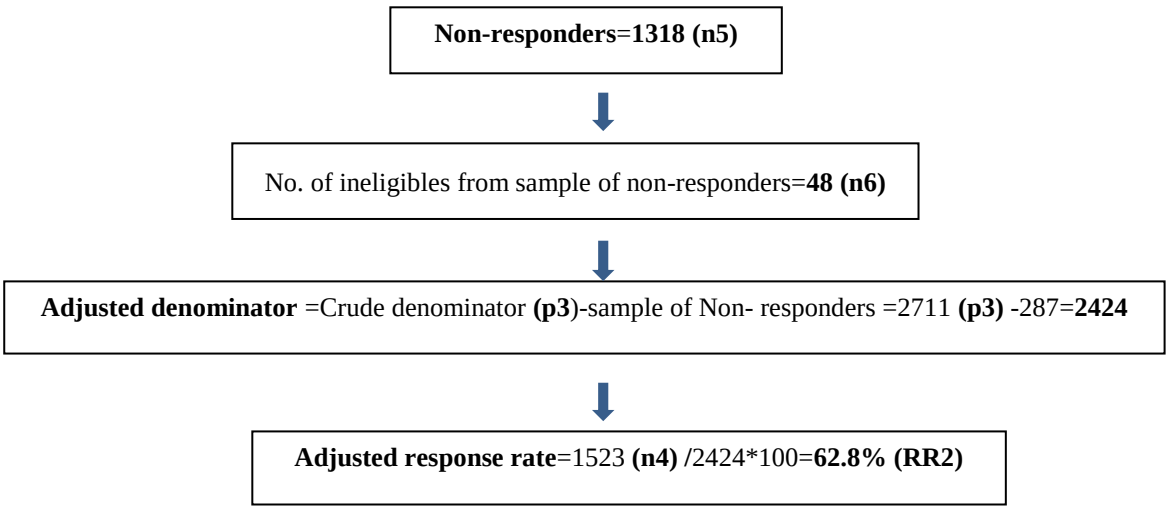


Figure 6.2: Adjusted response rate calculation

6.2 Outcome variable

The total number of patients seen from each disadvantaged group in the first or second practices (where applicable) in a typical fortnight was calculated, and the results presented in Table 6.2. Most patients seen, were categorised as general private patients (Mn=77.84, SD 62.94), followed by 'Other Government funded adults' (Mn=7.41, SD

14.07). Disadvantaged patients made up a small proportion of the overall patients seen by dentists. Very few incarcerated patients (Mn=0.38, SD 6.31), and patients from Residential Care Facilities (Mn=1.60, SD 4.08), presented for care. Fewer than two Aboriginal or Torres Strait Islander patients (Mn=1.53, SD 6.78), and around three patients with special needs, were seen at either of the dentists' two practice locations (Mn=2.63, SD 8.16) in a regular fortnight.

Table 6.2: Proportion of types of patients seen at both practices in a regular fortnight

Patients (total=126109)	%	Sum	Mean	SD
Aboriginal & Torres Strait Islanders	1.59	2010	1.53	6.78
Incarcerated	0.40	499	0.38	6.31
Refugees/new migrants	1.88	2369	1.81	5.99
Residential Care Facility	1.66	2095	1.60	4.08
Special Needs	2.74	3450	2.63	8.16
Other Government funded adults	7.70	9711	7.41	14.07
Other Government funded children	3.18	4005	3.06	8.79
Other private patients	80.86	101970	77.84	62.94

The category, 'Dentists who treated patients' from one or more of five disadvantaged groups, excluding 'Other government funded adults and children', was used to define the outcome variable for this study. The proportion of dentists' total patient population from disadvantaged groups, and the percentage of dentists treating these patients, is presented in Table 6.3 (see footnote[2]). Almost 60% of dentists saw fewer than five per cent of patients from across the disadvantaged groups, with a quarter of dentists seeing 10% or more.

[2] Although not shown, a number of dentists (n=217; 14.2%) did not complete or fully complete the question pertaining to the number of patients from each group they saw in a regular fortnight.

Table 6.3: Percentage of dentists who treat disadvantaged patients

Proportion of disadvantaged patients seen by dentists n=1304	n	%
Less than 5%	775	59.4
5 to < 10%	205	15.7
10 to < 15%	102	7.8
15 to < 20%	40	3.1
20 to < 25%	34	2.6
25 to< 30%	18	1.4
30 to < 35%	18	1.4
35 to < 40%	13	1.0
40 to < 45%	14	1.1
45 to < 50%	4	0.3
50 to 100%	81	6.2

6.3 Univariate descriptive analyses

6.3.1 Demographic characteristics

The frequencies of respondents' demographic characteristics are presented in Table 6.4. All states and territories were represented, with two-thirds of dentists practising in the larger states, namely, NSW and Vic, and the rest practising in the remaining states and territories. Less than one per cent of responding dentists (n=11; 0.7%), were from NT. Fifty percent of respondents were 50 years and over, and less than a quarter were under 40 years (22.4%) and between 40-50 years (23.6%). Two thirds of respondents were male (68%), and over one half were born in Australia (55%), which was followed by Asia (20%) as the second highest country of birth.

The distribution of respondents per state and territory, in this current study, is closely matched with 2012 census data. Comparing this current study data with the 2012 census, more eligible respondents were from South Australia (10% cf. 7.5%) and from Western Australia (14.2% to 10.5%) and fewer were from New South Wales (30.5% cf. 33.4%). There were slightly higher percentages of males and fewer females, compared with the total dentist population of 12,767 registered clinicians.

The mean age of respondents was 49.8 years (SD 11.81). This was comparable to 2012 workforce data (Mn=43.4 years), after accounting for dentists with less than five years' experience, not being eligible for this study (Table 6.4).

Table 6.4: Demographic characteristics of dentists and comparisons with census data

			2012 Census N=12,767	
Demographic	**n**	**%**	**n**	**%**
State n=1523				
New South Wales	464	30.5	4268	33.4
Victoria	361	23.7	3126	24.5
Queensland	265	17.4	2525	19.8
Western Australia	217	14.2	1343	10.5
South Australia	153	10.0	962	7.5
Tasmania	26	1.7	190	1.5
Australian Capital Territory	26	1.7	238	1.9
Northern Territory	11	.7	86	0.7
Age in years n=1482	**(Mean 49.8)**		**(Mean 43.4)**	
Under 40	331	22.4	13266†	
40-49	350	23.6		
50-59	477	32.2		
60 and over	324	21.9		
Gender n=1523				
Male	1036	68.0	8107	63.5
Female	487	32.0	4660	36.5
Country of birth n=1448				
Australia	800	55.2		
Asia	303	20.9		
United Kingdom (UK) & Ireland	117	8.1		
Europe	72	5.0		
Africa	55	3.8		
Middle East	36	2.5		
New Zealand (NZ) & Pacific	41	2.8		
North & South America	24	1.7		

†Number of all employed dentists, NHWDS data, dental practitioners (AIHW, 2014a)

6.3.2 Socio-economic characteristics

Participants' schooling and parents' level of education represent socio-economic characteristics in this study (Table 6.5). The majority of respondents attended high school in an Australian capital city (61%), and around a quarter (26.5%), completed their schooling overseas. The minority received their high school education outside a capital city and equal proportions of dentists attended public and private schools. More dentists' fathers' than their mothers' had a degree qualification as the minimum education level (41.7% cf. 20.7%).

Table 6.5: Frequency distribution of socio-economic characteristics of dentists

SES variable	n	%
School location n=1487		
Australian capital city	913	61.4
Australian country town/regional city	180	12.1
Overseas	394	26.5
School type n=1471		
Public	739	50.2
Private	732	49.8
Fathers education n=1508		
Bachelor or above	629	41.7
Diploma/AdvancedDiploma/Yr12/Certificate 3-4 & below	879	58.3
Mothers education n=1506		
Bachelor or above	312	20.7
Diploma/AdvancedDiploma/Yr12/Certificate 3-4 & below	1194	79.3

6.3.3 Formal dental education

Most respondents (27.8%) graduated between 1975-1984, with approximately the same proportion graduating in the periods 1985-1994 (19.4%) and 1995-2004 (17.0%) (Table 6.6). However, almost a fifth (18.9%) of respondents did not report their year of graduation. Half of the respondents graduated from either the University of Sydney or the University of Melbourne (50.6%). Four out of five (79.7%) were Australian graduates and

most gained their qualification in the minimal time, with 16.8% taking longer to obtain their degree.

Table 6.6: Frequency distribution of characteristics of dentists' formal dental education

Dental school characteristic	n	%
Year of graduation n=1523		
1945-54	6	0.4
1955-64	29	1.9
1965-74	166	10.9
1975-84	423	27.8
1985-94	296	19.4
1995-04	259	17.0
2005-07	56	3.7
Not stated	288	18.9
Australian university n=1080		
Sydney	305	28.2
Melbourne	242	22.4
Adelaide	201	18.6
Queensland	182	16.9
Western Australia	150	13.9
Gained qualification n=1498		
Australia	1194	79.7
United Kingdom & Ireland	96	6.4
New Zealand/Pacific	50	3.3
Asia	73	4.9
North/South America	13	0.9
Africa	37	2.5
Middle East	18	1.2
Europe	17	1.1
Degree in minimum time n=1512		
Yes	1258	83.2
No	254	16.8

Note: Griffith University was not included because graduates did not meet the inclusion criteria.

6.3.4 Practice details

The distribution of dentists in this study closely represents the distribution of dentists, per practice type, recorded in the 2012 dentists' labour force census (Table 6.7) (AIHW, 2014a); with the exception of hospital-based clinicians. There was a 10% difference in the number of private dentists who were either working in group practices or as assistants, when compared with 2012 census data. The majority (87%) were working in solo or group practices as their main location.

The majority of dentists who worked at a second practice were in a private practice (63%) (Table 6.7). Around 14% worked in government clinics such as hospital settings, the school dental service or general public clinics with almost the same percentage working in tertiary institutions (13.2%). No comparisons were made between the second practice description and the 2012 census data because the census data referred to the 'main' job only.

Table 6.7: Frequency distribution practice characteristics with census data

	Current study			2012 census[a] N=12,767	
	n	**%**	**95% CI**	**n**	**%**
Main practice n=1426					
Private solo	381	26.7	(24.5-29.1)		
Private group	869	60.9	(58.0-63.0)	10,179	79.7[c]
Locum	14	1.0	(0.6-1.6)		
Dental hospital	31	2.2	(1.5-3.1)	698	5.5
School Dental/General Public	72	5.0	(4.0-6.0)	619	4.8
Defence	11	0.8	(0.4-1.4)	109	0.9
Tertiary	12	0.8	(0.5-1.5)	92	0.7
Other	36	2.5	(1.8-3.5)		
Second practice n=364[b]					
Private solo	56	15.4			
Private group	173	47.6			
Locum	9	2.5			
Dental hospital	14	3.8			
School Dental/General Public	37	10.2			
Defence	2	0.5			
Tertiary	48	13.2			
Other	25	6.9			

[a]Clinician, NHWDS data, dental practitioners (AIHW, 2014a)
[b]Distributions not available for second practice in census data
[c]% Private solo, group or locum combined
Note: Not all column %'s total 100 due to rounding off

After collapsing practice type into four groupings, it was clear that five times as many dentists worked in the Defence Force, a tertiary intuition or another environment, as their second practice activity, compared to dentists recording this for their main (20.6% cf. 4.1%). Twice as many dentists worked in the public sector (e.g., School Dental/General Public/Hospital) in their second practice, compared with their main activity (14.0% cf. 7.2%) (Table 6.8).

Table 6.8: Frequency distribution of type of main and second practice locations

	Main n=1426		Second n=364	
Type of practice	**n**	**%**	**n**	**%**
Private solo	381	26.7	56	15.4
Private group/locum	883	61.9	183	50.1
School Dental/General Public/Hospital	103	7.2	50	14.0
Defence/Tertiary/Other	59	4.1	75	20.6

Note: Not all column %'s total 100 due to rounding off

Based on the remoteness area classification, the Australian Standard Geographical Classification (ASGC), the majority of dentists' main practice locations were in major cities (80.2%), and less than one per cent were in remote and very remote locations (Table 6.9). The remoteness area classification of the dentists' second practice, showed that the proportion of dentists working within the particular regions, were very similar to those of the main practice.

Table 6.9: Frequency distribution using remoteness area classification of main and second practice

	Main n=1423		Second n=348	
Practice location	**n**	**%**	**n**	**%**
Major City	1141	80.2	276	79.3
Inner Regional	191	13.4	48	13.8
Outer Regional	75	5.3	19	5.5
Remote/Very remote	16	1.1	4	1.5

Notes: Remoteness area classification is Australian Standard Geographical Classification (ASGC) (ABS, 2010a)
Not all column %'s totals 100 due to rounding off

In response to the question about how dentists came to be at their practice, just under half (44.7%) sought out the main workplace themselves; whereas, only a third sought out the second workplace themselves (Table 6.10) (see Appendix D.3, p. 222, for a full list of responses).

Table 6.10: Frequency distribution of reasons for being at the main and second practice

	Main n=1419		Second n=366	
Reason	**n**	**%**	**n**	**%**
Sought opportunity self	635	44.7	116	31.7
Other reason	784	55.3	250	68.3

6.3.5 Career decision

The three main reasons for choosing dentistry, revealed that, most dentists (42.0%) in the study nominated the 'opportunity to help people' as the main reason, with 'self-employment and independence', and the ability to earn a 'good income', were also of high importance (Table 6.11). A main motivating factor for around 10% was that studying dentistry was the 'expectation of their parents'. Responses to 'Other' (4.5%) included following the careers of their parents, friends, dentists, role models and having the flexibility of a work-life balance. Others reported choosing dentistry because they had met the academic requirements for entry or because they had been offered scholarships to attend university.

Table 6.11: Frequency distribution of dentists' responses to career choice motivation options

Motivation variable	n	%
Opportunity to help people	639	42.0
Self-employment and independence	534	35.1
Able to earn a good income	529	34.7
Opportunity to use manual skills	431	28.3
High professional status	361	23.7
Interesting job	342	22.5
Science-based occupation	332	21.8
Job security	308	20.2
Regular working hours	296	19.4
A second choice to medicine	294	19.3
Saw dentistry as a challenging career	201	13.2
Fits in with family	140	9.2
My parent's expectation	134	8.8
Other	68	4.5
Opportunity to specialise	46	3.0
Parent's made decision for me	32	2.0
Opportunity to do research	10	0.7

NB Respondents were asked to provide a minimum of three main reasons

A third of the respondents nominated a dentist (31.5%) as having the most influence over their career choice, with parents and/or another relative, also influential (28.2% & 10.7% respectively) (Table 6.12). Teachers and career advisors had little influence (4.5%).

Table 6.12: Frequency distribution of person/s having the main influence over career choice

Influencing person	n	%
Dentist	479	31.5
Parent	430	28.2
Self	195	12.8
Relative	163	10.7
Friend	129	8.5
Teacher or career advisor	75	4.9
Other	32	2.1

6.3.6 Dental education experience

The responses to the statement (B7f) in relation to having 'a range of exposure to disadvantaged groups during dental education', were orientated toward the negative, (Mn=2.85, SD 1.22) (Table 6.13). The remaining responses rating experiences in dental school, showed a mean in the positive direction (Mn > 3.0), indicating the dentists either agreed or strongly agreed to the statements.

Table 6.13: Responses to dental education experience

Statement (1=strongly disagree to 5=strongly agree)	n	mean	SD
B7a. Overall I would rate my dental school experience as positive	1507	3.81	1.07
B7b. My dental education prepared me well for my current type of practice activity	1510	3.58	1.03
B7c. Overall I felt that the assessment was fair	1496	3.70	0.91
B7d. Overall I was treated with respect by my dental educators during my training	1508	3.59	1.07
B7e. Role models during dental school had a positive impact on my current practice activity	1504	3.53	1.09
B7f. I had a range of exposure to dentally disadvantaged groups during my training	1500	**2.85**	1.22
B7g. I would have liked an intern opportunity on graduation to develop my confidence in treating patients with special needs	1496	3.24	1.28

Note: **Bold** type indicates less than neutral score of 3
SD Standard Deviation

6.3.7 Attitudes towards dental service provision

There was considerable agreement amongst the dentists that 'Public dental services should be directed toward disadvantaged groups' (D1), (Mn=4.22, SD 1.04), that 'all Australians should have a choice of dental provider' (D2), (Mn=4.14, SD 1.02), and that 'different models of care should be explored to reach disadvantaged groups' (D10), (Mn=4.03, SD 0.84) (Table 6.14). 'Dental profession should be responsible for dental care for all Australians' (D3), returned a neutral response, (Mn=2.98, SD 1.29).

Table 6.14: Responses to attitudes toward dental service provision

Statement (1=strongly disagree to 5=strongly agree)	**n**	**mean**	**SD**
D1. Public dental services should be directed toward disadvantaged groups	1495	4.22	1.04
D2. It is important to have a choice of provider for all Australians	1499	4.14	1.02
D3. The dental profession should be responsible for ensuring that all Australians are able to receive dental care	1494	**2.98**	1.29
D4. The government should be responsible for ensuring that all Australians are able to receive dental care	1493	3.91	1.16
D5. Oral health therapists should be employed to provide care to disadvantaged groups within their scope of practice	1493	3.63	1.05
D6. Dental disease could be eliminated through education alone	1493	**2.27**	1.13
D7. Dentists should not be concerned with patients who don't place oral care as a high priority	1493	**2.35**	1.09
D8. Private dentists should be funded to provide care to disadvantaged groups	1492	3.63	1.05
D9. If incentives were offered more dentists would go to remote and outer regional areas to provide dental services	1496	3.64	1.05
D10. Different models of care to reach disadvantaged groups should be explored	1482	4.03	.84
D11. Dentists should volunteer some of their time to work with disadvantaged groups if the facilities, equipment and support staff enable this	1492	3.19	1.15
D12. Dentists should work with a multidisciplinary team in managing people who are disadvantaged	1491	3.76	.97

Note: **Bold** type indicates less than neutral score of 3
SD=Standard Deviation

6.3.8 Resilience of dentists

Using the CD_RISC 10 scale allowing for a possible maximum score of 40, resilience was calculated as the total score for each statement. Table 6.15 shows the variation and distribution between the responses for each statement. Most responses were in the positive direction registering a mean above the neutral score of three, and only three statements registered a mean score less than three. The statistics for the CD_RISC 10 scale were Mn=31.2 and SD=5.47.

Table 6.15: Descriptive statistics of Resilience scale statements

Resilience statement n=1468 (0=not true at all to 4=true most of time)	**n**	**mean**	**SD**
E1. I am able to adapt to change	1498	3.34	.70
E2. I can deal with whatever comes my way	1498	3.19	.74
E3. I use humour when faced with problems	1495	2.83	.92
E4. Coping with stress makes me stronger	1496	2.71	.95
E5. I tend to bounce back after illness, injury or other hardship	1494	3.30	.75
E6. I believe I can achieve my goals despite obstacles	1499	3.31	.71
E7. I can focus and think clearly when under pressure	1499	3.21	.76
E8. I am not easily discouraged by failure	1499	2.99	.89
E9. I am strong when dealing with life's challenges and difficulties	1496	3.24	.79
E10. I am able to handle unpleasant and painful feelings	1497	3.05	.83

SD=Standard Deviation
Scale statistic (Mn=31.17, SD 5.4)

For completeness, PAF was performed on each of the scaled items. The suitability for analysis was clearly indicated by the KMO and Bartlett's Test of Sphericity (Table 6.16). All 10 items were forced into one factor called Resilience.

Table 6.16: KMO and Bartlett's Test of Sphericity for the Resilience scale

Scale	**Kaiser-Meyer-Olkin Measure**	**Bartlett's Test of Sphericity**		
		Approx. Chi-Square	**df**	**Sig.**
Resilience	0.91	5323.012	45	< 0.001

1. Non redundant residuals 26% with absolute values greater than 0.05

The loadings for the Resilience scale items were all above 0.5 indicating a clear relationship with the factor (Table 6.17). The Cronbach's alpha (0.87) was in the 'good' range (Costello & Osborne, 2005; Field, 2005). Reliability analysis showed that the scale mean statistic was 31.17 (SD 5.47). This score was compared with the score pertaining to the US general population where the mean of the CD_RISC 10 was 31.78 (SD 5.41; range 9-40) (Campbell-Sills et al., 2009; Johnson, 2009).

Table 6.17: Factor analysis of Resilience scale items showing loadings

Statements	Factor loadings
E1. I am able to adapt to change	.603
E2. I can deal with whatever comes my way	.677
E3. I use humour when faced with problems	.523
E4. Coping with stress makes me stronger	.546
E5. I tend to bounce back after illness, injury or other hardship	.622
E6. I believe I can achieve my goals despite obstacles	.685
E7. I can focus and think clearly when under pressure	.670
E8. I am not easily discouraged by failure	.657
E9. I am a strong person when dealing with life's challenges and difficulties	.743
E10. I am able to handle unpleasant and painful feelings	.677

Note: Extraction Method: Principal Axis Factoring, 1 factor extracted. 4 iterations required

6.3.9 Interpersonal reactions (Empathy)

The total score of each of the three components measuring Interpersonal reactions was calculated separately. The maximum score of 32, 32 and 25 for Empathic concern, Personal distress and Positive sharing, was calculated respectively (Table 6.18).

Descriptive statistics for each component of the Interpersonal reactions (Empathy) scale are shown in Table 6.18. Missing observations were less than 5% for all statements. The Positive sharing statements were skewed positively. Empathic concern statements were in the direction as the questions suggest and included both positively and negatively worded statements. The Personal distress statement, 'Tense emotional situations frighten me' (F.10), evoked a neutral response even though the battery of statements were both

positive and negatively worded (Med=3, Mn=2.73) (see Appendix D.4, p. 223, for distribution diagram)

Table 6.18: Interpersonal reaction scales showing descriptive statistics of responses

Statements (1=strongly disagree-5=strongly agree)	**Mean**	**SD**	**Median**
Empathic concern n=1506			
F2. I care about less fortunate people	4.12	.79	4.00
F5. Am not sympathetic towards some people (-)	2.21	1.06	2.00
F6. Others misfortunes don't usually disturb me (-)	2.25	.94	2.00
F8. Protective of people being taken advantage of	4.09	.83	4.00
F9. Don't always pity people being unfairly treated (-)	1.95	.95	2.00
F16. Am moved by what I see	3.72	.87	4.00
F17. Am a soft hearted person	3.79	.92	4.00
Personal distress n=1504			
F1. I remain calm when I see someone hurt (+)	3.90	.92	4.00
F4. Feel apprehensive in emergency situations	2.49	1.00	2.00
F10. Tense emotional situations frighten me	2.73	1.04	3.00
F11. Don't cope well in emergencies	1.98	.86	2.00
F12. Am effective in dealing with emergencies (+)	3.89	.94	4.00
F14. I lose control when faced with emergency	1.74	.80	2.00
F15. I feel helpless in emotional situations	2.46	1.06	2.00
Positive sharing n=1503			
F3. Am happy to see people enjoying themselves	4.50	.65	5.00
F7. Happy people make me happy	4.34	.72	4.00
F13. I feel other peoples joy	4.10	.77	4.00
F18. Seeing people smiling makes me smile	4.26	.74	4.00
F19. I feel good witnessing a person helping another	4.24	.75	4.00

(-) Direction reversed; (+) direction reversed
SD=Standard Deviation

After reversing the direction of statements F5, F6, and F9 for Empathic concern, and F1 and F12 for Personal distress, all 19 were subjected to PCA. The correlation matrix revealed many coefficients of 0.3 and above. The Kaiser-Meyer-Olkin (KMO) measure

and Bartlett's Test of Sphericity was significant at < 0.05, which supported the factorability of the matrices (Table 6.19).

Table 6.19: Sampling adequacy and Sphericity of Interpersonal reaction scales

Scale	Kaiser-Meyer-Olkin Measure	Bartlett's Test of Sphericity		
		Approx. Chi-square	df	Sig.
Empathic concern[1]	.705	779.016	21	< 0.001
Personal distress[2]	.773	1094.432	21	< 0.001
Positive sharing[3]	.853	2867.103	10	< 0.001

1 Non redundant residuals (3) 14% with absolute values greater than 0.05
2 Non redundant residuals (7) 33% with absolute values greater than 0.05
3 Non redundant residuals (0) 0% with absolute values greater than 0.05

The mean, distribution and range, after the summation of the Personal distress, Empathic concern and Positive sharing scores, are presented in Table 6.20.

Table 6.20: Summation of components of Interpersonal reaction scales showing mean

	Mean	SD	Range
Empathic concern (out of 32)	29.07	3.54	27
Personal distress (out of 32)	14.74	3.73	23
Positive sharing (out of 25)	21.23	3.24	18

The factor loadings, after the extraction by PCA, have been included as an appendix (see Appendix D.5, p. 224). Cronbach's alpha was 'reasonable' for Empathic concern ($\alpha = 0.67$) and Personal distress ($\alpha = 0.68$) and 'good' for Positive sharing ($\alpha = 0.85$) (Costello & Osborne, 2005; Field, 2005). These measures showed internal consistency which provided evidence of reliability of the statements in the summated scales.

6.3.10 Religious affiliation

Around half the dentists surveyed were affiliated with 'Christianity' (51.2%). One third nominated 'No religion' (35.7%) and the remainder was affiliated with other religions. These were either, Buddhism, Hinduism, Islam, Judaism or another not listed (see Appendix D.6, p. 225). However, when growing up, almost three quarters of dentists were affiliated with 'Christianity' (73.8%) and fewer nominated 'No religion' (11.3%).

After collapsing the variables into 'Religion' and 'No religion', almost two thirds of dentists (64.3%) were affiliated currently with a religion or faith while the majority (88.7%), did so when they were growing up (Table 6.21).

Table 6.21: Frequency distribution of dentists' religious affiliations currently and growing up

Religion	n	%
Current n=1499		
Religion	964	64.3
No Religion	535	35.7
Growing up n=1490		
Religion	1321	88.7
No Religion	169	11.3

6.4 Bivariate analysis

This section presents the associations between the independent variables with the binary outcome variable of dentists who treat disadvantaged patients. The level of significance was set at $p<0.05$ and where this applies, it is highlighted in bold text. In addition, associations where the p-value was < 0.15 for particular variables, are also highlighted because this was the level chosen for the cut-off for entry into the multivariate modeling which follows this bivariate analyses.

6.4.1 Demographic characteristics

More males than females treated disadvantaged patients (55.0% cf. 45.0%; $p< 0.05$) in their practice or practices (single or combined) (Table 6.22). The proportion of dentists who treated disadvantaged patients increased with age up to 50-59 years. Fewer dentists less than 40 years of age (14.7%), treated disadvantaged patients compared with dentists in the other age categories; 40-49 (21.4%), 50-59 (44.0%) and > 60 years (20.0%). Neither age nor country of birth, were significantly associated at the $p < 0.05$ level.

Table 6.22: Associations between demographics and treating disadvantaged patients

	% Disadvantaged patients		
Demographic variable	**< 50% n (%)**	**≥ 50% n (%)**	p†
Age in years n=1275			
Under 40	293(24.4)	11(14.7)	
40-49	292(24.3)	16(21.3)	
50-59	395(32.9)	33(44.0)	
60 and over	220(18.3)	15(20.0)	**0.124**
Country of birth n=1248			
Australia	639(54.4)	41(55.4)	
Asia	257(21.9)	15(20.3)	
Other	278(23.7)	18(24.3)	0.947
Gender n=1301			
Male	832(68.1)	45(55.0)	
Female	389(31.9)	36(45.0)	**0.015**

†Pearson's Chi-Square

6.4.2 Socio-economic status

There were no significant associations between the outcome variable and the levels of parents' education at the time of being a student (Table 6.23). Similarly, the type of secondary school attended and where it was located were not significant (Table 6.23).

Table 6.23: Associations between SES and treating disadvantaged patients

SES variable	% Disadvantaged patients		p†
	< 50% n (%)	≥ 50% n (%)	
Fathers education n=1294			
Bachelor or above	501(41.3)	37(46.2)	
Diploma/Advanced diploma/Yr12/Cert. 3-4 & below	713(58.7)	43(58.3)	0.381
Mothers education n=1373			
Bachelor or above	273(21.6)	24(22.0)	
Diploma/Advanced diploma Yr12/Cert. 3-4 & below	939(78.4)	56(78.0)	0.708
School type n=1260			
Public	596(50.3)	37(49.3)	
Private	589(49.7)	38(50.7)	0.872
School location n=1277			
Australian capital city	734(61.1)	43(56.6)	
Australian country town/Regional city/Rural/Remote	152(12.7)	10(13.2)	
Overseas	315(26.2)	23(30.3)	0.706

†Pearson's Chi square

6.4.3 Formal dental education

After testing for associations between variables relating to dentists' location and time of graduation, and treating disadvantaged patients, no significant associations were found (Table 6.24). Three-quarters of dentists who treated disadvantaged patients graduated prior to 1996 and most were graduates from Sydney University and the University of Adelaide. Almost one in five (78.8%) who treated disadvantaged completed their degree in the minimum time, with a slightly higher percentage treating < 50% disadvantaged (84.2%).

Table 6.24: Associations between dental education and treating disadvantaged patients

Dental education variable	% Disadvantaged patients		p†
	< 50% n (%)	≥ 50% n (%)	
Year of graduation n=1060			
Pre1996	745(75.0)	51(76.1)	
1996-2007	248(25.0)	16(23.9)	0.841
Australian university n=922			
Sydney	251(29.1)	13(22.4)	
Melbourne	197(22.8)	11(19.0)	
Adelaide	160(18.5)	13(22.4)	
Queensland	142(16.4)	10(17.2)	
Western Australia	114(13.2)	11(19.0)	0.560
Gained qualification n=1292			
Australia	961(79.3)	63(78.8)	
Overseas	251(20.7)	17(21.2)	0.908
Degree in minimum time n=1299			
Yes	1026(84.2)	63(78.8)	
No	193(15.8)	17(21.2)	0.210

†Pearson's Chi square

6.4.4 Practice detail

6.4.4.1 Remoteness area

Most dentists practised in the major cities or regional areas (Table 6.25). The association between the remoteness area of the dentists' practices, and treating disadvantaged patients, was significant ($p < 0.001$). Nearly seven times as many dentists (6.6%) in remote or very remote locations provided care for disadvantaged patients at their main practice compared with those who did not (0.9%). The association between practice location and caring for disadvantaged patients, was not significant for dentists' second practice location.

Table 6.25: Associations between remoteness area and treating disadvantaged patients

Remoteness classification	% Disadvantaged patients < 50% n (%)	% Disadvantaged patients ≥ 50% n (%)	p†
Main practice n=1282			
Major City/Inner Reg/Outer Reg	1195(99.1)	71(93.4)	**< 0.001**
Remote/Very remote	11(0.9)	5(6.6)	
Second practice n=301			
Major City/Inner Reg/Outer Reg	216(80.3)	22(68.8)	**0.129**
Remote/Very remote	53(19.7)	10(31.2)	

†Pearson's Chi square

6.4.4.2 Reason for working at their practices

Most dentists (64.9%), who worked with disadvantaged patients in their main practice, did so because they were either invited, encouraged, the opportunity arose or because of other reasons, compared with those who sought the opportunity themselves (35.1%). Similar proportions of dentists who worked with underserved patients were also invited or encouraged by others to work in their second location (66.7% cf. 33.3%). Neither association, however, were significant (Table 6.26).

Table 6.26: Associations between reason for practice and treating disadvantaged patients

Reason for being at practice	% Disadvantaged patients < 50% n (%)	% Disadvantaged patients ≥ 50% n (%)	p†
Main n=1279			
Sought opportunity self	550(45.8)	27(35.1)	**0.068**
Invited, encouraged/other	652(54.2)	50(64.9)	
Second n=317			
Sought opportunity self	93(32.7)	11(33.3)	0.946
Invited, encouraged/other	191(67.3)	22(66.7)	

†Pearson's Chi square

6.4.4.3 Practice type

There was a significant association between the dentists' main type of practice and the percentage of disadvantaged patients seen ($p< 0.001$) (Table 6.27). Of the dentists who treated disadvantaged patients, less than half worked in the public sector (e.g school dental service, a general public clinic or a dental hospital) as their main practice. Almost nine times as many dentists, who worked in these public clinics, treated disadvantaged patients compared with those who did not (42.3% cf. 4.7%). Three times as many dentists who worked in the Defence Force, tertiary institutions or another type of practice saw mainly disadvantaged patients compared to those who did not (9.0% cf. 3.6%). Around half the proportion of private dentists saw disadvantaged patients (48.8% cf. 91.7%).

There were also significant associations between the type of the second practice and treating disadvantaged patients ($p< 0.01$). Specifically, the proportion of dentists who treated the underserved was fairly even across the different practice types; however, this was not the case for dentists who did not treat the underserved. Significantly, fewer worked in private solo practices (12.8% cf. 26.5%) and twice as many worked in private group practices or as locums (55.7% cf. 23.5%) (Table 6.27).

Table 6.27: Associations between practice type and treating disadvantaged patients

Type of practice	**% Disadvantaged patients**		**p†**
	< 50% n (%)	**≥ 50% n (%)**	
Main n=1283			**< 0.001**
Private solo	323(26.8)	13(16.7)	
Private group/Locum	782(64.9)	25(32.1)	
School Dental/General Public/Hospital	57(4.7)	33(42.3)	
Defence/Tertiary/Other	43(3.6)	7(9.0)	
Second n=316			**0.001**
Private solo	36(12.8)	9(26.5)	
Private group/Locum	157(55.7)	8(23.5)	
School Dental/General Public/Hospital	34(12.1)	10(29.4)	
Defence/Tertiary/Other	55(19.5)	7(20.6)	

†Pearson Chi square

6.4.5 Career decision

Significant associations between dentists who provided care to disadvantaged groups, and a range of career choice factors, were found. Specifically, there were fewer dentists treating disadvantaged patients who regarded independence and self-employment as important in their career decision to become a dentist (16% cf. 36.4%; $p < 0.001$) compared with dentists who did not treat disadvantaged (Table 6.28). More dentists (32.5%), who were motivated by the professional status of dentistry, treated disadvantaged patients ($p< 0.05$) compared with those who did not (22.2%). Of the dentists motivated by the good working hours, fewer worked with disadvantaged patients (11.2%) ($p< 0.05$) compared with those who did not (20.3%). There was a significant association between choosing dentistry as a second choice to medicine ($p< 0.01$) and seeing disadvantaged patients (Table 6.28). Nearly twice as many of these dentists saw disadvantaged patients (31.2% cf. 18.7%). Similarly, nearly twice as many dentists who worked with disadvantaged groups saw dentistry as a challenging career (22.5% cf. 11.3%) ($p< 0.01$).

Table 6.28: Associations between important career choice motivation and treating disadvantaged patients

Main motivation	High importance	% Disadvantaged patients		
		< 50% n (%)	≥ 50% n (%)	p†
Opportunity to help people	Y	516(42.3)	42(52.5)	
	N	705(57.7)	38(47.5)	**0.073**
Self-employment/independence	Y	445(36.4)	12(16.0)	
	N	776(63.6)	68(85.0)	< **0.001**
Able to earn a good income	Y	445(36.4)	24(30.0)	
	N	776(63.6)	56(70.0)	0.245
Opportunity to use manual skills	Y	342(28.0)	20(25.0)	
	N	879(72.0)	60(75.0)	0.561
High professional status	Y	271(22.2)	26(32.5)	
	N	950(77.8)	54(67.5)	**0.033**
Interesting job	Y	271(22.2)	15(18.8)	
	N	950(77.8)	65(81.2)	0.471
Science based occupation	Y	268(21.9)	19(23.8)	
	N	953(78.1)	61(76.2)	0.707
Job security	Y	257(21.0)	18(22.5)	
	N	964(79.0)	72(77.5)	0.758
Regular working hours	Y	248(20.3)	9(11.2)	
	N	973(79.7)	71(88.8)	**0.049**
2nd choice to medicine	Y	228(18.7)	25(31.2)	
	N	993(81.3)	55(68.8)	**0.006**
Saw dentistry as a challenging career	Y	138(11.3)	18(22.5)	
	N	1083(88.7)	62(77.5)	**0.003**
Fits in with family	Y	114(9.3)	9(11.2)	
	N	1107(90.7)	71(88.8)	0.571
My parent's expectation	Y	106(8.7)	8(10.0)	
	N	1115(91.3)	82(90.0)	0.686
Other[a]	Y	56(4.6)	3(3.8)	
	N	1165(95.4)	77(96.2)	1.000
Opportunity to specialise*	Y	31(2.5)	3(3.8)	
	N	1190(97.5)	77(96.2)	0.461
Was my parent's decision*	Y	29(2.4)	1(1.2)	
	N	1192(97.6)	79(98.8)	1.000
Opportunity to do research*[a]	Y	6(0.5)	2(2.5)	
	N	1215(99.5)	78(97.5)	**0.082**

†Pearson Chi-Square, *Fishers Exact test, Y=yes important, N=not important
[a]Not to be included in multivariable analysis due to small number
Note: Participants were asked to nominate three main reasons for choosing dentistry

6.4.5.1 Influences

In terms of who influenced dentists career decision, and whether this was associated with dentists treating disadvantaged groups, only those who were influenced by a relative showed a significant association for treating disadvantaged groups ($p < 0.05$) (Table 6.29).

Table 6.29: Associations between career influences and treating disadvantaged patients

Influencing person	% Disadvantaged patients		p†
	< 50% n (%)	**≥ 50% n (%)**	
Dentist	381(31.2)	25(31.2)	0.993
Self	146(12.0)	13(16.2)	0.256
Relative[a]	122(10.0)	15(18.8)	**0.013**
Friend*	107(8.8)	4(5.0)	0.169
Teacher or career advisor*	59(4.8)	3(3.8)	0.462
Other*	26(2.1)	2(2.5)	0.523

†Pearson Chi-Square
*Fishers Exact test
[a]Not to be included in multivariable analysis due to broad meaning of relative

6.4.6 Dental school experience

Dentists' experiences, during their formal education period, were found to be associated with treating disadvantaged patients (Table 6.30). When asked to rate whether they were treated with respect by their educators, twice as many dentists who treated disadvantaged patients disagreed compared with those who did not treat disadvantaged patients (28.8% cf. 14.7%, $p < 0.01$). Fewer dentists who treated disadvantaged patients, agreed that they were treated respectfully by their educators compared with those who did not treat disadvantaged patients (53.8% cf. 61.8%, $p < 0.05$). More dentists who treated disadvantaged groups, disagreed that role models had a positive impact on their current practice during their dental education, compared with those who did not treat disadvantaged patients (27.8% cf. 16.0%, $p < 0.05$). None of the other statements relating to dentists' experiences as students were significantly associated with treating disadvantaged patients.

Table 6.30: Associations between dental school experiences and treating disadvantaged patients

Dental education experience	% Disadvantaged patients		p†
	< 50% n (%)	≥ 50% n (%)	
Overall dental school experience was positive n=1296			
SD/D	158(13.0)	15(18.8)	
neutral	210(17.3)	14(17.5)	
A/SA	848(69.7)	51(63.8)	0.324
Dental education prepared me well for my current practice n=1377			
SD/D	180(14.8)	13(16.2)	
neutral	328(26.9)	27(33.8)	
A/SA	711(58.3)	40(50.0)	0.317
Overall I felt assessment was fair n=1289			
SD/D	114(9.4)	13(16.2)	
neutral	302(25.0)	21(26.2)	
A/SA	793(65.6)	46(57.5)	**0.114**
Overall I was treated with respect by educators n=1295			
SD/D	179(14.7)	23(28.8)	
neutral	285(23.4)	14(17.5)	
A/SA	752(61.8)	43(53.8)	**0.003**
Role models had a positive impact on my current practice n=1293			
SD/D	194(16.0)	22(27.8)	
neutral	339(27.9)	27(21.5)	
A/SA	681(56.1)	40(50.6)	**0.021**
Range of exposure to disadvantaged groups during training n=1293			
SD/D	491(40.5)	32(40.0)	
neutral	307(25.3)	20(25.0)	
A/SA	415(34.2)	38(35.0)	0.989
Would have liked an intern year opportunity n=1289			
SD/D	366(30.2)	19(24.1)	
neutral	310(25.6)	17(21.5)	
A/SA	534(44.1)	43(54.4)	0.202
Gained qualification normal time n=1299			
Yes	1026(84.2)	63(78.8)	
No	193(15.8)	17(21.2)	0.202
Part-time job during semester n=1293			
Yes	611(50.4)	43(53.8)	
No	602(49.6)	37(46.2)	0.552

Pearson Chi-Square, SD strongly disagree, D disagree, A agree, SA strongly agree
Note: p-values in bold type will subsequently be entered in multivariate regression model

6.4.7 Attitudes towards dental service provision

In terms of dentists' attitudes toward who should be responsible for providing dental services, there was only one significant association following the bivariate analyses (Table 6.31). Specifically, there was more disagreement with the statement about oral health therapists being employed to provide care for disadvantaged groups from dentists who worked with disadvantaged patients (20% cf. 12.4%) compared to more neutral responses from dentists who did not (29.3% cf. 18.8%). Other statements, which reflected the dentists' attitudes towards dental service provision, were not significantly associated with treating disadvantaged patients.

Table 6.31: Associations between attitudes towards dental service provision and treating disadvantaged patients

Dental education experience	% Disadvantaged patients		p†
	< 50% n (%)	≥ 50% n (%)	
Public dental services should be directed toward disadvantaged groups n=1292			
SD/D	91(7.5)	6(7.5)	
neutral	139(11.5)	11(13.8)	
A/SA	982(81.0)	63(78.8)	0.825
All Australians should have a choice of dental provider n=1297			
SD/D	92(7.6)	5(6.2)	
neutral	206(16.9)	15(18.8)	
A/SA	919(75.5)	60(75.0)	0.852
Profession should be responsible for dental care for all Australians n=1293			
SD/D	454 (37.4)	20(25.3)	
neutral	345(28.4)	26(32.9)	
A/SA	415(34.2)	33(41.8)	**0.095**
Government should be responsible for dental care for all Australians n=1296			
SD/D	163(13.4)	10(12.5)	
neutral	209(17.2)	19(23.8)	
A/SA	843(69.4)	51(63.8)	0.330
OHTs should be employed to provide care to disadvantaged groups n=1294			
SD/D	151(12.4)	16(20.0)	
neutral	356(29.3)	15(18.8)	
A/SA	707(58.2)	49(61.2)	**0.041**
Education alone could eliminate dental disease n=1292			
SD/D	733(60.4)	42(53.8)	
neutral	287(23.6)	22(28.2)	
A/SA	194(16.0)	14(17.9)	0.513
Dentists should not be concerned with those who do not prioritise oral care n=1290			
SD/D	713(58.9)	51(63.8)	
neutral	311(25.7)	18(22.5)	
A/SA	186(15.4)	11(13.8)	0.696
Private dentists should be funded to provide care to disadvantaged groups n=1290			
SD/D	165(13.6)	15(18.8)	
neutral	310(25.6)	24(30.0)	
A/SA	735(60.7)	41(51.2)	0.214
More dentists would work remote /outer regional areas if incentives were offered n=1295			
SD/D	171(14.1)	9(11.2)	
neutral	327(26.9)	17(21.2)	
A/SA	717(59.0)	54(67.5)	0.325

Different models of care should be explored to reach disadvantaged groups n=1286			
SD/D	49(4.1)	5(6.3)	
neutral	225(18.6)	12(15.2)	
A/SA	933(77.3)	62(78.5)	0.496
Dentists should volunteer time to work with disadvantaged groups n=1291			
SD/D	327(27.0)	14(17.5)	
neutral	379(31.3)	27(33.8)	
A/SA	505(41.7)	39(48.8)	0.166
Dentists should work in multidisciplinary teams to manage disadvantaged people n=1291			
SD/D	122(10.1)	4(5.0)	
neutral	330(27.3)	20(25.0)	
A/SA	759(62.7)	56(70.0)	0.252

†Pearson Chi-Square; SD strongly disagree, D disagree, A agree, SA strongly agree
OHTs=Oral Health Therapists

6.4.8 Resilience

The self-report resilience scores of dentists who treat disadvantaged patients, was not significantly different, after comparing the means of the scores for each group (MD=0.48, SE Diff=0.51) (Table 6.32). Resilience, therefore, was not entered into the multivariate model.

Table 6.32: Comparing means: dentists' resilience and treating disadvantaged patients

	% Disadvantaged patients	
Resilience	**< 50%**	**≥ 50%**
N	1219	80
Mean	31.01	30.53
Std. Deviation	5.54	5.97
Std. Error	.159	.668
Minimum	0.00	6.00
Maximum	40.00	40.00

6.4.9 Interpersonal reactions (Empathy)

There was no significant relationship between Empathic concern and dentists who treat disadvantaged patients (MD=0, SE Diff=0.40) compared with those who do not (Table 6.33). Similarly, there was no significant difference in the mean Personal distress

score between the two groups of dentists (MD=0.47, SE Diff=.33), nor the Positive sharing score (MD=0.72, SE Diff=0.34) (Table 6.33). Based on the associations, these variables were not entered into the multivariate model.

Table 6.33: Comparing means: Interpersonal reactions (Empathy) and treating disadvantaged patients

	% Disadvantaged patients	
	< 50%	**≥ 50%**
Empathic concern n=1383		
N	1274	109
Mean	25.2	25.2
Std. Deviation	5.81	5.90
Std. Error of mean	.16	.56
Minimum	6	8
Maximum	35	35
Personal distress n=1378		
N	1270	108
Mean	14.38	13.91
Std. Deviation	3.89	4.56
Std. Error of mean	.109	.44
Minimum	1	1
Maximum	30	25
Positive sharing n=1383		
N	1274	109
Mean	21.31	20.61
Std. Deviation	3.17	4.45
Std. Error of mean	.09	.43
Minimum	7	7
Maximum	25	25

6.4.10 Religious affiliation

After grouping the religious affiliations into one variable 'Religious', and checking for associations, a significant association between treating disadvantaged patients and dentists' religious affiliation both currently ($p< 0.05$), and growing up ($p< 0.05$), was evident (Table 6.34). Over three quarters of dentists who treated the underserved had a current religious affiliation compared with two thirds who did not treat underserved groups (78.2% cf. 63.8%). Similarly, almost all dentists who were affiliated with a religion

growing up (96.1%) treated underserved patients compared with those who did not treat underserved groups (88.3%) (Table 6.34).

Table 6.34: Associations between religious affiliation and treating disadvantaged patients

Religious affiliation	% Disadvantaged patients		p†
	< 50% n (%)	≥ 50% n (%)	
Current n=1289			
Religious	773(63.8)	61(78.2)	
No religion	438(36.2)	17(21.8)	**0.010**
Growing up n=1281			
Religious	1063(88.3)	74(96.1)	
No religion	141(11.7)	3(3.9)	**0.035**

†Pearson Chi- Square
Note: Moderate (+) correlation of .4 between the two variables

6.5 Multivariate analyses

Binomial logistic regressions were performed on a number of independent variables with the outcome variable, namely, treating disadvantaged patients from the five disadvantaged groups in their main and/or second practice location. Table 6.35 gives the global p-values for each bivariate association with the outcome variable where the p-value was < 0.15. These variables were subsequently included in the backwards stepwise elimination, multiple logistic regression model. The Hosmer and Lemeshow 'Goodness of fit' test was performed on all logistic models. All p-values were greater than 0.05 indicating a good fit (Field, 2005).

Table 6.35: Summary of variables entered into multivariable logistic regression model and the p-value

Variable	Global p-value
Age	0.124
Practice location (Remote area code main practice)	< 0.001
Gender	0.015
Dental education experience	
Treated respectfully as student	0.003
Role models as student had positive impact on current practice	0.021
Over I felt assessment was fair as a student	0.114
Practice detail	
Type of main practice	< 0.001
Reason for being at main practice	0.068
Career motivation	
To help people	0.073
Independence/self-employ	< 0.001
Status of dentistry	0.033
Regular work hours	0.049
Second choice to career in medicine	0.006
Challenging career	0.003
Attitudes toward dental service provision	
Profession should be responsible for care	0.095
Oral Health Therapists should treat disadvantaged	0.041
Religious affiliation	
Religious affiliation currently	0.010
Religious affiliation growing up	0.035

Notes: Age as a continuous variable was included
Remoteness area for second practice was not included due to small numbers

After being presented in a backward stepwise elimination process, all nine models showed a significance of greater than 0.05 indicating the suitability of the variables associated with dentists treating disadvantaged patients (Table 6.36).

Table 6.36: Hosmer and Lemeshow tests summary to show model suitability of dentists who treat disadvantaged patients

Hosmer and Lemeshow Test			
Step	Chi-square	df	Sig.
1	6.960	8	.541
2	6.355	8	.608
3	8.014	8	.432
4	11.647	8	.168
5	5.244	8	.731
6	11.532	8	.173
7	13.163	8	.106
8	9.866	8	.275
9	9.018	8	.341

The final multivariable logistic model was constructed, after the nine models were presented in stages for the elimination process. Table 6.37 gives the Odds Ratios, 95% Confidence Interval (CI) and the global p-values of the model. Those with a p-value of < 0.05 show the variables which contributed significantly to how the model was interpreted. The major factors, influencing whether dentists treat disadvantaged patients, are explained in the following sections.

6.5.1 Age

After adjusting for all other covariates in the model, age was a significant factor associated with treating disadvantaged patients. For every one year increase in the age of dentists, the odds of treating disadvantaged patients was three per cent higher (Odds Ratio: 1.03; 95% CI: 1.00-1.06) (Table 6.37).

6.5.2 Practice location

When considering the location of the dentists' main practice, dentists had around eight times the odds of treating disadvantaged patients if they practised in a remote or very remote area than if they practised in a major city, after adjusting for other covariates (OR 8.60, 95% CI: 2.21-33.48) (Table 6.37).

6.5.3 Type of practice activity

After adjusting for all other covariates in the model, dentists working for the Defence Force, in tertiary institutions or for another organisation, had three times the odds of treating disadvantaged patients than private dentists working in solo practices (OR 3.01; 95% CI: 0.99-9.22). Public sector dentists (e.g., those working in school dental, general public or hospitals clinics), had eleven times the odds of working with disadvantaged groups than dentists in private solo practices (OR 11.65; 95% CI: 5.22-25.96) (Table 6.37).

6.5.4 Career motivation

There were statistically significant associations with particular reasons given for choosing dentistry as a career. For example, dentists treating disadvantaged patients had around twice the odds of being motivated to dentistry for its 'status' (OR 2.40, 95% CI: 1.32-4.35) and because it was a 'second choice to medicine' (OR 2.09, 95% CI: 1.11-3.95), than those who did not rate these motivators as highly important. They had around twice the odds of choosing dentistry for the desire 'to help people' (OR 1.80, 95% CI: 1.03-3.16) and because it was a 'challenging career' (OR 2.11, 95% CI: 1.01-4.40), than those who did not rate these motivators as highly important. Those choosing dentistry for the chance to be 'independent or self-employed', had half the odds of treating disadvantaged patients (OR 0.52, 95% CI: 0.24-1.14). Although this finding was not significant at the five percent level, it still added to the variance explained in the model, as determined by the stepwise regression procedure (Table 6.37).

6.5.5 Attitudes towards dental service provision

Dentists who neither agreed nor disagreed (i.e., neutral in their opinion) that OHTs could be employed to care for disadvantaged groups, within their scope of practice, had more than twice the odds of treating disadvantaged patients themselves, after adjusting for other covariates (OR 2.31; 95% CI: 1.09-4.91) (Table 6.37).

6.5.6 Current religious affiliation

Dentists had twice the odds of treating disadvantaged patients if they were currently affiliated with a religion, than those who did not currently have a religious affiliation (OR 2.23; 95% CI: 1.12-4.42), after adjusting for other covariates in the model (Table 6.37).

Table 6.37: Final multiple backward stepwise logistic regression model for outcome, treating disadvantaged patients showing ORs, 95%CIs and Global p-values

Variable	Reference	Adjusted Odds Ratio	95% CI	Global p
Age		1.03	(1.00-1.06)	**0.024**
Practice location				
Major city	Ref			**0.019**
Inner regional		1.20	(0.53-2.73)	0.666
Outer regional		1.61	(0.51-5.12)	0.422
Remote/very remote		8.60	(2.21-33.48)	**0.002**
Type of practice				
Private solo	Ref			**< 0.001**
Private Group/Locum		.63	(0.30-1.32)	0.223
School Dental/General Public/Hospital		11.65	(5.22-25.96)	**< 0.001**
Defence/Tertiary/Other		3.01	(0.99-9.22)	0.053
Career motivation				
To help (Important)	Ref	1.80	(1.03-3.16)	**0.041**
Independence/self-employ (Important)	Ref	.52	(0.24-1.14)	0.104
Status (Important)	Ref	2.40	(1.32-4.35)	**0.004**
2nd choice to medicine (Important)	Ref	2.10	(1.11-3.95)	**0.022**
Challenging career (Important)	Ref	2.11	(1.01-4.40)	**0.046**
Attitudes towards dental service provision				
OHT Strongly Agree/Agree	Ref			0.054
OHT Neutral		2.31	(1.09-4.91)	**0.030**
OHT Disagree/Strongly Disagree		.85	(0.42-1.72)	0.651
Current religious affiliation				
Religious	Ref	2.23	(1.12-4.42)	**0.022**

Note: Dependent variable: Dentists who treat underserved (coded as 1) vs. Dentists who see < 50% disadvantaged patients (coded as 0); Variables entered into model were: age, gender, practice location, type of practice, reason for being at practice, dental education experience, career motivation, attitudes toward dental service provision, religious affiliation; OHT=Oral Health Therapist

The Nagelkerke R^2 value for the final model was 0.307 (Cox and Snell R^2 .109), suggesting that the model was only moderately useful in explaining characteristics of dentists' who treat underserved groups (Table 6.38). Although the contribution of the independent variables is statistically significant, the effect size is moderate. The variables

relating to gender, reason for being at the practice, and dental education experience, were eliminated from the final model.

Table 6.38: Binomial logistic regression model summary: dentists who treat disadvantaged patients

Model Summary			
Step	**-2 Log likelihood**	**Cox & Snell R^2**	**Nagelkerke R^2**
1	378.360	.117	.329
2	378.503	.117	.328
3	379.226	.117	.327
4	380.207	.116	.325
5	381.360	.115	.322
6	383.267	.114	.318
7	384.524	.113	.316
8	386.479	.111	.312
9	388.917	.109	.307

Estimation terminated at iteration 7 because parameter estimates changed by less than .001

6.6 Key findings from quantitative study (Stage 2)

From an eligible population of 2711 who were mailed a survey, an adjusted response rate of 62.6% was achieved.

Dentists' who worked in the public sector, such as school dental services, in government clinics or hospitals, were much more likely to care for disadvantaged patients. They were also more likely to treat disadvantaged patients if their main practice was in a remote or very remote location. With all factors considered, there was no significant difference in how they came to be at their practice, although fewer, who worked with disadvantaged, 'sought the opportunity themselves'. Motivational factors important for a pursuing a career in dentistry, and wanting to work with disadvantaged groups, were; the high professional status, wanting to help people, the challenging nature of the work, and it was a second choice to a career in medicine. Having a current religious affiliation also increased the odds of dentists treating disadvantaged patients.

There was a direct association between age and sex and treating more disadvantaged patients in a practice but this was not a factor related to doing so. Whether a dentist gained their qualification in Australia or overseas was not an important factor in their type of practice activity and type of patients they mostly treated.

Dentists, who were undecided in their attitudes that OHTs should be employed to provide care for disadvantaged patients, were more likely to treat disadvantaged groups. There was no significant relationship with dentists treating disadvantaged patients with their dental school experience, their resilience or empathy levels, and their socio-economic circumstances. These results provided the evidence that answered the research questions: What are the characteristics of dentists whose practice is orientated to disadvantaged groups and do they differ from those dentists who work primarily in mainstream dental practices seeing mainly general patients?

Chapter 7 discusses these results in the context of the current literature. It also presents implications of these findings for practice, and for further research.

Chapter 7. Discussion

The purpose of this study was to explore the characteristics, namely, the values, beliefs, and motivation of dentists who work with disadvantaged patients and then compare the findings with dentists who provide care to mainly general patients. With particular interest to the researcher, was the group of dentists who provided care to Aboriginal and Torres Strait Islander people, the incarcerated, people living in Residential Care Facilities, people classified as having special needs, refugees and/or new migrants and lastly, people living in rural or remote communities. This study used a sequential mixed-methods approach, which included in-depth interviews and self-report questionnaires. Stage 1 highlighted the importance of hearing the dentists' reality, first hand, through in-depth interviews. It brought a deeper meaning to what drove dentists to do what they do and what the personal gain was to them, unlike many previous studies, where the focus has largely been on the negative aspects of providing care for disadvantaged groups (Bedi et al., 2001; Borreani et al., 2008; Davis, 2009).

This chapter is divided into sections, which include discussion and comment relating to this research. Specifically, they provide:

- a dental workforce overview,
- a building on the summary of results from the previous chapter, in relation to the research questions,
- an integration of these major findings with the current literature, including theories that align closely with the findings,
- the strengths and limitations of Stage 1, the qualitative component, including the methodological approach, sampling, and data collection,
- the strengths and limitations of Stage 2, the quantitative component of the study, also including the research design as above,
- the identification of the gaps in the knowledge that still exist after conducting this research, thus indicating the need for further investigation,
- implications for practice, based on the research findings,
- a summary of this research project.

7.1 Workforce overview

The review of the literature provided evidence that oral health disparities between particular groups of Australians is very real, and continues to exist, despite attempts to change this outcome through policy decisions, curriculum innovations, and dental education. The proportions of dentists working in the public sector is very small in comparison to private practice, and so are the proportion of dentists working in rural and remote areas, when compared with those in urban areas. Whilst this trend in workforce choice and practice location continues, the number of dentists available to care for disadvantaged groups is likely to continue to affect access to care for vulnerable groups.

The definition of disadvantaged patients in this study, were those who belonged to specific vulnerable groups, who were reported to have suffered disparities in oral health outcomes when compared with the general population. For this study, the target population of interest did not include all patients who were eligible to access treatment through public dental clinics (e.g. low income earners). Within this group of concession card holders, it is likely that, a proportion of people would choose to access private dental care, in addition to being eligible to receive care through public clinics.

7.1.1 Age

The likelihood of dentists who worked with underserved patients increased with age in this study, which is consistent with Luzzi and Spencer (2011), who reported that older dentists tended to be more established and under less pressure than younger dentists. This pressure was often associated with establishing a viable practice. Since the majority of underserved patients attend government–based clinics, establishing a practice may not have been a concern to the dentists in this study.

7.2 Important motivators to become a dentist and work with disadvantaged groups

7.2.1 Motivated for the perceived status

The association between status and working with disadvantaged groups was an unexpected result in this study. Herzberg's Motivation to Work Theory however, supports this unexpected result. Status, as one of the hygiene factors that Herzberg's theory notes as a

motivator, was important for these dentists. This finding was consistent with dentists working in prisons, where recognition, achievement, personal growth, advancement, responsibility and the work itself were motivators in their choice of practice in accordance with Herzberg's Theory (Smith et al., 2011). The link between altruistic action and prestige or status has been reported, where the latter has referred to the reward or the benefit in exchange for doing 'public good' (Price & Van Vugt, 2014). Other research has highlighted the importance of status in an individual's choice of dentistry as a career. For example, 70% of first-year students in an Australian study nominated status as a reason for choosing dentistry as a career (Gardner & Roberts-Thomson, 2014). Earlier studies have reported status and prestige as important motivators in wanting to become a dentist (Al-Bitar et al., 2008; Brand et al., 1996; Over et al., 1984). Perhaps dentists driven by status as a career motivator were also attracted to work within oraganisations with a recognised career structure, such as the public sector. The findings in this current study, where around 24% of dentists rated the perceived status of the profession as having high importance when choosing their career, is consistent with this earlier research. This perceived status could relate to how the profession of dentistry is viewed by the public, and in this case, by the dentists in this study before they entered the profession (Welie, 2004). It raises the question; could dentists, who treat disadvantaged patients, be the ones who are adhering and acting accordingly, to the literal definition of a profession? This original code of ethic defines a profession as a "collective of expert service providers, who have jointly and publically committed to always give priority to the existential needs and interests of the public they serve, above their own interests…" (Welie, 2004, pp. 531-532). Attributes associated with lifestyle, autonomy, the satisfaction of providing good clinical work, also support status as a 'hygiene' factor in Herzberg's Theory of Work Motivation (Cane & Walker, 2007; Gilmour et al., 2005). Dentist 13 from Stage 1, stated that she liked others to think that she was 'good' in working with RCF patients, however, she stated that her main driver was 'helping' the patients.

7.2.2 Motivated by the desire to help people

It is fair to assume that anyone entering the profession of dentistry would be motivated by a 'desire to help', although the strength of this desire may vary between individuals. This study was able to demonstrate a significant association between the 'desire to help' and treating disadvantaged patients. For example, expressions of wanting to help those in need were typical of those in Stage 1. Helping others has been identified

as a characteristic associated with dentists' job satisfaction (Gallagher et al., 2007; Goetz et al., 2012; Luzzi & Spencer, 2011; Luzzi et al., 2005).

The reasons for dentists' initial decision to work in public sector dentistry has been explored, resulting in a long list of motives; such as, altruism, wanting to improve the oral health of the community, interest in public health; to more personal reasons, such as financial reward, lifestyle and practice location (Hopcraft et al., 2010). Access to professional support through mentoring, as well as altruistic motives, appeared to be more important than financial rewards for those dentists who chose to work in the public sector (Hopcraft et al., 2010). This too, was very strong in the findings from Stage 1 of this study (see Sections 4.1.6.3. & 4.1.6.4., pp. 64-67). Many dental schools are now using selection tools, such as the Undergraduate Medicine and Health Sciences Admissions Test (UMAT), in order to screen applicants' suitability for health-related caring professions (ACER, 2013). Abilities such as, being able to identify, to understand, and to try and work out the "thoughts, feelings, behaviours and/or intentions" of people in given situations, are assessed in the test (p. 3). These, and other abstract non–verbal reasoning skills, are considered necessary to study and practise in health science professions, which includes dentistry.

7.2.3 Motivated because it was a second choice to medicine

The link between dentists orientating their practice towards disadvantaged groups, and choosing dentistry because it was their second choice to medicine, may be explained by characteristics common to both. Being compassionate, and empathic, would be paramount qualities in becoming a good doctor. In one study however, associated with salaried doctors being promoted in a general hospital setting, seeing welfare patients, these qualities rated least important (Carmel & Glick, 1996). Another study (Wayne et al., 2010) reported positive attitudes by medical students toward the poor and underserved populations in their earlier years, but found that recent cohorts of students were less likely to take up primary care residencies, despite expressing positive attitudes towards serving the poor. A suggested reason for this finding was that the medical students were heavily influenced by physicians along the way, to look for alternative options, other than serving the poor. Similarly, the same could apply to the number of Australian dentists choosing to work in private practices because of the strong influence of tutors throughout the years of their program, the majority of who are recruited from private practices. Whilst this

remains the case, dental students exposed to the influences of private practitioners, may be more inclined to follow a similar path upon graduation, and hence, the likelihood of increasing the number of dentists to address the oral care of those most in need, would be reduced (Smith et al., 2011).

7.2.4 Motivated because it was a challenging career

It is reasonable to assume that any health professional choosing to work with disadvantaged groups of patients would not be immune to the challenges it brings. For example, physicians working in prisons were challenged by their physical surroundings, but remained in their job because of the satisfaction they felt in providing that care (Lichtenstein, 1984). The author acknowledged that physicians working in prison settings might have 'different attitudes' to those who work in other types of practices. In Smith et al's (2011) study of dentists working in a challenging prison environment; the 'feeling of personal worth and a sense of commitment by the dentists' was reported as their prime motivation (Smith et al., 2011, p. 1). Similar parallels could be made with this current study for dentists who worked in remote area and who worked with refugees (see Appendix B.9, pp. 198-199).

The more positive approach to a complex or challenging job, the more likely people are to enjoy their work, perform better and reap the subsequent rewards (e.g. money, promotion, sense of wellbeing and purpose) (Judge, Heller et al. 2002). Dentists treating disadvantaged patients in this current study were able to respond to the challenges of dentistry whilst experiencing a sense of well-being and purpose at the same time. The dental graduates of today are faced with different sets of challenges, such as, keeping abreast with new knowledge, the regulatory requirements, and understanding the skills associated with technological advances in prosthodontics, endodontics, implantology and orthodontics (Hobson, 2009). Whilst these fields of specialisation may require technical challenges, a different set of challenges are faced by dentists who work with underserved (see Section 2.2., pp. 16-20 for further examples).

7.2.5 Motivated for self-employment and independence opportunities

There was a negative association with dentists who were motivated to their career for the opportunity to be self-employed and/or independent, and working with disadvantaged

patients. This contrasts with other studies where, dentists and dental students in general, are motivated by independence (Bernabe et al., 2006; Gallagher, Clarke, & Wilson, 2008; Gardner & Roberts-Thomson, 2014; Mariño et al., 2006; Over et al., 1984; Sivaneswaran & Barnard, 1992). This negative association between the dentists' desire for independence and working with the disadvantaged may be explained because the work would often lack routine and predictability. The personality of dentists in general, which is expanded upon in the following section, could reflect these findings.

7.2.5.1 Personality type

Dentists in this study, working with disadvantaged patients were less likely to have chosen the career for self-employment opportunities (see Table 6.28, p. 116). Does this reflect particular personality types being attracted to this type of work? Dentists in general, have been found to be more of the Introverted, Sensitive, Thinking and Judging personality types (Judge, Heller, & Mount, 2002), which can be summarised as being introverted, and preferring routine, standardised methods of resolution, and practical tasks. They prefer harmony and logical analysis; they prefer to develop and implement plans and seek closure. They dislike interruptions and become impatient with complications, lack empathy, are hypocritical and ignore their aspirations (Chambers, 2001; Grandy et al., 1996). These characteristics would be less likely to be typical of a dentists working with socially marginalised and disadvantaged groups. These same personality traits have also been found to be predominant in dental students in one study (Jessee, O'Neill, & Dosch, 2006). Traits such as conscientiousness and agreeableness (a concern for social harmony and having consideration for others), were the most important personality traits of dentists in another (Chamberlain, Catano, & Cunningham, 2005).

The qualitative study showed that being 'tapped on the shoulder' was associated with dentists taking up work with disadvantaged patients (see Section 4.1.6.1., pp. 63-64). The bivariate analyses in this study also found a significant association in that dentists who worked with underserved patients mostly waited to be asked or personally approached before taking up the activity (see Table 6.26, p. 113). This too, may reflect a particular personality type, but it may also reflect that it takes courage for dentists to change direction and to consider a different type of practice activity than the one the majority of dentists take. This may also apply to dentists who choose the path of academia and/or research.

Fewer dentists work in tertiary institutions, as this study and the recent workforce data shows, compared to private practice, and other public sector clinics (AIHW, 2014a).

7.3 Practice environment associated with treating disadvantaged patients

Dentists, who worked in the Defence Force, tertiary institutions or in other type of practices, were more likely to serve disadvantaged patients. The exact nature of 'other', when respondents were asked to describe the practice, was unclear. It may have included dentists who worked for the Royal Flying Doctor service, for independently run Aboriginal Community Health services, or for large companies (e.g., BHP Billiton) in remote mining locations. The Australian Defence Force's duties often extend to providing care to a wide range of patients, using portable equipment, where access to traditional clinics is not available (Mahoney, 2003). Dentists working in remote areas would be expected to treat the majority of disadvantaged patients because of the lack of specialists available for referral. Obviously this would not be the case in urban areas. Public sector dentists (e.g., those working in school dental, general public or hospital clinics) would see the majority of patients who hold concession cards, such as the underserved in this study. Whilst this current study found no association between country of birth and serving the underserved, location of practice has been related to ethnicity, with Asian dentists preferring to be close to family, working in urban areas, and where opportunities to secure work in private practice are available (Gallagher, Clarke, & Wilson, 2008). However, due to the changing demographics of dental students in Australia, such as increased numbers from Asian backgrounds (Mariño et al., 2006; Mariño et al., 2004) compared with the sample from this current study, this relationship may change. Specifically, workforce shortages for some groups of Australians, especially those living outside capital cities and inner regional areas, may increase further.

7.4 Attitudes toward dental service provision

An association between attitudes towards who should be responsible for oral health care, and dentists who treat disadvantaged patients, was anticipated in this study. For example, should it be the responsibility of the government, the dental profession, the patients themselves or dental auxiliaries, for the oral care? The analysis however, revealed only one significant result which related to using OHTs providing services, within their scope of practice, to disadvantaged groups. The unadjusted analyses in this study (see

Table 6.31, p. 120) found that in general, dentists' attitudes toward the use of OHTs to provide care for disadvantaged groups were positive. However, the adjusted association found that dentists who treated disadvantaged patients were undecided about involving OHTs (see Table 6.37, p. 127). Perhaps these dentists are the ones handling very complex patients whom they consider to be beyond the scope of OHTs. Similar findings have been reported in the US where dentists' expressed neutrality when asked about involving dental therapists to treat marginalised populations (Lamster & Formicola, 2011). Despite dental therapists and hygienists being used as dental health care providers in 54 countries, for as long as 45 years, ignorance and scepticism amongst dentists, about their role and scope of practice, still exists (Blue et al., 2013; Blue & Lopez, 2011; Gallagher & Wright, 2003; Lamster & Formicola, 2011; Nash et al., 2014). There is limited research on the degree to which the OHTs, or their equivalent, are being utilised, and little research on the economic viability of involving these professionals in school-based, community and private practices (Bailit et al., 2012; Nash et al., 2014; Satur et al., 2009). Historically, much of the care provided by dental therapists has been for children, and there is evidence which indicates that this care is provided safely, economically, effectively, and is generally accepted by the public and by the profession, 'where their use is established' (Nash et al., 2014, p. 1). Dental therapists, working for the Dental Health Aide Therapist Program in Alaska, were initially subjected to skepticism, not only by dentists, but by physicians, politicians, officials and journalists (Murat, 2013). However, after witnessing dental therapy being practiced as part of a team, providing care to vulnerable populations, these attitudes changed (Murat, 2013; Williard & Fauteux, 2011). It has been suggested that patients' acceptance of dental auxiliaries is influenced strongly by the dentists' acceptance and if the latter were to increase, then the notion of a 'shared care' arrangement would be perceived as being more accepted by patients. In medicine for example, it is the 'quality of care which is being carried out which is of concern to patients rather than who carries out the task' (Gallagher & Wright, 2003, p. 40). The driving force for adopting dental therapists into the workforce was to improve access to care, particularly for children (Nash et al., 2014). It is reasonable therefore, that OHTs could be better utilised in providing care for vulnerable adults who lack access to timely and appropriate care.

7.5 Religious values

This study showed an association between having a religious affiliation and treating disadvantaged patients. Wanting to work with poor and disadvantaged people was

regarded as a 'calling' for some (Curlin et al., 2006), irrespective of whether the calling was faith-based or not. Historically, medicine and healing were linked because it was the belief that healers and religious leaders were one and the same (Olive, 1995). It has also been found that physicians with 'high intrinsic religiosity were more likely to believe that their beliefs were important to their practice of medicine' (Olive, 1995, p. 1254). In a study of doctors' resilience in working with socially marginalised groups, religion was an important personal frame of reference, but not a key driver in the decision to work in that field of practice (Stevenson et al., 2011). There is some weak evidence that religion evokes prosocial behaviours, but the studies by Batson and colleagues (1993), describe the altruistic action as more egoistic (cited in Paciotti et al., 2011). In Paciotti et al's (2011) experiment, testing the effect of religion on prosociality, it was concluded that 'religious institutions are not a strong force to explain generosity, trust and cooperation amongst the individuals paired within unknown social networks' (p. 302). Whilst many reported to be religious, in their experimental study, it was found that "proclivity for prosocial behaviour was similar to that of secular participants" (Paciotti et al., 2011, p. 302). Basic religious beliefs, too, have a "positive relationship, with good characteristics that help people resolve the challenges of their lives" (Khoynezhad, Rajaei, & Sarvarazemy, 2012, p. 85). The extent, to which the religiosity of dentists in this current study had an effect on their decision to treat the disadvantaged, has not been evaluated. However, others have found that religiosity had no influence on prosocial behavior (Galen, 2012; Saroglou, 2012) but rather that these people "may be less selective and more universalistic than the very religious" when targeting their prosociality (Saroglou, 2012, p. 911). Further research would be necessary to test the prosocial aspects of the dentists' with past religious affiliations, and compare these findings with those who were non-religious in this study, and look for the presence of underlying factors.

7.6 Characteristics not associated with treating disadvantaged patients

7.6.1 Resilience and treating disadvantaged patients

There were high levels of resilience in this study population, as evidenced by the high mean score, but the cut-off used, was not significantly associated with treating disadvantaged patients (see Table 6.32, p. 121). The qualitative study, however, found resilience to be a key theme. Dentists demonstrated an ability to bounce back after experiencing difficulties in their personal lives, and during the time of their dental

education, and subsequently, they were able to overcome the challenges associated with their work environment (see Section 4.1.5.1.5., pp. 61-62). There is a tendency however, to report higher levels of resilience in a self-report scale (Campbell-Sills et al., 2009), and that the higher the levels of education and economic status, the higher the resilience levels recorded (Campbell-Sills et al., 2009). Due to the nature of the practice of treating particular groups (e.g. patients with special needs), it is reasonable to expect that high levels of resilience would be required. Being prepared with a realistic view of what to expect as a dentist, and in particular the uniqueness of working in specific places with specific patients, may improve resilience when it is needed. Having a clear career perspective has been shown to reduce stress and burnout amongst Dutch dentists, leading to a sense of pride and idealism (Gorter et al., 2006). The study showed that, helping the 'fellow man', being a good caregiver, and 'feeling important', made them happier in their job, irrespective of the environmental factors or the type of workplace. Resilience relates to effort and choice, and about the direction, intensity and duration in which people go about their work (Locke & Latham, 2004; McCann et al., 2013). The nature of the dental profession itself, may explain why no significant associations were found between the types of patient groups primarily treated in this study, and the dentists who treated them. Although the definition of resilience amongst health professionals is not clear, the findings in this study, suggests that the interaction between the contextual and individual factors relating to the dentists' resilience was sufficient, thus enabling dentists to cope with the challenges of work stresses and adversities as they arose (McCann et al., 2013).

7.6.2 Empathy and treating disadvantaged patients

This study was unable to show an association between dentists' empathy and treating disadvantaged patients. This finding raises the question as to the inner motives of feeling empathy for one's patients and thus acting upon this feeling, which was evident in the qualitative study (see Chapter 4.1.5.1.3, pp. 60-61). Was the empathic reaction non-altruistic and more associated with Cialdini's theory (Cialdini, 1991; Cialdini, 2004; Cialdini et al., 1987), which posits that empathy for a person's suffering or need, relates to the need to relieve the stress of the one feeling the empathy? Or was the reaction driven by the emotional response of the one in need, as Batson et al propose (Batson et al., 1991; Batson et al., 2007)? Could this be a possible explanation for the association between status and providing care for disadvantaged groups found in this study? Specifically, dentists driven by the high professional status of dentistry were more likely to treat

disadvantaged groups. Another explanation could be one of self-preservation, where dentists in this study have realised the importance of self-care necessary to manage the stresses associated with working with disadvantaged patients, by maintaining a work-life balance; as suggested by Burks and Kobus (2012). In contrast, by dedicating too much 'focus, energy and personal resources' on either themselves or their patients, 'negative consequences may result' (Burks & Kobus, 2012, p. 320).

It has also been suggested that due to the complexities and debate associated with measuring, testing and defining empathy (Davis, 1994; Gould, 1990), a qualitative approach is recommended to better understand and elicit meanings of empathy.

7.6.3 Dental education experience and socioeconomic status and treating disadvantaged patients

Unlike other studies, where the presence of role models during and after dental education, were reported to have influenced dentists' future direction, this study found no significant relationship (Dao et al., 2005; Smith, Ester, & Inglehart, 2006). This could be a reflection that most clinical tutors at dental school were from private practices where they saw mainly general patients. It was not surprising either, to find that past SES was not associated with treating disadvantaged patients because dentists generally, were from higher SES groups (Mariño et al., 2006).

The effect of community-based rotations as dental students did not show an effect in treating disadvantaged groups in this current study, unlike others, where these rotations influenced patterns of care (McQuistan et al., 2010; McQuistan, Mohamad, & Kuthy, 2014). The degree of rotation through community settings was not measured and it was likely to have differed widely between the different education programs undertaken by the dentists in this study. The majority of the participants had little or no community-based clinical experiences.

7.7 Theories in support of the research findings

Different theories relating to work motivation are supported by these findings. It is fair to conclude that dentists who worked with disadvantaged patients in this study, tended to like the nature of their work, and anticipated rewards and successes, which ultimately led to a greater fulfilment and satisfaction than they may have experienced otherwise. This

supports Herzberg's theory (1954) of 'hygiene factors' being met, Vroom's Expectancy Theory of Motivation (Davis & Newstrom, 1989; Newstrom, 2007), and Korman's Self-consistency Theory of Work Motivation and Occupational Choice (Dipboye, 1977). Over time, the 'wants' from the job, by dentists working with disadvantaged groups, became secondary in comparison with the sense of 'self-worth' that the dentists' experienced.

7.8 Strengths and limitations of this research

There are strengths and limitations to all studies and this study was no exception. Because of the subjectivity associated with both, the strengths and limitations are presented together in the following sections.

7.8.1 Methodological approach

To the best of the researcher's knowledge, this sequential mixed-method design was the first undertaken in Australia to explore these phenomena. It set out to investigate the dentists' motivation, the characteristics, values and beliefs associated with providing care to disadvantaged groups. Traditionally, a single quantitative study would have been the preferred method to answer this research question. The mixed-methods approach for this study, added strength to this exploration.

7.8.2 Sampling for the qualitative study (Stage 1)

The experiences of sixteen dentists who work with underserved groups were reported in the qualitative study, Stage 1. Whilst there is debate on how many interviews should be conducted for a qualitative investigation, 'it depends' on a range of factors (Baker & Edwards, 2012). These factors include the time and resources available, the importance of the question itself, and the researcher's methodological and epistemological approach. Generally, the number is decided upon by accessing a 'range' of responses to the question (Baker & Edwards, 2012). However, expert qualitative methodological researchers agree that it is the 'richness of what is being said' as opposed to the number of people saying it, which is of importance in qualitative studies (Baker & Edwards, 2012). This study included a highly homogenous group of dentists being interviewed, and therefore, the sample of 16 participants was considered sufficient to allow for meaningful theme development and interpretation (Baker & Edwards, 2012). Cresswell (2007) for example, suggests 20-30 individuals for a sample, and Charmez (2006) even larger, if using a grounded theory methodology. Caution therefore needs to be considered when interpreting

findings and making generalisations with other populations outside Australia. In this study, intergroup diversity was attained by choosing people who worked in different types of practices, and every effort was made to also ensure that there was diversity in gender, workplace location, and age within the groups. There were problems making follow-up connections and arranging suitable times with three dentists, so they were not included. Since the interviews were the first of the two-stage data collection process, time was also a factor in the study design and sample selection. The variation in interview format was a limitation because not all interviews were conducted face-to-face. The costs in carrying out face-to-face interviews with dentists working in very remote areas of Australia could not be justified for this study. Despite this, evidence suggests there is little difference in the quality of face-to-face contact when compared with telephone contact for narrative interviewing (Sturges & Hanrahan, 2004).

7.8.3 Sampling for the quantitative study (Stage 2)

The sampling frame used for Stage 2 was a limitation because it included out of date contact details, which resulted in many dentists having left their addresses. Once this was known, searching for current addresses of around 200 dentists was a time consuming process. These dentists were re-approached, also using the Dillman method (Dillman, 1978), in an attempt to maximise the responses. Dentists known to have been chosen for other studies being conducted concurrently were excluded from the sampling frame. This reduced the number of available dentists, but it also reduced the risk of dentists being 'over-surveyed'.

7.8.4 Data analysis of interview transcripts

This study was strengthened by the high level of accuracy in transcribing the interviews. Inter-rater reliability, important in qualitative analyses, was high amongst the three researchers, indicating a consensus in the representativeness of the transcripts during the coding (Begley, 1996; Burnard et al., 2008; Kitto et al., 2008; Pope et al., 2000).

7.8.5 Data collection instrument and timing of the questionnaire survey

The cross-sectional study design for Stage 2 was a cost-effective means of gathering data from a large population using a postal survey. In Australia, postal surveys remain the most cost-effective means of data collection in epidemiological research (Sinclair et al.,

2012). The timing of the first and second mail outs of the questionnaire occurred around the Christmas and New Year holiday period for 2013, which may have been inconvenient for some dentists and hence, may have affected the response rate. However, the response rate was comparable with other studies of the dentist population in Australia (Brennan & Spencer, 2006; Luzzi & Spencer, 2011).

An alternative mode of data collection, such as an online survey, could have been offered if email addresses were available. There is conflicting evidence however, about web-based versus postal surveys and the respective response rates, but fewer errors have been reported in the web-based surveys (Van Gelder, Bretveld, & Roeleveld, 2010). A systematic review concluded that the response rate was greater, by around 10%, for mail or telephone surveys compared with web-based surveys (Fan & Yan, 2010). It may also have reduced the time to collect data, because web-based surveys have been found to be completed at a faster rate than pencil and paper surveys (Van Gelder, Bretveld, & Roeleveld, 2010). If a combination of two collection methods were used for Stage 2, different ethical clearance would have been necessary, resulting in extra time for conducting the research and thus negating any time benefit.

7.8.6 Inclusion/exclusion

The five-year cut-off since graduation was chosen as the criteria for inclusion in the study on the basis that older dentists have been reported as having higher levels of job satisfaction; possibly due to being more established, and under less pressure often associated with establishing a viable practice (Luzzi & Spencer, 2011). Drawing conclusions on dentists' memory of their decision-making, prior to commencing their formal dental education that occurred at least 10 years previously, is a limitation to the study. It was possible that retrospective recall about their career decision-making, could be inaccurate because, "cognitive-based decision processes are difficult to observe and are subject to bias", as time delays (Singh & Greenhaus, 2004, p. 218).

7.8.7 Defining the outcome variable

The definition of a dentist who worked with disadvantaged groups for this study, was, one whose regular patient pool, at either their first or second practice, comprised of at least 50% patients from any of the five disadvantaged groups. It did not include patients from practices they may have worked at in addition to the main and second location. It

could be argued that if a dentist saw just one patient from a disadvantaged group in a regular fortnight, then technically, they 'treated underserved patients'. However, by changing the cut-off to a different proportion of patients, resulting in a different definition of the outcome variable, it may not have added greatly to the overall number of dentists treating underserved patients (Refer Table 6.3, p. 94). A greater proportion of dentists could have been categorised as providing care for disadvantaged groups if dentists who provide care for patients who attend public clinics (e.g., school dental services, community clinics and hospitals) had been included. For example, recent labour force data suggests the number of dentists in this group could be around 20% of dentists not working in private practice (AIHW, 2014a). At the time of the study, 16% of dentists worked in public clinics (Balasubramanian & Teusner, 2011). It is recognised that people eligible to attend public dental clinics are considered disadvantaged when it comes to accessing dental services. These patients generally hold a recognised concession card, and most would be on low incomes. Therefore, dentists who care for patients categorised as 'other adult' and 'other children' seen in 'other government funded clinics', were not included in this study.

7.9 Implications of these study findings for practice

In Australia, there has been no major research exploring the characteristics of dentists who orientate their practice toward disadvantaged or underserved groups of people. Although the findings of the qualitative study cannot be generalised, the convergence of both studies have found that differences do exist between dentists who orientate their practice toward disadvantaged people, when compared with dentists who provide care to general Australians in mainstream practices. Because the model (see Table 6.37, p. 127) was only moderately useful explaining the characteristics of dentists who work with underserved Australians, caution must be exercised when considering the implications of these study findings. These are described in the following detail, have implications for student selection, career promotion for dental students, recruitment for the dental workforce, and curriculum design for dental programs.

7.9.1 Selection/career promotion

There has been extensive literature on what motivates dental students and early graduates towards their career choice, and this study revealed the same main factors (independence, desire to help, status, income, regular hours). Perhaps it is time to look beyond career motivation as the focus of studies of early career dentists and shift it to more

established dentists. In the qualitative study, it was found that dentists were encouraged by other dentists to change direction and provide care for disadvantaged groups. It is also important to acknowledge that the status of dentistry is a core consideration for many practising dentists, particularly those working with underserved groups. A more realistic account of what drives dentists to do what they do is necessary so that others, such as those involved in providing career advice, can be informed. This is particularly important because dentists continue to influence people enquiring about a dental career (see Table 6.12, p. 103) and this influence was critical for the majority of participants in Stage 1 who provided care for the disadvantaged groups (see Section 4.1.6.1., p. 63).

Dental students have been traditionally selected based on their values which are "orientations toward groups of activities seen as rewarding" (Chambers, 2001, p. 1433). Whilst students have the orientation toward being in control, and having a preference for structure "where they can help individuals without having to affiliate with or be equal with them" (Chambers, 2001, p. 1434), it is difficult to see how major changes in improving access to care for disadvantaged groups will occur. With the exception of self-identified Black dentists, many dentists in the US refuse to treat Medicaid patients, despite not being busy (Logan et al., 2014). This is consistent with findings from previous studies which found that dentists were more likely to treat underserved patients from the same minority or ethnic groups as themselves (Smith, Ester, & Inglehart, 2006). These findings reinforce the need for diversity amongst our Australian dental students, so that they may reflect a broader range of SES, rather than being predominately from high SES groups (Mariño et al., 2006). Parental influence is strong for students wanting to enter the profession through undergraduate programs (Mariño et al., 2006; Gardner & Roberts-Thomson, 2012). Even if dentistry programs had more older or mature-aged students, it is not known whether the perceived status of the profession would be less of a motivator. Whilst entry into dentistry programs in Australia remains very competitive, they are likely to continue to attract high achievers and students from high SES backgrounds, and therefore the diversity of students, representative of all Australians, will be reduced.

In a recent UK study comparing dental professionals, the 'features of the job' was the major finding in what motivated younger dentists to enter undergraduate programs (Belsi et al., 2014). These features were linked to job security, the opportunity to specialise, dentistry being 'well recognised', altruism, personal experience, and other social reasons (Belsi et al., 2014). Belsi and colleagues (2014) 'tentatively proposed' that the young,

future dentists were more driven by what the profession could offer them rather than what they could offer the profession. This reinforces the need to be more comprehensive when promoting dentistry as a career, and when recruiting dentists for particular areas of dentistry. More emphasis should be placed on "the fact that dentistry is at core, a health care profession, where the ultimate aim is to care for and serve people" (Belsi et al., 2014, p. 28). As has been previously mentioned, working with the underserved is a 'calling' for many, irrespective of whether it is based on a religious affiliation or secular beliefs (Curlin et al., 2006). Perhaps those associated with the selection of dental students could acknowledge that, for some, dentistry is a path toward academia, or an opportunity to work with disadvantaged people, or a business venture, whilst still coming under the banner of a 'health care profession'. This may assist with identifying applicants with a specific intention of wanting to work with disadvantaged people, because, based on current practice activity and findings from this study, they currently represent the minority.

7.9.2 Recruitment and the dental workforce

Dentists could be involved in opportunities to exert greater influence on students and young practitioners to consider working with underserved patients, as was suggested by the 'Tapped on the shoulder' theme emerging from Stage 1. Dental organisations could recommend to its members that their colleagues may need prompting to consider a change in direction. The ability of 'reaching out to others' could be fostered amongst the profession more. The recognition of skills and attributes, that may be similar to dentists working with disadvantaged groups, should be encouraged. "Peers have an opportunity to learn from peers'' (Welie, 2004, p. 601), so dentists could lend support to others who may be considering working with disadvantaged groups, by implementing support strategies necessary to sustain this type of work. This current study found that most dentists working with disadvantaged patients in a second practice were invited or encouraged by others to do so (Refer Table 6.26, p. 113). If recruitment programs designed to encourage dentists to take up particular career pathways occurred throughout the program, rather than in the final year, perhaps more options than private practice may be considered. Encouraging dentists, who are already practising with disadvantaged groups, to speak to undergraduates about the rewarding aspects associated with their job, may also result in more dentists showing interest and ultimately doing the same.

Even though there is evidence that the number of patients experiencing disparities in access to care is growing (Luzzi & Spencer, 2011), every effort is a start in changing attitudes amongst the profession. Such change in attitudes is likely to have a snowballing affect. Dentists could be encouraged to look for ways to 'recharge oneself and seek buffering resources' to prevent loss of job satisfaction, the risk of burnout, and the loss of resilience (Gorter et al., 1998). Professional associations, such as the Australian Dental Association (ADA), could take a lead in this area by reinforcing the collective responsibility of the profession toward those it serves, and 'to guard against personal interest' being placed above fostering access to care for the most vulnerable of society (Welie, 2004, p. 601). The ADA is an influential and powerful professional body, whose members predominately, are private dental practitioners. This current study confirms that the influence of dentists remains strong for people seeking advice about dentistry, and whilst there is a large disproportion between public and private dentists, there will continue to be a focus on private sector dental care. There needs to be an openness in where opportunities lie for future graduates, rather than the emphasis being on self-interest, such as the current trend of dentists mostly seeking work in major cities and inner regional areas. In providing career advice for current and future dentists, the negative association between dentists who work with disadvantaged patients and choosing dentistry because of the opportunity to be independent or self-employed, could be exploited. Specifically, more detailed information about the 'pros' and 'cons' of working with underserved groups could be made available to dentists, which would support having strategies and services at hand when these need to be called upon. Although not examined in this study, systemic disincentives may exist. This is a critical area for future research to address disparities in care for disadvantaged groups.

More effort in understanding the scope of practice of OHTs could be undertaken because other countries have shown that there is merit in employing mid-level practitioners to provide services to disadvantaged groups. Dentists' job satisfaction has been positively associated with working with dental auxiliaries (Sur et al., 2004). Whilst this lack of understanding and appreciation of the skill sets of all members of the dental team exists, there will continue to be large groups of people who will suffer disparities in accessing basic oral care (Gallagher & Wright, 2003; Lamster & Formicola, 2011; Nash et al., 2014; Williard & Fauteux, 2011).

There is a need for more properly evaluated and sustainable health service models to address the health inequalities, particularly those which address the differing health outcomes for Australians living in rural and remote areas (Kruger et al., 2010; Kruger, Perera, & Tennant, 2010; Smith et al., 2007; Wakerman, 2008). For example, "vertically integrated, service, education and research-driven models" (Kruger, Jacobs & Tennant, 2010, p. 132) have proved sustainable in remote, Indigenous communities in Western Australia. Other models, such as the Royal Flying Doctor Service, in conjunction with the Remote Area Dental Service, have been operating in remote parts of Western Australia for example, and could be expanded if deemed effective and sustainable.

7.9.3 Curriculum

This study found no association between the amount of exposure to underserved groups in their dental education and working with this population. There is evidence in other studies however, that the more exposure students have working with disadvantaged groups, the more comfortable they feel, and the more likely they are to serve these groups as graduates (Dao et al., 2005; Levesque et al., 2009; Smith, Ester, & Inglehart, 2006). McQuistan et al (2014) found that dentists who were happy with their community-based rotations were more likely to treat vulnerable populations (McQuistan et al., 2014). A curriculum change in one US dental school has meant that students in the latter years treat the 'full spectrum of underserved patients' (Halliday, 2013). They provide care to 'children, adults, geriatric patients, the disabled, the homeless, and the uninsured' in community centres, under supervision, rather than waiting to do so as graduates (Halliday, 2013). Dentists graduating from this program also graduate with an extra qualification in Public Health. Perhaps Australian dental schools could look at innovative ways in how students fulfil the clinical components of their programs, by providing maximum exposure to a range of vulnerable populations, whilst still addressing all aspects of their dental care at the same time. For example, if students were exposed to a range of clinical experiences with geriatric patients, it may lead to an increase in confidence in their diagnostic and treatment planning ability (Ettinger, 2010).

Whilst resilience was not supported in the final model, the curricula could explore reinforce the moral and ethical obligations of dentists. Dentistry, arguably, is a stressful profession which presents different degrees of challenges on a day-to-day basis (Gorter et al., 2007; Myers & Myers, 2004; Rutter, Herzberg, & Paice, 2002). There is a growing

trend to include mindfulness teaching in medical and dental curricula in the belief that it can 'prevent compassion fatigue and burnout' (Dobkin & Hutchinson, 2013). It has been suggested that if students could be made aware of the challenges to expect as a student, and also as a practitioner, they may be better equipped to deal with these as they occur (Gorter et al., 2007; Te Brake et al., 2007). In turn, these authors have also reported higher levels of engagement being associated with increased positive attitudes and a reduced likelihood of burnout amongst dentists. Activities based around ethical obligations could be integrated with increasing student exposure to disadvantaged groups, and exploring better ways to manage patients with special needs. These changes could include increasing cultural empathy and attitudes towards Indigenous people, as has been implemented for health educators in Western Australia (Wain et al. 2012).

The sustainability of prosocial behaviour could be taught in dental schools, as has been suggested for medical students (Burks & Kobus, 2012; Stevenson et al., 2011). In order to behave ethically and professionally, a dentist should have empathy toward their patients where the patient's circumstances evoke this emotion. However, it has been shown that in medical education, empathy levels of the students' have waned across the program (Batt-Rawden et al., 2013; Burks & Kobus, 2012; Chen et al., 2007; Mangione et al., 2002; Quince et al., 2011). Dental course designers should be aware of the potential for this to happen, and be prepared to reinforce the importance of empathy in dental practice, throughout the students' program.

Providing 'real world' experiences through community–based rotations would help 'cultivate those skills, knowledge, values and attitudes' necessary for dentists to succeed in 'today's dynamic health care environment' (Mofidi et al., 2003, p. 523). It has been shown that this action increases the likelihood of dentists providing charitable community care after graduation (Dao et al., 2005; Holtzman & Seirawan, 2009; McQuistan et al., 2014). As reported in medical education, early experiences may assist with the transition to the social environment, such as, giving students greater confidence in approaching patients, reminding them of their vocation, and reinforcing their responsibilities in becoming health care practitioners (Dornan et al., 2006). This early experience not only benefits patients and populations, but also teachers and health organisations (Dornan et al., 2006). These benefits are likely to continue to develop once the VDGYP, or an intern year for dental graduates, is fully established in Australia. At present, patients seen in these programs are from various disadvantaged groups but the degree of disadvantage varies. Many overseas-

trained doctors have struggled with the social and historical issues associated with working in Aboriginal community-health centres, after being placed there (Gilles, Wakerman, & Durey, 2008). The same struggles may well be experienced by overseas-trained dentists if placed in a similar environment.

More tutors who work with disadvantaged groups could be recruited, despite the small number of dentists working in these areas. Alternatively, they could supervise students at their worksites, which would provide more opportunities for students in addition to their community-based placement options. For this to work, clearly supported partnerships between the university and community clinics need to be in place.

7.10 Further research

While the findings of this study have contributed to the knowledge of what is known about dentists who orientate their practice towards disadvantaged groups of Australians, further research could address some of the study limitations, and explore new research questions that have arisen from conducting this study. For example:

- Explore the motivation factors of dentists who treat specific disadvantaged groups, to determine the relevance of status, second choice to medicine, the challenge of the career, and not wishing for independence in their practice environment. For example, are dentists who work with Residential Care Facility patients different to those who work with Aboriginal and Torres Strait Islander people? If this were known, more targeted recruitment would be possible. A further exploration of the relationship between status as a career motivator and those with an interest in medicine would be beneficial, as it is associated with future structures in society which are geared towards caring for the disadvantaged.
- Include all adult and child patients seen at government clinics who were not identified as Aboriginal or Torres Strait Island decent, RCF or incarcerated patients, special needs patients, rural and remote area patients and new migrants and/or refugees. Through this inclusion, the scope of disadvantaged would be broadened.
- Analyse the qualitative component of the questionnaire (i.e., the open-ended responses) which would add strength to the findings. The analyses of this extra information, pertaining to the dentists' current work situations (see Appendix C.1, p. 208), would identify particular areas of concern expressed at the time of the study, and might help

further explain the reasons why some dentists choose to work with underserved patients.

- Conduct further longitudinal, qualitative studies, which would complement the quantitative analyses on whether reasons for dentists' motivation differ over time in terms of sustaining their activity and remaining in the profession.
- Explore the actual movement of recent graduates and determine whether there is an association between the times spent at each community-based rotation and their practice orientation at least five years after graduation.
- Monitor the work practice of OHTs and where they are being employed, and the degree to which they are practising within their full scope of capabilities. This would add further insight into dentists' acceptance of OHTs as part of the dental team and how they can be involved more in working with underserved populations.
- Monitor the employment details of dentists engaged in the Voluntary Dental Graduate Year Program for over a 3-5 year period, to determine the type of practice they sought to work in, the patient profile of the practice, and to compare the findings with those who did not have an 'intern' year upon graduation. Because the program is in its infancy, it is likely to take time to gather sufficient evidence to draw comparisons and evaluate the benefit if any, in addressing the disparities in access for disadvantaged groups.
- Whilst this study found no results that could be generalised between resilience levels in different groups of dentists, this should be explored further using in-depth interviews with a diverse group of general practitioners. It would also be important to explore resilience further to see if levels vary at different stages of progress through the dentistry program, and repeat this again post-graduation. Motivation for work after all, relates to domains of choice, effort and resilience; in other words, the direction a person chooses to take, the intensity in which they go about their work, and the duration of the work (Locke & Latham, 2004).
- It was assumed, prior to this current study, that dentists working with underserved patients would have higher empathy levels than those working in 'mainstream' practice, treating mainly general private patients. Further research measuring empathy at different stages of the dentists' formal education, and mapping their future career direction, would be important to confirm or otherwise, whether empathy is associated with dentists' preferred choice of patient and practice.

- Use a different definition for dentists who treat disadvantaged patients. For example, instead of one who sees 50% or more patients, use a different cut-off point for a binary outcome, or use a continuous outcome variable for a linear regression analysis.
- Explore whether these findings can be generalised outside of Australia by endorsing similar research in other countries.

7.11 Summary

The statistically significant variables associated with dentists treating disadvantaged groups, after adjusting for gender, dental education experience, socio-economic status and reasons for being at their practice, are presented in Figure 7.1. This figure presents the variables showing significant characteristics associated with dentists treating disadvantaged groups. It incorporates a multivariate concept described by Steers and Porter (1975) which is based on the characteristics of the individual dentists, the job, and the work environment.

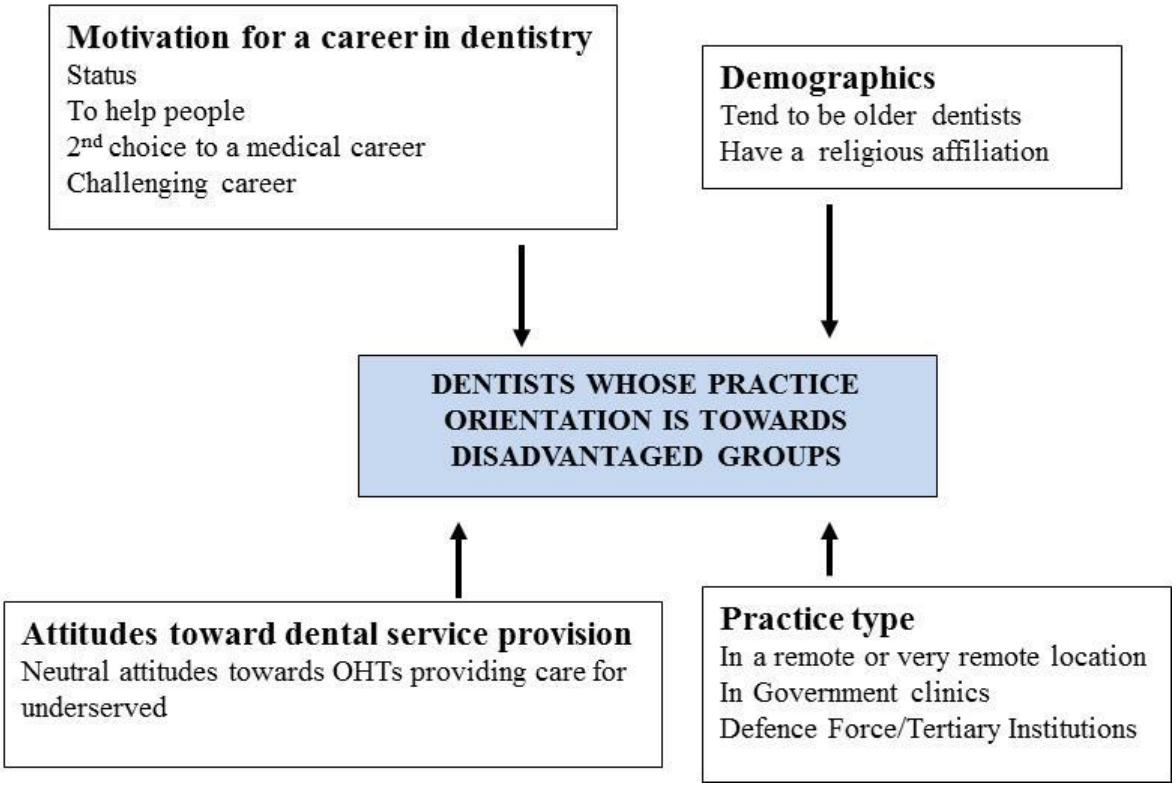


Figure 7.1: Diagrammatic display of variables showing significant characteristics associated with dentists treating disadvantaged groups

Prior to this research, little was known about dentists who choose to orientate their practice activities toward disadvantaged groups of Australians. A two-staged, mixed-method approach showed that differences did exist between these dentists (RQ.1.1) and those who provided care to mainly general patients in 'mainstream' private practices (RQ.1.2). These differences were that initially dentists were motivated to the career for its status, their desire to help others, the challenging nature of the job, and because it was their second choice to a career in medicine. They did not seek out independent or self-employment practice environments. Dentists who treated disadvantaged patients were; more likely to work in remote locations, in government clinics, tertiary institutions, or with the Defence Force (RQ2.6), currently affiliated with a religion or faith (RQ2.5), and associated with being neutral in their opinion of OHTs being used to provide care for underserved populations. The next chapter will present the general conclusions that are drawn from this study.

Chapter 8. Conclusions

The aim of this study was to answer the following questions:

- RQ1.1. What are the characteristics of dentists whose practice is orientated towards disadvantaged groups?
- RQ1.2. Do these characteristics differ from dentists who work primarily in mainstream private dental practices seeing mainly general patients?
- RQ2.1. Was there an association between resilience and treating the underserved?
- RQ2.2. Was there an association between experiences in dental school and treating the underserved?
- RQ2.3. Was there an association between being motivated by the intrinsic reward received and treating the underserved?
- RQ2.4. Was there an association between empathy levels and treating the underserved?
- RQ2.5. Was there an association between having a faith or religious affiliation and treating the underserved?
- RQ2.6. Was there an association between demographic detail and treating the underserved?
- RQ2.7. Was there an association between socio-economic status and treating the underserved?

Based on the purpose of the study, and the convergence of the qualitative and quantitative components, the following conclusions can be drawn:

1. The study contributed to existing literature by demonstrating a better understanding of the characteristics, attitudes, and beliefs of dentists who work primarily with underserved or disadvantaged groups of Australians (RQ1.1). It was able to demonstrate conclusively that differences do exist between dentists who orientate their practice toward disadvantaged groups, when compared to those who provide care to mainly general patients in mainstream practices (RQ1.2).
2. Dentists' career choice motivation was different, depending on the way they decided to orientate their practice activity (RQ2.3, RQ2.4). Those working with disadvantaged patients were attracted to the profession for its status, the challenge of the career, because it was a second choice to a career in medicine, and for the desire to help others.

3. The findings suggested that there was a connection between caring tendencies and wanting to help people from disadvantaged groups improve their wellness (RQ2.3), and that these personal values (typical of medical practitioners), suggest an association with the dentists' religion or faith (RQ2.5). Dentists who work with disadvantaged groups nominated dentistry as their second choice to medicine in their career selection (RQ1.1).
4. The mixed-method study design was effective in answering the research questions, because it provided the researcher with a deeper insight into the factors associated with dentists' motivation to treat underserved groups of Australians, through the use of interviews, and by conducting a cross-sectional survey.
5. Dental schools should include intra-professional learning activities, involving oral health and dental students, which would focus on improving the understanding of team-based patient care. One of the aims of these developments, is to improve the understanding of the role OHTs currently have, in providing care for disadvantaged groups (RQ1.2) (see Section 7.4, pp. 136-137).
6. Dentists, who currently work with disadvantaged groups, could be more proactive in identifying others with similar characteristics or personality traits as theirs, and encourage them to consider a change in their practice activity if practicable (RQ1.2) (see Section 7.6, pp. 138-140).
7. Dental curricula could explore appropriate methods to reinforce the moral and ethical obligations of dentists, including reinforcing their 'duty of care' to all patients in need, irrespective of their race, religion, and socioeconomic status. This may increase the likelihood of a greater proportion of dentists choosing to work with underserved groups (see Section 7.4, pp. 136-137).
8. There was no significant association between resilience levels (RQ2.1), and demographic and socio-demographic characteristics of dentists, and treating disadvantaged patients (RQ2.6, RQ2.7).
9. There was no significant association between empathy levels and treating the underserved (RQ2.4).

The number of dentists primarily involved in providing care for marginalised groups of Australians, is small. If this remains, the gap in oral health outcomes for these groups, compared to general Australians, will continue to widen, unless all stakeholders work on ways to improve this disparity. This study sought data based on the dentists' perspective only, using interviews and self-report questionnaires. Before disparities in oral health

outcomes can be eliminated however, it is essential to recognise and acknowledge that oral health is affected by a multitude of factors, such as one's social and physical environment, one's self-care, one's lifestyle, and the systems associated with these factors (Maas, 2006).

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Appendix A

Gardner, S.P., Roberts-Thomson, K.F., Winning, T.A., & Peterson, R. (2014) Intrinsic rewards experienced by a group of dentists working with underserved populations. *Australian Dental Journal, v. 59 (3), pp. 302-308*

Appendix B

B.1 Ethics approval confirmation (Stage 1)

THE UNIVERSITY of ADELAIDE

RESEARCH BRANCH
RESEARCH ETHICS AND COMPLIANCE UNIT

BEVERLEY DOBBS
EXECUTIVE OFFICER
HUMAN RESEARCH ETHICS SUB-COMMITTEES
THE UNIVERSITY OF ADELAIDE
SA 5005
AUSTRALIA

TELEPHONE +61 8 8303 4725
FACSIMILE +61 8 8303 7325
email: beverley.dobbs@adelaide.edu.au
CRICOS Provider Number 00123M

28 July 2011

Professor K Roberts-Thomson
ARCPOH The School of Dentistry

Dear Professor Roberts-Thomson

PROJECT NO: H-172-2011
Personal qualities and characteristics of dentists who serve the underserved (stage 1)

I write to advise you that on behalf of the Human Research Ethics Committee I have approved the above project. Please refer to the enclosed endorsement sheet for further details and conditions that may be applicable to this approval.

The ethics expiry date for this project is: 31 July 2012

Where possible, participants taking part in the study should be given a copy of the Information Sheet and the signed Consent Form to retain.

Please note that any changes to the project which might affect its continued ethical acceptability will invalidate the project's approval. In such cases an amended protocol must be submitted to the Committee for further approval. It is a condition of approval that you immediately report anything which might warrant review of ethical approval including (a) serious or unexpected adverse effects on participants (b) proposed changes in the protocol; and (c) unforeseen events that might affect continued ethical acceptability of the project. It is also a condition of approval that you inform the Committee, giving reasons, if the project is discontinued before the expected date of completion.

A reporting form is available from the Committee's website. This may be used to renew ethical approval or report on project status including completion.

Yours sincerely

PROFESSOR GARRETT CULLITY
Convenor
Human Research Ethics Committee

B.2 Protocol to follow for interviews

Introductory protocol for in-depth interviews

Thankyou for agreeing to speak with me today.

Identified as someone with a great deal to share about your work choice.

My research focuses on the understanding why dentists do what they do in order to improve the likelihood of other dentists wanting to engage in service provision for underserved populations.

These shared experiences may lead to

- differences in the selection of undergraduates
- recruitment and retention of the dental workforce
- improved curriculum development to prepare students in provision of dental care to all.

My study does not aim to evaluate your techniques or experiences, rather

- I want to learn more about the characteristics and personal qualities of dentists who choose to provide care to disadvantaged patients.
- From there, future implications will be to hopefully remove some of the disparities in oral health outcomes experienced by many Australians.

Format

- semi structured interview technique, using a guide as a helpful indicator
- planned to last no longer than one hour.
- interruptions may be necessary to complete all lines of questioning.
- recording the interview using 2 machines (in case of failure).

Questions to expect

- will relate to your motivation, reasons for workplace choice, influencing factors, sociodemographic details.

To complete the 2 identical forms to meet our human subject research requirements which states that: (1) all information will be held confidential, (2) your participation is voluntary and you may stop at any time if you feel uncomfortable, and (3) I do not intend to inflict any harm.

One I will keep and the other is for you to keep.

In order to save time during the interview please complete short questionnaire

Thank you for your agreeing to participate.

B.3 Short questionnaire to collect demographic data (Stage 1)

THE UNIVERSITY OF ADELAIDE AUSTRALIA

Motivation and characteristics of dentists who provide care to underserved groups

ARCPOH Australian Research Centre for POPULATION ORAL HEALTH

Office ID:

Please complete the following short questionnaire prior to your interview. The information gained may be elaborated on during the interview process and will save time if the details are known beforehand. All information provided will be strictly confidential.

Please 'cross' the box which best describes your answer ☒

A1. Your gender	Male ☐	Female ☐			
A2. Your age range	26-35 ☐	36-45 ☐	46-55 ☐	56-65 ☐	over 65 ☐
A3. Year of Graduation	☐☐☐☐	Name of **Australian** University:			
		Name of **International** University:			
A4. The type of **primary** school you **attended**	Govt/State ☐	Non govt, Independent or Private ☐	Catholic ☐	Other ☐ _____	
A5 The type of **secondary** school you **attended**	Govt/State ☐	Non govt, Independent or Private ☐	Catholic ☐	Other ☐ _____	
A6. Where you **lived** for most of your **primary** school years	Postcode: _____	Aust capital city ☐	Aust large town/city ☐	Australian rural ☐	Overseas city ☐	Overseas rural ☐
A7. Where you **lived** for most of your **secondary** school years	Postcode: _____	Aust capital city ☐	Aust large town/city ☐	Australian rural ☐	Overseas city ☐	Overseas rural ☐
A8. Your parents occupation	Father:		Mother :		

A9. Which type of patient best fits your regular patient pool and your practice activity? *(Tick boxes as applicable)*

	daily	weekly	monthly	For how many years
☐ Special Needs: mental/physical	☐	☐	☐	
☐ Special Needs: med compromised	☐	☐	☐	
☐ Aboriginal or Torres Strait Islanders	☐	☐	☐	
☐ Institutionalised: elderly	☐	☐	☐	
☐ Institutionalised: other	☐	☐	☐	
☐ Institutionalised: prisoners	☐	☐	☐	
☐ Refugees/New migrants	☐	☐	☐	
☐ Homeless	☐	☐	☐	
☐ Other low SES patients	☐	☐	☐	

Please email the completed questionnaire to sue.gardner@adelaide.edu.au or bring it to your interview.
Thank you for agreeing to participate in this study.

B.4 Interview guide

THE UNIVERSITY OF ADELAIDE AUSTRALIA

Interview guide

Employment history Current, hours worked, years worked Population & patient characteristics Challenges, rewards Previous work, volunteer dental work **Dentist background** Cultural/Language Education, high school, tertiary, boarding Religious following Political persuasion **Family background** Were families Migrants? • Did they suffer prejudice? • Parents socio economic status • Parents jobs • Siblings • level of education, type of schooling • Religious following **Personal experiences** Lived in Rural/remote Exposure to Special needs person, Disabled family member, terminally ill Elderly relatives, Indigenous, Low income **Role models** past, present Outside interests, volunteer work	**Dental education experience** Work during dental school? Financial support through dental school Ranking as student & time to reach degree Idealism as student Rural/remote experience What selective did you choose? Types of patients in dental school Clinical rotations dental school Role modelling in dental school **Perceptions** Why the choice to work with underserved? What influenced you? Would you recommend work? Would you do same again? Peers views of your work choice Your view on volunteer work, pro-bono work Your view of 'closing the gap' Structural barriers Political persuasion? Altruism and empathy Personality

Notes

B.5. Example of Initial approach email to potential recruits for Stage 1 interviews

Date: Tue, 4 Oct 2011 15:49:45 +1030
From: Sue Gardner <sue.gardner@adelaide.edu.au>
To: INSERT DENTISTS EMAIL ADDRESS
Subject: Fwd: interview request

Dear INSERT NAME

Your name was given to me by INSERT NAME OF REFERING PERSON as someone who may be willing to share their experiences and motivations which lead to their work choice/s throughout their career.

Your involvement with patients with Special Needs is of great interest to me as am conducting a study exploring the characteristics and motivation of dentists who have a prolonged involvement in providing care to underserved populations. Dr Kaye Roberts-Thomson is my PhD supervisor and will be overseeing the study.

I intend to interview approximately 16 dentists for Stage 1 of my study which will be followed up with a questionnaire on a random sample of Australian dentists (Stage 2 of the study).

Ethical approval for the qualitative stage has been granted by the Human Research Ethics Committee, University of Adelaide.

If you are interested in receiving more information regarding my research, I would be happy to provide those details.

I look forward to hearing from you.

Yours sincerely
Sue
--
Sue Gardner
Lecturer
PhD candidate
School of Dentistry
THE UNIVERSITY OF ADELAIDE SA 5005
AUSTRALIA
Tel: +61 8 8303 3053 (Tu,) +61 8 83035873(Mon, Wed, Thurs, Fri)

B.6 Information, Complaints procedure, Consent form Stage 1

THE UNIVERSITY OF ADELAIDE AUSTRALIA

INFORMATION *Personal qualities and characteristics of dentists who serve the underserved*

What is the study about? The overall study is about exploring the characteristics, beliefs, attitudes and motivations of dentists who work with the groups who suffer disparities in oral health outcomes. The groups identified for this study are Aboriginal and Torres Strait Islanders, people with Special Needs, Institutionalised and Refugees. The purpose of the study is to better understand what drives dentists who choose to provide care to the dentally disadvantaged. The findings will be used to inform selection of dental applicants, recruitment and retention of the dental workforce and assist dental educators to modify curricula to better prepare students to provide oral health care to all patients regardless of their status.

Who is carrying out the study? The study is being conducted by Mrs. Sue Gardner as part of her PhD research. She is under the supervision of Prof Kaye Roberts-Thomson and Assoc Prof Tracey Winning.

What does the study involve? The research is a qualitative study of dentists whose primary role is to provide care or has had prolonged involvement in providing care to underserved groups of the population. It is expected that 16 dentists will be interviewed for a period of around one hour. The interview will be recorded and then transcribed verbatim. This transcript will be coded and a summary sent to you for validation. An analysis of all interviews will be based on grounded theory principles where it is expected that key themes will emerge from which a summary and interpretation will be possible.

Will the study benefit me? This study is not designed to directly benefit you; however, your participation in the study will lead to a deeper understanding of the reasons associated with your decision to work in your field of practice. This may assist with recruitment and retention of the dental workforce, future selection of dental students and further curricular development.

How much time will the study take? The study will require a time commitment of approximately one hour for the interview to be held. It is anticipated that the interviews will occur between October 2011 and February 2012. The verbatim transcriptions and coding of the interviews and data analysis is expected to be completed by July 2012.

Can I withdraw from the study? Being in this study is completely voluntary—you are not under any obligation to consent. Please note that you are free to participate or decline to participate in this project without any prejudice to yourself, now or in the future.

Will anyone else know the results? Your anonymity and privacy must be protected, so only Sue Gardner will have access to your details during the process. Working data will be password protected on the investigator's PC or in a locked file. All research data will be assigned a unique pseudonym. Original de-identified transcriptions, tapes, notes and coded transcriptions of the interviews will be securely stored separately, password protected, at ARCPOH central data storage unit. A report of the study will be produced in a thesis and submitted for publication by using pseudonyms to protect your identity.

What if I require further information?

Contacts:

Sue Gardner;	ph: 0419 130 522; email: sue.gardner@adelaide.edu.au
Prof Kaye Roberts-Thomson;	ph: 08 83134454; email: kaye.robertsthomson@adelaide.edu.au
Assoc Prof Tracey Winning;	ph: 08 83135968; email: tracey.winning@adelaide.edu.au

What if I have concerns or a complaint? If you have questions or problems associated with this project or wish to discuss issues with an independent person, please refer to the attached complaint sheet for contact details.

If you choose to take part in the project this information sheet is to be kept by you. Both copies of the consent form are to be signed and one copy kept by you.

THE UNIVERSITY OF ADELAIDE
HUMAN RESEARCH ETHICS COMMITTEE

CONTACTS FOR INFORMATION ON PROJECT AND INDEPENDENT COMPLAINTS PROCEDURE

The Human Research Ethics Committee is obliged to monitor approved research projects. In conjunction with other forms of monitoring it is necessary to provide an independent and confidential reporting mechanism to assure quality assurance of the institutional ethics committee system. This is done by providing research participants with an additional avenue for raising concerns regarding the conduct of any research in which they are involved.

The following study has been reviewed and approved by the University of Adelaide Human Research Ethics Committee:

Project title: *Personal qualities and characteristics of dentists who serve the underserved.*

1. If you have questions or problems associated with the practical aspects of your participation in the project, or wish to raise a concern or complaint about the project, then you should consult the project co-ordinator:

   Name: Professor Kaye Roberts-Thomson……

   Telephone: 08 83134454……..

2. If you wish to discuss with an independent person matters related to
   - making a complaint, or
   - raising concerns on the conduct of the project, or
   - the University policy on research involving human participants, or
   - your rights as a participant

Contact the Human Research Ethics Committee's Secretary on phone (08) 8303 6028

THE UNIVERSITY OF ADELAIDE HUMAN RESEARCH ETHICS COMMITTEE

CONSENT FORM

Understanding what motivates dentists to provide care to dentally underserved groups

1. I, *(the participant)* ……*(please print name)*

   consent to take part in the research study entitled *Personal qualities and characteristics of dentists who serve the underserved.*

2. I have read the attached Information Sheet entitled ***Information sheet:*** *Personal qualities and characteristics of dentists who serve the underserved.*

3. The project, and my involvement, has been fully explained to me by Sue Gardner. My consent is given freely.

4. I understand that the purpose of this research is to better understand what drives dentists who choose to provide care to the dentally disadvantaged by comparison with dentists who primarily provide care to the general population of Australians.

5. I understand that my involvement in this project is confidential, and that it will not benefit or harm my career in any way.

6. I have been informed that, while information gained during the study will be published, a unique pseudonym will be used to protect my identity.

7. I understand that I am free to withdraw from the project at any time without prejudice to me, now or in the future.

8. I am aware that I should retain a copy of this Consent Form, when completed, and the attached Information Sheet.

…… ……/……/……..
(Participant's signature) *(date)*

WITNESS

The nature of the research has been explained to……
(Participant's name)

In my opinion she/he understood the explanation.

Researcher's name: Sue Gardner

…… ……/……/……..
(Researcher's signature) *(date)*

B.7 Example of letter, thanking dentists who were no longer required to participate

Date: Mon, 30 Jan 2012 13:00:30 +1030
From: Sue Gardner <sue.gardner@adelaide.edu.au>
To: INSERT ADDRESS
Subject: PhD study

Dear INSERT NAME

Some time has elapsed since our last contact and I have, in the
meantime, found sufficient recruits who met the selection criterion for my PhD Stage 1 study.

I sincerely thank you for your interest and perhaps you will have an opportunity to respond to the questionnaire, once developed, if randomly selected.

I wish you continued success with the work that you do with INSERT UNDERSERVED GROUP, amongst other things, and apologies for
the inconvenience I may have caused.

Kind regards
Sue

--
Sue Gardner
Lecturer
PhD candidate
ARCPOH
School of Dentistry
THE UNIVERSITY OF ADELAIDE SA 5005
AUSTRALIA
Tel: +61 8 8303 3053 (Tu,) +61 8 83035873(Mon, Wed, Thurs, Fri)
Email:sue.gardner@adelaide.edu.au
Fax: +61 8 8313 3070

B.8 Example of email, with attachment, of interview transcript

Date: Wed, 21 Dec 2011 10:28:46 +1030
From: Sue Gardner <sue.gardner@adelaide.edu.au>
To: INSERT NAME
Subject: thankyou
Part(s): 2 Interview13_12_11.doc application/msword 97.16 KB

Dear INSERT NAME

Please find attached the transcript of the interview conducted on
[INSERT DATE].

I sincerely appreciate your honesty and frankness when providing insightful
responses to my questions. If you have any concerns about this interpretation
or would like to add anything further, please feel free to do so.

Thank you for your assistance with my research. Your support and valuable
contribution was very much appreciated.

I wish you and your family a very happy and safe Christmas.

Kind regards
Sue

--
Sue Gardner
Lecturer
PhD candidate
ARCPOH
School of Dentistry
THE UNIVERSITY OF ADELAIDE SA 5005
AUSTRALIA
Tel: +61 8 8303 3053 (Tu,) +61 8 83035873(Mon, Wed, Thurs, Fri)
Email:sue.gardner@adelaide.edu.au
Fax: +61 8 8313 3070

B.9. Quotations from transcripts to support code allocation and theme development

Code	Quotation
Family background	*I can't talk on behalf of him [father] but I think he often says about how he's had missed opportunities…and I think that's where he doesn't want us to have missed opportunities …so he's always been…. very supportive. (Dent1)*
	…my dad was wanting me to medicine, and I wanted to go to art college and dentistry was a compromise between the two…..(Dent11)
Religious affiliation	*Yes. I'm an atheist……..My father is a lapsed Catholic. My mother's a lapsed Lutheran and my sister is a Church of England/Uniting. (Dent10)*
	I'm not really a follower, but I consider myself an infrequent follower. (Dent15)
	Nominally we put on the census form that they were probably some sort of Protestant, Methodist or something like.. Look, I'm a devout atheist really….(Dent3)
	Not strongly but Anglican, yes. And I have followed that perhaps more strongly than they have, so I'm quite involved in our church. (Dent6)
	I don't follow, I mean I don't go to church but I still have a fairly strong Christian belief. (Dent8)
Resilience	*… I was a frustrated student because I was a high achiever, I always topped the class… you do your assessment.. you think great, …..then awards go to somebody else.. (Dent1)*
	..The gerodontologist …. I liked his approach. It was quite fierce though, it intimidated a lot of the students. And that was the other problem I think, that I didn't show any fear (Dent11)
	Actually ….because I was sick, I had to repeat a whole year doing a couple of subjects, and I wasted basically a whole year….. I didn't ask questions, I didn't suck up to tutors and so … I was handicapped because of that..(Dent5)
	I think there were times and occasionally, as females, we were [sic] - some lecturers were harder on us than others perhaps. (Dent13)
Dental school experience	*Well dictatorial [the teaching]. in a health science course, I think it is a terrible way of doing it. It was really by fear and those that could stand it, ended up being good students. I saw many young kids, who were our age, just fall apart and end up doing not anywhere near as well as they could have. (Dent15)*
	I was the only student to get offered a private full-time job in my final year and they failed me. …… And it didn't matter what I did. It was those days and I came from a family which was not very functional. These days, if I was in a functional family, my dad would have gone in and demanded my paper be remarked. (Dent12)
	I failed physics…. but I passed everything else but I failed first year on the basis that I failed this one subject. So I had to do it again and they allowed me to do a course called general physics, which was much easier. (Dent2)
	Orthodontics training, you weren't allowed to do anything; So we were made to feel like we were absolutely stupid….. (Dent3)
	…a lot of the other disciplines were sort of run by complete sociopaths…….today, they would be in court. The University would be paying compensation because they [lecturers] taught by fear and they were just bastards, to some people. I wasn't victimised like some people were. (Dent4)
	I had some pretty cheerless tutors …..You'd ask them a question and they'd look down on you rather than giving an encouraging atmosphere. (Dent5)
'Resilience' from 'Rural and remote experiences'	*We almost run our own race out here. We're really isolated. We get on with it and I guess I try myself to be the person who models behavior…..And you just keep on keeping on. There are people that need help, there are things that need to be done and you just do them. (Dent7)*
	There is a lot more after hours work. Like, where we worked, you're basically 24 hours a day. There weren't too many weekends where I wouldn't get called in...(Dent16)
	You certainly had to have some initiative and some idea of how to pick up a

	screwdriver and if the compressor fails or something goes wrong, you have to be willing to try and fix it. (Dent4)
'Tapped on shoulder'	*.....someone asked me to go and see one of my ex-patients who was in a nursing home and I realised there was a need, so up until then I had what I call my general garden variety suburban dental practice. (Dent12)*
	I knew an orthodontist at the time, and he came to me probably towards - near my final year and said "these two practices might be looking for a new dentist next year if you're interested", and I thought it would be quite a good exercise having lived in Adelaide, I thought it would be quite a good challenge to move away and so yeah, I only applied for those two. (Dent16)
	....there was a committee formed to find out whether there was any dentist willing to take on a nursing home, and be responsible for a nursing home, so I was approached by the ADA and I said "yeah I am happy to do that" and they gave me [Name] Nursing Home to look after. (Dent 2)
'Motivation' theme subsequently renamed 'Intrinsic reward'	*So basically one of the reasons I wanted to do it, is because I thought.. it would be doing some good. There's a group of people that find it difficult to get all their needs met in medical, dental and other sorts of things. (Dent5)*
	Knowing that I am helping someone _ helping a group. (Dent14)
	There are people that need help, there are things that need to be done and you just do them .. I'm the sort of person who enjoys a challenge…. I like to fix things and sort things out and get things running and because of the challenges there are with working in a remote area in terms of staffing and, you know, access to services and support…(Dent7)
	I had someone ring me, they had one of the refugees ... they needed dental treatment, they had no money. I was happy to treat them. That's my view, where you're helping someone and you're not going to get any great pat on the back, no financial gain, but hopefully you have helped someone who has had a pretty tough time.. (Dent16)
Volunteering	*... I guess work is pretty consuming for me, I suppose that's my, my wife's a serious volunteer.. (Dent4)*
	.. My father in particular…had a good social conscience and was generous to a fault, with helping anyone out. My mother, although she didn't volunteer, gave substantial amount of money to the church ..(Dent7)
	When I was a student at university, my wife and I did volunteer work. (Dent6)
	...I have no time really [for volunteering] - this job is very time consuming at the moment and has been for some time. (Dent7)
	I used to [volunteer] with Oxfam. In the shop I used to work on Saturday afternoons and that's what I aim to do when I retire. (Dent8)

Appendix C

C.1 The questionnaire

ARCPOH
Australian Research Centre for POPULATION ORAL HEALTH

THE UNIVERSITY of ADELAIDE

DENTISTS' CHARACTERISTICS, MOTIVATION AND OTHER FACTORS INFLUENCING CHOICE OF PRACTICE

Thankyou for agreeing to participate in this study. Your responses are very important and will lead to a better understanding of the factors influencing your choice of workplace and the patients you treat. Responses to the questionnaire are STRICTLY CONFIDENTIAL and will be reported in statistical form to protect your identity. Your questionnaire is identified by a serial number to manage follow up mailing procedures. Ethics approval for this study has been granted by The University of Adelaide Human Research Ethics Committee.

Please answer all questions by marking boxes with an ☒, circling a number, or writing in the spaces provided

Section A relates to your initial CAREER decision

A1. Please indicate **three main reasons** for choosing dentistry as a career *(Mark box/boxes with an X)*

Regular working hours	☐1	Fits in with family	☐10
Opportunity to help people	☐2	Opportunity to use manual skills	☐11
High professional status	☐3	Opportunity to specialise	☐12
Job security	☐4	Parents made decision for me	☐13
Self employment and independence	☐5	Saw dentistry as a challenging career	☐14
Interesting job	☐6	A second choice to medicine	☐15
My parents expectation	☐7	Appeal of a science-based occupation	☐16
Opportunity to do research	☐8	Other *Please specify:*	☐17
Able to earn a good income	☐9	.....	

A2. Who was the **main person** who **influenced** your decision to become a dentist? *(Mark box with an X)*

Your father	☐1	Your mother	☐2	Another relative	☐3	A dentist	☐4
						Other	☐8
Friend	☐5	School teacher	☐6	Careers advisor	☐7	*Please specify:*	

SECTION B relates to your experiences during DENTAL SCHOOL

B1. Where did you obtain your **initial qualification** allowing registration as a dentist?
Australia ☐1 ..... *(name university)*
Overseas ☐2 ..... *(name country)*

B2. Did you obtain your qualification in the **minimum time** frame? Yes ☐1 No ☐2 B3. Year of graduation ☐☐☐☐

B4. If you answered 'No' to question B2, how much **extra time** did you take? <12 mths ☐1 12 mths ☐2 between 12-24mths ☐3 ≥24mths ☐4

B5. Did you hold a **part-time job** during the semester whilst at dental school? Yes ☐1 No ☐2

B6. If you had a part-time job, to what extent did it **affect your overall performance** during dental school? no impact ☐1 little impact ☐2 some impact ☐3 major impact ☐4

B7. Please **circle** the number which best describes your level of agreement/disagreement for each statement

	Strongly disagree				Strongly agree
a. Overall, I would rate my dental school experience as **positive**	1	2	3	4	5
b. My dental education **prepared** me well for my current type of practice activity	1	2	3	4	5
c. Overall, I felt that the **assessment** was fair	1	2	3	4	5
d. Overall, I was **treated** with respect by my dental educators during my training	1	2	3	4	5
e. **Role models** during dental school had a positive impact on my current practice activity	1	2	3	4	5
f. I had a range of **exposure to dentally disadvantaged groups*** during my training	1	2	3	4	5
g. I would have liked an **'intern' opportunity** on graduation to develop my confidence in treating patients with special needs	1	2	3	4	5

B8. Are you currently **practicing clinical dentistry** (ie providing full courses of care) in Australia? Yes ☐1 No ☐2 Volunteer only ☐3

If you answered 'No' or 'Volunteer only' please go to QUESTION C11

*Disadvantaged groups are those who may have difficulty accessing dental services viz, Aboriginal and Torres Strait Island people, incarcerated people, refugees and new migrants, people living in Residential Care Facilities, those with special needs including intellectual/physical/psychiatric and medically compromised individuals and other socially marginalised groups.

SECTION C relates to your PRACTICE and PATIENTS

Please complete if you are **currently practicing** clinical dentistry

C1. Please mark with ☒ what bests describes your **main** type of practice

Private solo ☐1 | Private solo with assistant ☐2 | Partnership/associate ☐3 | Assistant ☐4 | Locum ☐5 | Dental Hospital ☐6

School Dental Service ☐7 | General Public Dental ☐8 | Defence services ☐9 | Tertiary institution ☐10 | Other ☐11

C2. What is the **postcode** of your **main** practice location? ☐☐☐☐

C3. How long have you worked at this **main** practice? Number of years ☐☐

C4. How many **days per fortnight** do you work in this **main** practice? Number of days ☐☐

C5. What best describes how you came to work at your **main** practice?

I was invited ☐1 | I was encouraged to join ☐2 | I 'put my hand up' when asked ☐3

I sought the opportunity myself ☐4 | The opportunity arose ☐5 | Other ☐6

Please specify: .....

Please complete questions C6-C10 **only** if you work in a **second** location

C6. Please mark with ☒ what bests describes your **second** type of practice

Private solo ☐1 | Private solo with assistant ☐2 | Partnership/associate ☐3 | Assistant ☐4 | Locum ☐5 | Dental Hospital ☐6

School Dental Service ☐7 | General Public Dental ☐8 | Defence services ☐9 | Tertiary institution ☐10 | Other ☐11

C7. What is the **postcode** of your **second** practice location? ☐☐☐☐

C8. How long have you worked at this **second** practice? Number of years ☐☐

C9. How many **days per fortnight** do you work in this **second** practice? Number of days ☐☐

C10. What best describes how you came to work at your **second** practice?

I was invited ☐1 | I was encouraged to join ☐2 | I 'put my hand up' when asked ☐3

I sought the opportunity myself ☐4 | The opportunity arose ☐5 | Other ☐6

Please specify: .....

.....

C11. If you currently **volunteer your time** to provide **courses of care** for specific groups within Australia, please estimate the number of days in a **regular year** Days ☐☐☐ N/A ☐

C12. If you do **paid work in a third** location, please provide details about the type of practice, including patient mix and location

.....

.....

SECTION C PRACTICE and PATIENTS (cont)

C13. Please estimate the **number of patients**, as **best described** from the list below, you would see from **each group** in your practice/s in a **regular fortnight**

Patient Group	C13-1. **Main** location no. of patients	C13-2. **Second** location *(if applic)* no. of patients	C13-3. **Volunteer** only or Pro bono no. of patients
a. Aboriginal or Torres Strait Islander people			
b. Incarcerated people			
c. Recent refugees/migrants			
d. Residential Care Facility patients			
e. Other Special Needs patients: *(Intellectual/physical/psychiatric or Medically compromised)*			
f. Other Govt funded Adults: *(eg State/Territory funded Medicare eg EPC/CDDS, Veterans Affairs)*			
g. Other Govt funded Children: *(eg School Dental)*			
h. Other General private patients: *(Adults/children)*			

SECTION D relates to DENTAL SERVICE PROVISION

Please **circle** the number which best represents your level of agreement/disagreement for each statement

	Strongly disagree				Strongly agree
D1. Public dental services should be directed to disadvantaged groups	1	2	3	4	5
D2. It is important to have a choice of dental provider for all Australians	1	2	3	4	5
D3. The dental profession should be responsible for ensuring that all Australians are able to receive dental care	1	2	3	4	5
D4. The government should be responsible for ensuring that all Australians are able to receive dental care	1	2	3	4	5
D5. Oral health therapists should be employed to provide care to disadvantaged groups within their scope of practice	1	2	3	4	5
D6. Dental disease could be eliminated through education alone	1	2	3	4	5
D7. Dentists should not be concerned with patients who don't place oral care as a high priority	1	2	3	4	5
D8. Private dentists should be funded to provide care to disadvantaged groups	1	2	3	4	5
D9. If incentives were offered, more dentists would go to remote and outer regional areas to provide dental services	1	2	3	4	5
D10. Different models of care to reach disadvantaged groups should be explored	1	2	3	4	5
D11. Dentists should volunteer some of their time to provide services to dentally disadvantaged groups if the facilities, equipment and support staff enable this	1	2	3	4	5
D12. Dentists should work with a multi disciplinary team in managing people who are disadvantaged	1	2	3	4	5

SECTION E refers to PERSONAL FACTORS

Please **circle** the number which best indicates how much you agree with the following statements as they apply to you over the last **month**. If a particular situation has not occurred recently, answer according to how you think you would have felt

	Not true at all	Rarely true	Sometimes true	Often true	True most of the time
E1. I am able to adapt when changes occur	0	1	2	3	4
E2. I can deal with whatever comes my way	0	1	2	3	4
E3. I try to see the humorous sides of things when I am faced with problems	0	1	2	3	4
E4. Having to cope with stress can make me stronger	0	1	2	3	4
E5. I tend to bounce back after illness, injury or other hardship	0	1	2	3	4
E6. I believe I can achieve my goals, even if there are obstacles	0	1	2	3	4
E7. Under pressure, I stay focused and think clearly	0	1	2	3	4
E8. I am not easily discouraged by failure	0	1	2	3	4
E9. I think of myself as a strong person when dealing with life's challenges & difficulties	0	1	2	3	4
E10. I am able to handle unpleasant or painful feelings like sadness, fear & anger	0	1	2	3	4

SECTION F relates to INTERPERSONAL REACTIONS of a general nature

Please **circle** the number which best indicates your level of agreement/disagreement with each statement in a **general** context

	Strongly disagree				Strongly agree
F1. When I see someone get hurt, I tend to remain calm	1	2	3	4	5
F2. I feel concern for people less fortunate than me	1	2	3	4	5
F3. I feel happy when I see people laughing and enjoying themselves	1	2	3	4	5
F4. In emergency situations I feel apprehensive and ill at ease	1	2	3	4	5
F5. Sometimes I have no sympathy for people experiencing problems	1	2	3	4	5
F6. Other people's misfortunes do not usually disturb me greatly	1	2	3	4	5
F7. Being around happy people makes me feel happy as well	1	2	3	4	5
F8. When I see someone being taken advantage of, I want to protect them	1	2	3	4	5
F9. When I see someone being treated unfairly, I don't always feel pity for them	1	2	3	4	5

SECTION F INTERPERSONAL REACTIONS (cont)

	Strongly disagree				Strongly agree
F10. Being in a tense emotional situation frightens me	1	2	3	4	5
F11. When I see someone who badly needs help in an emergency, I do not cope well	1	2	3	4	5
F12. I am usually pretty effective in dealing with emergencies	1	2	3	4	5
F13. I feel other people's joy	1	2	3	4	5
F14. I tend to lose control when faced with an emergency	1	2	3	4	5
F15. At times I feel helpless if I find myself in a very emotional situation	1	2	3	4	5
F16. I am often moved by things I see happen	1	2	3	4	5
F17. I would describe myself as a fairly soft hearted person	1	2	3	4	5
F18. Seeing other people smile makes me smile	1	2	3	4	5
F19. I get a warm feeling for someone if I see them help another person	1	2	3	4	5

SECTION G relates to your JOB SATISFACTION

Please **circle** the number which best indicates your level of agreement/disagreement for each statement

	Strongly disagree				Strongly agree
G1. I find my present clinical work personally rewarding	1	2	3	4	5
G2. Overall, I am pleased with my work and the related services I provide to my patients	1	2	3	4	5
G3. Overall, I am satisfied with my skill level to provide the service to my patients	1	2	3	4	5
G4. The community in which I practice is not important to my job satisfaction	1	2	3	4	5
G5. Overall, I am satisfied with the personal rewards (excluding monetary) I receive as a result of my work	1	2	3	4	5
G6. I am happy to promote and/or sell products and services to my patients	1	2	3	4	5
G7. I am comfortable or would feel comfortable charging patients for the dental services I provide	1	2	3	4	5
G8. My dental colleagues are supportive of the work that I do	1	2	3	4	5
G9. Overall, I feel my colleagues respect the work that I do and the services I provide	1	2	3	4	5
G10. I am concerned with how my colleagues feel about the services I provide to my patients	1	2	3	4	5
G11. At times my dental colleagues have intimated 'glad it's you not me' when referring to the clinical services I provide to my patients	1	2	3	4	5

SECTION G JOB SATISFACTION (cont)

	Strongly disagree				Strongly agree
G12. If I could choose again, I would not become a dentist	1	2	3	4	5
G13. If I were to start my career again, I would choose my current practice situation	1	2	3	4	5
G14. I would recommend my current practice situation to a dental student seeking advice	1	2	3	4	5
G15. I would recommend dentistry to younger people seeking advice about the career	1	2	3	4	5
G16. Overall, I am satisfied with the material standards of my life that dentistry enables	1	2	3	4	5
G17. Late cancellations and missed appointments cause me frustration	1	2	3	4	5
G18. I experience feelings of isolation as I go about my work	1	2	3	4	5
G19. My patients do not appreciate the dental care that I provide for them	1	2	3	4	5
G20. I am satisfied with my current work life balance	1	2	3	4	5
G21. I am having a positive impact on a socially disadvantaged population	1	2	3	4	5
G22. The gratitude displayed by my patients keeps me going	1	2	3	4	5
G23. I feel a strong personal connection with my patients	1	2	3	4	5

SECTION H relates to GENERAL INFORMATION about you

H1. **Where** did you attend secondary school?
Aust. Capital city ☐1 Aust. large country town or regional city ☐2 Aust. small rural or remote country town ☐3 O'seas ☐4 Other ☐5

H2. What **type** of secondary school did you attend?
Aust. Public ☐1 Aust. Private ☐2 O'seas Public ☐3 O'seas Private ☐4 Other ☐5

H3. Did you attend **boarding school** during your secondary education?
Yes ☐1 No ☐2 H3a. If yes, for how many **years**? ☐3

H4. What is your year of birth? ☐☐☐☐

H5. Gender Male ☐1 Female ☐2

H6. Were you born in Australia? Yes ☐1 No ☐2

H6a. If not in Australia, which country?
.....

SECTION H GENERAL INFORMATION (cont)

	Yr 9 or below	Yr 10/11 or Cert I or II (basic)	Yr 12 or Cert III or IV (skilled)	Diploma/Advanced diploma	Bachelor degree or above	N/A or Don't know
H7. What was your **father's** highest **level of education** when you were a dental student?	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5	☐ 6
H8. What was your **mother's** highest **level of education** when you were a dental student?	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5	☐ 6

H9. Please indicate if you are an **active member** of any of the following groups (*attend regular meetings*)

Sporting club	☐ 1	Community service	☐ 4	Professional organisation	☐ 7	Parent group	☐ 10
Social group	☐ 2	Hobby group	☐ 5	Fund raising group	☐ 8	Other	☐ 11
Religious group	☐ 3	Charitable organisation	☐ 6	Cultural association	☐ 9	No group	☐ 12

H10. Please indicate if you have **siblings** Number ☐

H11. Do you have **children** of your own? Yes ☐ 1 No ☐ 2

H12. Has your **family circumstances** influenced your decision making with your current type of practice and location? Yes ☐ 1 No ☐ 2

	Buddhism	Christianity	Hinduism	Islam	Judaism	Other Religion	No Religion
H13. Which **religious group** are you affiliated with currently?	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5	☐ 6	☐ 7
H14. Which **religious group** did you affiliate with **growing up**?	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5	☐ 6	☐ 7

Please use the space provided if you wish to add any further information about any aspect of your workplace choice

.....

.....

.....

.....

.....

Thank you for your participation and contribution to this study. Your cooperation and time spent is greatly appreciated. Please return the completed questionnaire in the REPLY PAID envelope provided.

C.2 Rephrased statements for Empathic concern and Personal distress

Original statements	Rephrased statements
I often have tender concerned feelings for people less fortunate than me.	I feel concern for people less fortunate than me.
I am often touched by things I see happen.	I am often moved by things I see happen.
When I see someone being taken advantage of I feel kind of protective towards them.	When I see someone being taken advantage of, I want to protect them.
When I see someone being treated unfairly, I sometimes don't feel very much pity for them.	When I see someone being treated unfairly, I don't always feel pity for them.
Sometimes I don't feel sorry for other people when they are having problems.	Sometimes I have no sympathy for people experiencing problems.
When I see someone who badly needs help in an emergency I go to pieces.	When I see someone who badly needs help in an emergency, I do not cope well.

C.3 Pilot study scale calculations (Stage 2)

Outcome variable

Scale	n	Mean (SD)	Min	Max
[a]Personal factors (Resilience)	14	29.42(6.33)	15	49
[b]Interpersonal reaction (Empathy)	15	65.33(3.49)	59	73
[c]Job satisfaction	9	84.11(6.69)	75	98

[a]Possible sum of 50 (10 items, likert scale of 1-5)
[b]Possible sum of 95 (19 items, likert scale of 1-5)
[c]Possible sum of 120 (24 items, likert scale of 1-5)

C.4 Ethics approval confirmation (Stage 2)

THE UNIVERSITY of ADELAIDE

RESEARCH BRANCH
OFFICE OF RESEARCH ETHICS, COMPLIANCE AND INTEGRITY

SABINE SCHREIBER
SECRETARY
HUMAN RESEARCH ETHICS COMMITTEE
THE UNIVERSITY OF ADELAIDE
SA 5005
AUSTRALIA

TELEPHONE +61 8 8313 6028
FACSIMILE +61 8 8313 7325
email: sabine.schreiber@adelaide.edu.au
CRICOS Provider Number 00123M

16 August 2012

Professor K Roberts-Thomson
School of Dentistry

Dear Professor Roberts-Thomson

PROJECT NO: H-2012-114
Personal qualities and characteristics of dentists who serve the underserved (stage 2)

I write to advise you that on behalf of the Human Research Ethics Committee I have approved the above project. Please refer to the enclosed endorsement sheet for further details and conditions that may be applicable to this approval. Ethics approval is granted for a period of three years subject to satisfactory annual progress reporting. Ethics approval may be extended subject to submission of a satisfactory ethics renewal report prior to expiry.

The ethics expiry date for this project is: 31 August 2015

Where possible, participants taking part in the study should be given a copy of the Information Sheet and the signed Consent Form to retain.

Please note that any changes to the project which might affect its continued ethical acceptability will invalidate the project's approval. In such cases an amended protocol must be submitted to the Committee for further approval. It is a condition of approval that you immediately report anything which might warrant review of ethical approval including (a) serious or unexpected adverse effects on participants (b) proposed changes in the protocol; and (c) unforeseen events that might affect continued ethical acceptability of the project. It is also a condition of approval that you inform the Committee, giving reasons, if the project is discontinued before the expected date of completion.

A reporting form for the annual progress report, project completion and ethics renewal report is available from the website at http://www.adelaide.edu.au/ethics/human/guidelines/reporting/

Yours sincerely

pes **Dr John Semmler**
Acting Convenor
Human Research Ethics Committee

C.5 Example of Primary approach letter (PAL)

ARCPOH
Australian Research Centre for POPULATION ORAL HEALTH

THE UNIVERSITY of ADELAIDE

28 Nov 2012

80180
TITLE INITIALS LASTNAME
ADDRESS
ADDRESS STATE POSTCODE

Dear TITLE,LASTNAME

Re: Dentists characteristics, motivation and other factors influencing choice of practice.

Within the next week or so, you will receive a questionnaire in the mail because you have been randomly selected from a list of registered dentists in Australia. We are mailing it to you in an effort to understand more about why you choose to work where you do and to better understand the factors which may have influenced your workplace choice and consequently, the range of patients you see. Information received will greatly assist in informing student selection, dentists' recruitment and dental school curriculum.

The study is being conducted at the University of Adelaide and the chief investigators are Professor Kaye Roberts-Thomson, Mrs Sue Gardner, Associate Professor Tracey Winning and Associate Professor Ray Peterson. If you wish to discuss any aspects of this research, we can be contacted on (08) 8313 5873 or (08) 8313 5438.

We would greatly appreciate you taking the time necessary to complete and return your questionnaire. A separate information sheet will accompany the questionnaire, which will provide further details about the study. Thank you in advance for your assistance.

Yours sincerely

Prof Kaye Roberts-Thomson
BDSc, MPH

Mrs Sue Gardner
B Educ (Adult & Voc), B Sci Dent (Hons)

C.6 Example of cover letter for first approach

ARCPOH
Australian Research Centre for POPULATION ORAL HEALTH

THE UNIVERSITY of ADELAIDE

05 Dec 2012

80180

TITLE INITIALS LASTNAME
ADDRESS
ADDRESS STATE POSTCODE

Dear TITLE,LASTNAME

You were only recently advised of your random selection to participate in a study exploring dentists' characteristics, motivations and other factors that may have influenced their workplace choice.

Please find enclosed in this package

- an information letter explaining details of the study
- contact information for the Human Research Ethics Committee
- the questionnaire
- a reply paid envelope

We would encourage you to take time to complete the questionnaire and return it to us in the reply paid envelope. Thank you.

Yours sincerely

Mrs Sue Gardner
B Educ (Adult & Voc), B Sci Dent (Hons)

Prof Kaye Roberts-Thomson
BDSc, MPH

C.7 Information about the questionnaire

INFORMATION ABOUT THE QUESTIONNAIRE

There are many factors associated with one's workplace choice and, like other professions, dentistry is no exception. This study, titled ***"Dentists' characteristics, motivation and other factors influencing choice of practice"***, has been designed to collect data which will assist in understanding factors, which may have influenced your workplace choice, and consequently, the range of patients you see.

It is likely that you have been approached on previous occasions to complete surveys and this undoubtedly, has been an infringement on your time. However, your responses and generous contribution toward dental research is greatly valued and does lead to a better understanding of your profession and ways in which the delivery of services can be improved to benefit all Australians, including you.

The questionnaire content is based on previous research and on the analysis of the qualitative study I conducted in 2011-2012 exploring dentists' characteristics, motivation and other factors associated with their choice of providing care to disadvantaged groups.

The questionnaire is divided into 7 sections.

- Sections A, B, C, D, & G relate specifically to your **career, career choice, influences, current practice activity, service delivery** and **job satisfaction**.
- Sections E & F contain questions of a more **personal nature**. Whilst not directly work related, the questions are designed to measure universal qualities found in all individuals and the scales have been validated for use in previous studies. Qualities such as **resilience, reactions** when observing other people's **emotions** are being explored as well as rating your own **reactions** when faced with particular **situations** or **events** which have occurred recently.
- Section H includes questions about **personal attributes** including family, education, religion etc.

I, Sue Gardner, along with Professor Kaye Roberts-Thomson, Associate Professor Tracey Winning and Associate Professor Ray Peterson, am conducting the study at the University of Adelaide. If you wish to discuss any aspects of this research, we can be contacted on (08) 8313 5873 or (08) 8313 5438.

All information collected is strictly confidential and will be reported in a manner that individual identification is not possible. Your consent to participate is implied by returning this questionnaire. Please refer to the document overleaf for further information on the ethical considerations for conducting human research and the independent complaints procedure.

I would be very grateful if you would participate in this study by spending 15-20 minutes to complete the survey and return it in the REPLY PAID envelope provided. Thank you.

Mrs Sue Gardner B Educ(Adult & Voc), B Sci Dent(Hons)

C.8 Contact information about the project and the complaints procedure

THE UNIVERSITY OF ADELAIDE
HUMAN RESEARCH ETHICS COMMITTEE

CONTACTS FOR FURTHER INFORMATION ON PROJECT AND INDEPENDENT COMPLAINTS PROCEDURE

The Human Ethics Research Committee is obliged to monitor approved research projects. In conjunction with other forms of monitoring, it is necessary to provide an independent and confidential reporting to assure quality assurance of the institutional ethics committee system. This is done by providing you with an additional avenue for raising concerns regarding the conduct of any project in which you are involved.

The following study has been reviewed and approved by the University of Adelaide Human Research Ethics Committee:

Project Title: **Dentists' characteristics, motivation and other factors influencing choice of practice.**

1. If you have questions or problems associated with the practical aspects of your participation in the project, or wish to raise a concern or complaint about the project, then you should contact the project coordinators.
   Name: Professor Kaye Roberts-Thomson
   Telephone: (08) 8313 4454
   Email: kaye.robertsthomson@adelaide.edu.au

   OR

   Name: Mrs. Sue Gardner
   Telephone: (08) 8313 5873
   Email: sue.gardner@adelaide.edu.au

2. If you wish to discuss with an independent person matters related to
   - making a complaint
   - raising concerns on the conduct of the project, or
   - the University's policy on research involving human subjects, or
   - your rights as a participant

contact the Human Research Ethics Committee secretary on (08) 83136028.

C.9 Example of friendly reminder card

ARCPOH
Australian Research Centre for POPULATION ORAL HEALTH

A Friendly Reminder

THE UNIVERSITY of ADELAIDE

Recently a questionnaire was mailed to you for the **'Dentists characteristics, motivation and other factors influencing choice of practice'** study seeking information related to your workplace choice and the range of patients you see.

If you have already completed and returned it to us, please accept our sincere thanks. If not, please try to do so soon. Because the questionnaire was sent to a small, but representative sample, it is important that your responses be included in the study if the results are to accurately represent all Australian dentists.

If you are unable to participate for one of the following reasons, please tick the appropriate box and return this card to us in the reply-paid envelope sent previously with the questionnaire.

☐ I am retired ☐ I am not currently in practice

If you did not receive a questionnaire, or if it was misplaced, please call us on (08) 8313 5873 or (08) 8313 5438 or email us at sue.gardner@adelaide.edu.au for a replacement copy.

Yours sincerely

Sue Gardner Kaye Roberts-Thomson

C.10 Example of cover letter for second approach

ARCPOH
Australian Research Centre for POPULATION ORAL HEALTH

THE UNIVERSITY of ADELAIDE

2 February 2013

80801

TITLE INITIALS LASTNAME
ADDRESS
ADDRESS STATE POSTCODE

Dear TITLE LASTNAME,

Recently we sent a questionnaire to you, and to the best of our knowledge, it has not yet been returned. We are writing again to ask for your help in the **'Dentists characteristics, motivation and other factors influencing choice of practice'** study by completing the replacement questionnaire and returning it to us. This survey is being sent to a random sample of all practicing dentists in Australia and it is the second stage of a two part study which commenced in 2011.

The reason we are writing again, is because of the importance that your questionnaire has for helping all sectors of the population. With a better understanding of the reasons associated with your career choice, it will help inform dental student selection, dentists' recruitment and dental education in how best dental services can be utilised to reach all Australians.

We do hope that you will take the time to fill out and return the questionnaire soon so that we can be sure that the results are truly representative.

If for any reason you prefer not to answer it, please let us know by returning a note or the blank questionnaire in the enclosed reply-paid envelope.

Yours sincerely

Mrs Sue Gardner
Researchers

Prof Kaye Roberts-Thomson

C.11 Example of cover letter for third approach

ARCPOH
Australian Research Centre for POPULATION ORAL HEALTH

THE UNIVERSITY of ADELAIDE

80180

26 April 2013

TITLE INITIALS LASTNAME
ADDRESS
ADDRESS STATE POSTCODE

Dear TITLE LASTNAME,

Over the past couple of months, we have sent you several mailings asking whether you would be kind enough to complete a questionnaire for the **Dentists characteristics, motivation and other factors influencing choice of practice** study. This questionnaire is the second stage of a mixed-methods study, which commenced in 2011.

The purpose of this phase of the research is to explore characteristics, opinions, personal attributes of dentists to better understand what drives them to work where they do and the profile of patients they regularly see.

The study is drawing to a close, and this is the last attempt to contact you. We are making this final contact because of our concern that people who have not responded may have different experiences from those who have. Hearing from everyone in the sample helps assure that the research results are as accurate as possible.

We also want to assure you that your response to this study is voluntary, and if you prefer not to respond, that is quite acceptable. Please return the blank questionnaire in the reply paid envelope to indicate that you do not wish to participate.

Finally, we appreciate your willingness to consider our request of 10-20 minutes of your time, as we conclude this effort.

Thank you most sincerely.

Mrs Sue Gardner
B Educ (Adult & Voc), B Sci Dent (Hons)

Prof Kaye Roberts-Thomson
BDSc, MPH

Appendix D

D.1 Exploratory Factor analysis of dental education experience

	Component[a]	
	1	2
B7a.Overall dental school experience was positive	.824	
B7b.Dental education prepared me well for current practice	.713	
B7c.Overall assessment was fair	.808	
B7d.Overall treated with respect by educators as student	.811	
B7e.Role models at dental school had a positive impact on my current practice	.689	
B7f.Range of exposure to disadvantaged groups during dental education		.576
B7g.Would have liked an intern opportunity on graduation		.755

Extraction Method: Principal Component Analysis

[a]2 components extracted

Note. The statements are abbreviated slightly from the original questionnaire

Notes: The PCA showed two underlying components; the first of which consisted of five items and the second component, two. The two items in the second component had low communality scores suggesting possible issues with the factor. The first five items loaded on this factor and the last two items failed to load. The reliability analysis of the five items showed a Cronbach's alpha score of 0.828. An examination of the items indicated no improvement if any of them left off. The first component was could have been renamed *Dental School experience*. The second component, with a Cronbach's alpha score of 0.008, was not considered a true factor. After reevaluating, it was decided that each of the statements were meaningful in the research analysis and directly related to findings from Stage 1, so it was decided to retain them as individual variables.

D.2 Exploratory Factor analysis of attitudes towards dental service provision

	Component		
	1	2	3
D12. Dentists should work in multidisciplinary teams to manage disadvantaged people	**.739**	-.038	.109
D10. Different models of care should be explored to reach disadvantaged groups	**.680**	-.229	.213
D11. Dentists should volunteer time to work disadvantaged groups if facilities, equip, staff were in place	**.628**	.301	-.008
D5. OHTs should provide care to disadvantaged groups within their scope of practice.	**.541**	-.062	.281
D4. Govt should be responsible for dental care of all Australians	.480	-.342	-.084
D9. More dentists would work in remote/outer regional areas if incentives were offered	.475	-.117	.359
D3. Profession should be responsible for dental care for all Australians	.447	**.519**	-.394
D2. All Australians should have a choice of provider	.390	.085	-.489
D6. Education alone could eliminate dental disease	.082	.733	.216
D7. Dentists should not be concerned with those who don't place oral care as high priority	-.262	.297	**.587**

Extraction Method: Principal Axis Factoring
3 components extracted
Note. The statements are abbreviated slightly from the original statements in the questionnaire

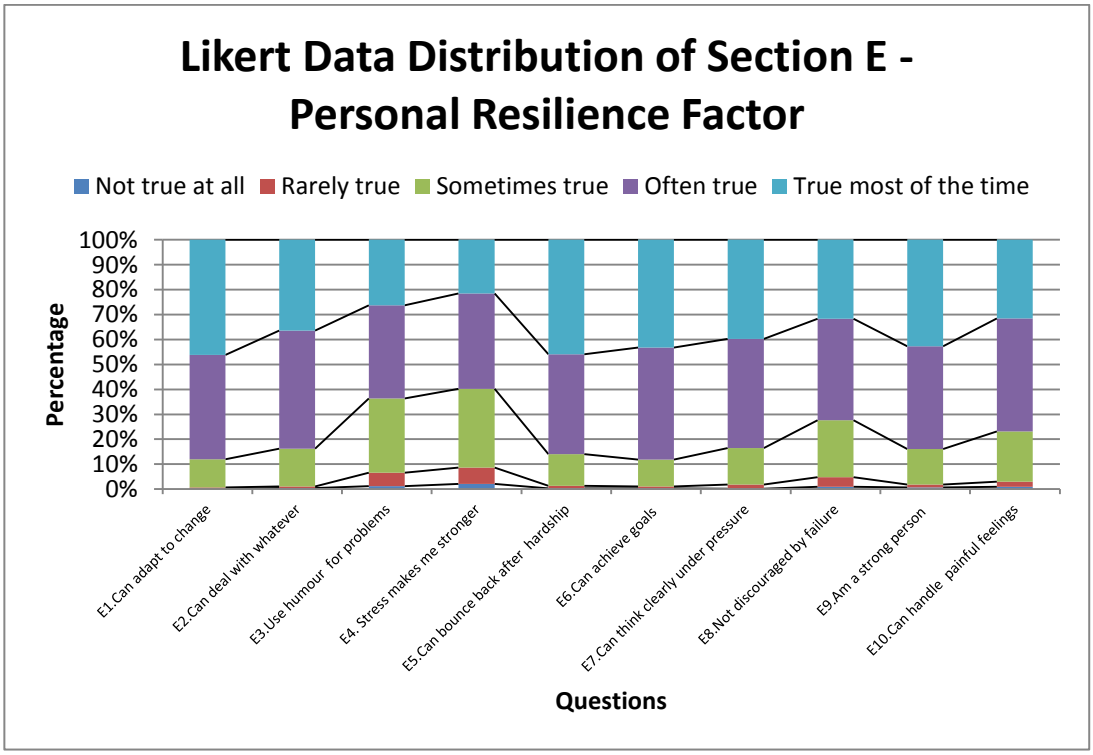
Notes: The PAF resulted in the extraction of three components and variables that loaded with a score over 0.5 with the exception of one, '*Education alone can eliminate dental disease*', which was conceptually different. The variables retained are presented in bold type in the table. PCA was also used for factor extraction, which generated a slightly different factor extraction result. However, due to a greater Cronbach's alpha from the PAF (0.648 compared with 0.588 from PCA), the PAF has been justified as the appropriate methodology to use in this factor analysis. The first four factors relate to delivery of services to disadvantaged groups, the second to dentists' beliefs, and the third component refers to dentists' attitudes. From this data reduction, new variables could have been created; '*Service to disadvantaged'*, '*Responsibility for care'* and '*Dentist's attitude toward patients'*. However, it was decided to retain all variables individually on the basis that they directly related to Stage 1 findings and were meaningful to the research analysis.

D.3 Reasons for being at either first or second practice locations (expanded)

	Main n=1419		Second n=366	
Reason	**n**	**%**	**n**	**%**
I was invited	184	13	85	23.2
I was encouraged to join	55	3.9	30	8.2
I put my hand up when asked	19	1.3	21	5.7
I sought opportunity myself	635	44.7	116	31.7
The opportunity arose	396	27.9	81	22.1
Other reason	130	9.2	33	9
Missing	107	7.0	85	23.2

D.4 Snake diagram of paired Resilience statements showing data distribution

The snake diagram demonstrates the response pattern of the distribution of likert responses in the Resilience scale. Paired statements such as E1 & E2, E3 & E4, E5 & E6 and E9 & E10 reveal very similar responses and statements E7 & E8 deviated marginally from each other.



Note. The statements are abbreviated slightly from the original statements in the questionnaire

D.5 Factor analysis of Empathy concern, Personal distress and Positive sharing

Statements	Factor loading
Empathic concern	
F2. Care about less fortunate people	.601
F5. Not sympathetic towards some people	.604
F6. Others misfortunes don't usually disturb me greatly	.667
F8. Protective of people being taken advantage of	.486
F9. I don't always pity people if they are being unfairly treated	.465
F16. I am moved by what I see	.572
F17. I am a soft hearted person	.632
Personal distress	
F1. I remain calm when I see someone hurt	.499
F4. Feel apprehensive and ill at ease in emergency sits.	.659
F10. Tense emotional situations frighten me	.634
F11. Don't cope well in emergencies	.704
F12. Am effective in dealing with emergencies	.255
F14. I lose control when faced with an emergency	.726
F15. I feel helpless in emotional situations	.611
Positive sharing	
F3. Happy to see people enjoying selves	.762
F7. Happy people make me happy	.784
F13. I feel other peoples joy	.775
F18. People smiling make me smile	.855
F19. I feel good witnessing a person helping another	.768

Extraction method: Principle Components Analysis
1 Component extracted
Note. The statements are abbreviated slightly from the original statements in the questionnaire

F12 showed a reduced factor loading (.255) when compared with the other statements in each of the three scales. A reliability statistics showed that the Cronbach's alpha did not change greatly if this item were deleted (0.72 cf. 0.68).

D.6 Distribution of responses to religious affiliation currently and growing up (expanded)

Religion	n	%
Current n=1499		
Buddhism	62	4.1
Christianity	768	51.2
Hinduism	50	3.3
Islam	28	1.9
Judaism	39	2.6
Other religion	17	1.1
No religion	535	35.7
Growing up n=1490†		
Buddhism	83	5.6
Christianity	1099	73.8
Hinduism	52	3.5
Islam	29	1.9
Judaism	44	3.0
Other religion	14	.9
No religion	169	11.3