

Public perceptions of dentistry

Stimulus or barrier to better oral health



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**Public perceptions
of dentistry:
stimulus or barrier
to better oral health**

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Abbreviations

AIDS	Acquired Immune Deficiency Syndrome
AIHW	Australian Institute of Health and Welfare
ANOVA	Analysis of variance
CDHP	Commonwealth Dental Health Program
CI	Confidence interval
DAS	Dental Anxiety Scale
dmfs	Decayed, missing or filled surfaces (deciduous dentition)
DMFS	Decayed, missing or filled surfaces (permanent dentition)
DMFT	Decayed, missing or filled teeth (permanent dentition)
ds	Decayed surfaces (deciduous dentition)
DS	Decayed surfaces (permanent dentition)
DSRU	Dental Statistics and Research Unit
DSI	Dental Satisfaction Index
fs	Filled surfaces (deciduous dentition)
FS	Filled surfaces (permanent dentition)
GEHF	Government Employees Health Fund
HIV	Human Immunodeficiency Virus
LOTE	Language other than English
MANOVA	Multiple analysis of variance
ms	Missing surfaces (deciduous dentition)
MS	Missing surfaces (permanent dentition)
NHMRC	National Health and Medical Research Council
ns	not significant
OLS	Ordinary least squares (regression)
PP	Private practitioner
sd	standard deviation
SDS	School Dental Service
se	standard error
WHO	World Health Organization

Glossary

edentulous	having no natural teeth
dentate	having at least one natural tooth
deciduous dentition/teeth	primary (baby) teeth
permanent dentition/teeth	adult teeth

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Several people have contributed to the editing of this publication. Knute Carter and Lorna Lucas of DSRU and proof reader Pam Maitland have all worked to improve the consistency, layout and readability of the text.

Introduction

The Australian Institute of Health and Welfare's Dental Statistics and Research Unit was established in 1988 with the purpose of improving the range and quality of statistics on oral health, use of services, provision of services and the dental labour force in Australia.

In October 1998 the Dental Statistics and Research Unit sponsored a Workshop, the third in a series which was devised as an opportunity for the Dental Statistics and Research Unit to interact with its stakeholders.

Each Workshop has been built around a specific theme where the users of dental statistics are being encouraged to look for gaps in data, methodological issues and problems in interpretation of data as well as the implications of the statistics for the public's oral health and dental care.

The previous Workshops have been on:

- Adult access to dental care in Australia; and
- Oral health and dental service statistics in Australia.

The third Workshop focussed on 'Public perceptions of dentistry'. It is likely that the public's perception of dentistry has a significant influence on patterns of dental health behaviour, use of dental care and oral health outcomes. In focussing on 'Public perceptions of dentistry' the Dental Statistics and Research Unit was seeking to explore:

- Which perceptions are important to change?
- Are there target groups whose perceptions are most important to change?
- What are the key strategies for changing public perceptions of dentistry?
- How will we know if strategies aimed at changing public perceptions are effective?

The present monograph has been developed from the papers presented by staff from the Dental Statistics and Research Unit. Its publication aims to provide a record of the substantive material presented at the Workshop arising out of components of statistical collection maintained by the Unit. In this sense the monograph is a resource document. It is hoped that with this publication stakeholders will be encouraged to express their views on the priorities, the focus and the types of information which are wanted on public perceptions of dentistry. It is also hoped that its publication will stimulate discussion around public perceptions on dentistry and how they might be improved.

The Dental Statistics and Research Unit hopes that this monograph will be found to be informative and stimulating to those like us who wish to improve the oral health and well-being of Australians.



Choosing a Provider

1 Social values and choice of provider

1.1 Introduction

Public perceptions of dentistry manifest themselves at various levels of observation. At the most abstract level, perceptions of dentistry and the oral health system are determined within the context of an individual's value system. Social values, as used in this chapter, are defined as beliefs about desirability that organise experiences and direct behaviour with respect to certain broad classes of events (Epstein, 1989). Because values are beliefs about desirability they invariably imply affect. The violation of prevailing social values may evoke strong emotional responses. In addition to their influence on emotions, values provide a framework for behaviour at a number of levels. At the societal level, social values shape the institutionalised forms of health care services available to the population. At the policy level, Donabedian (1973), for example, argues that social values may have critical, although possibly concealed, effects on the administrative decisions of policy makers. Finally, at a consumer level, values may sway choices regarding the utilisation of health care providers.

This study looks at the relationship between social values and use of dental services at the consumer level. The aim of the study was to test if social values vary between groups in the community who choose different dental care arrangements for their child. Because of the possible confounding between endorsement of value orientations and socioeconomic and sociodemographic indicators, the relationship between social values and service use across income, education, and insurance status groups was also investigated.

1.2 Method

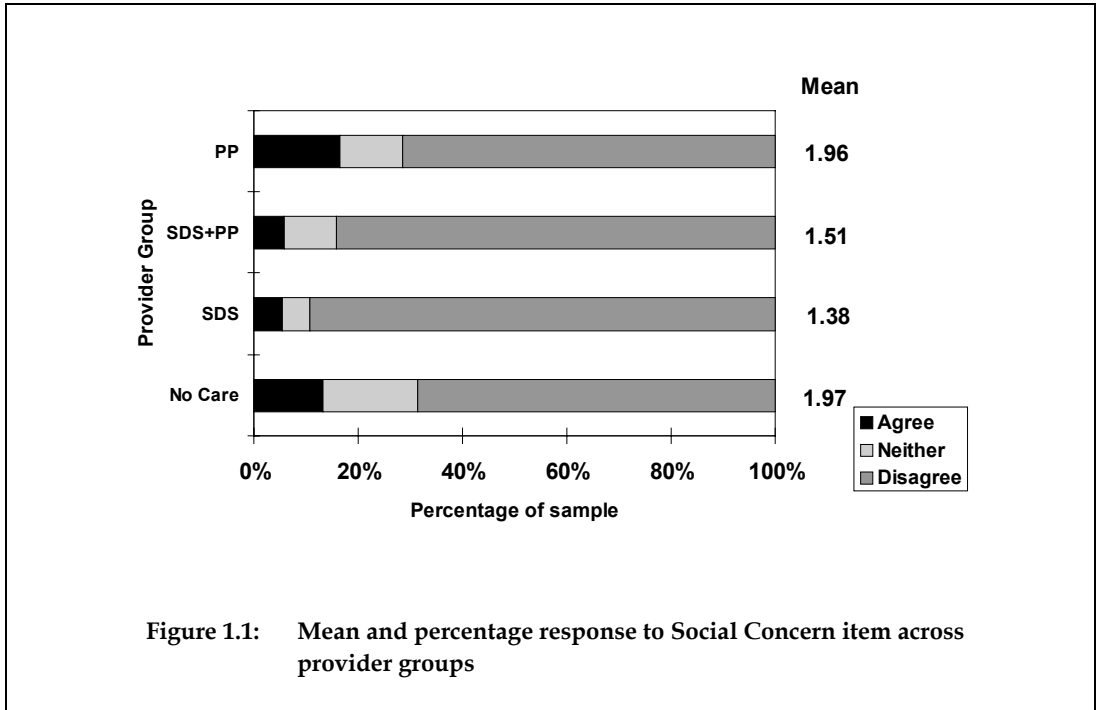
The data in this study were obtained as part of the three-phase Study into Child Use of Dental Services, which was conducted by the South Australian Dental Service and the Dental Statistics and Research Unit, during 1994. Stage 1 of the study involved a short questionnaire which was sent to 20,938 children from grades 5, 6, 9 and 10, representing about 1 in 5 children from these grades. Information from this stage was used to determine the locations of the children's dental visits during the previous two years. Children were classified as having attended the School Dental Service (SDS), a private practitioner (PP), both the School Dental Service and a private practitioner (SDS+PP), or having received no care within the last two years.

The second stage of the study entailed the completion of a questionnaire by a stratified random sample of participants from Stage 1. Items of the questionnaire tapped sociodemographic variables, attitudes, and dentally-oriented behaviours. The questionnaire also included four questions relating to social values of the parent or guardian completing the questionnaire. In total, 3,581 questionnaires were mailed out with 2,663 returned, a response rate of 74.4%.

The survey questionnaire contained items relating to four social values. These values have been discussed extensively by both Donabedian (1973) and Jenny (1980) in terms of their influence on the organisation of health care services. It was hypothesised that social values may also affect a parent’s choice of dental provider for their child. The four values related to the areas of social concern, freedom of choice, individual responsibility, and equality of care. The items were ‘Dental services for children should be directed only to disadvantaged groups’, ‘It is important to have a choice of dental providers’, ‘The community is responsible for ensuring all children are able to receive dental care’, and ‘Children with similar dental problems should be provided with the same dental care’. Respondents were asked to indicate their level of agreement or disagreement on a 5-point Likert scale which ranged from strongly agree to strongly disagree.

1.3 Results

Figure 1.1 shows the percentages of parents who agreed, disagreed, or neither agreed nor disagreed with the statement related to social concern. Also shown to the right of the graph is the mean response to the statement for each provider group. Overall, most people disagreed with the statement ‘Dental services for children should be directed only to disadvantaged groups’. Parents of children who had received either no care or who had only been to a private dentist in the previous two years had the highest levels of agreement with the statement. Parents of children who had only used the School Dental Service had the lowest levels of agreement. Parents of children who utilised both providers had an intermediate level of agreement. The overall effect of social concern on choosing a provider was statistically significant ($p < 0.001$).



There was considerable agreement with the statement concerning the importance of having a choice of dental providers (see Figure 1.2). However, parents of children who had used a private dentist recently rated freedom of choice as significantly more important than did either parents of children who had used the School Dental Service only or parents whose children had not received any dental care in the previous two years. The importance of freedom of choice was in between these levels for parents of children who had been to both a private dentist and the School Dental Service.

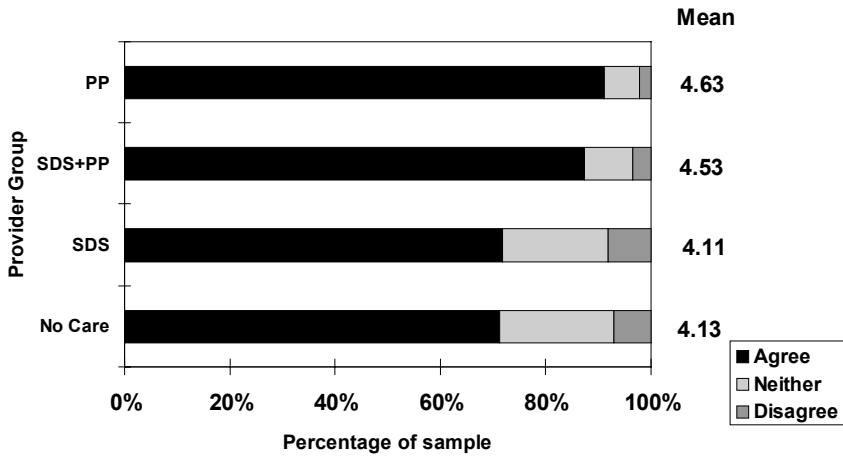
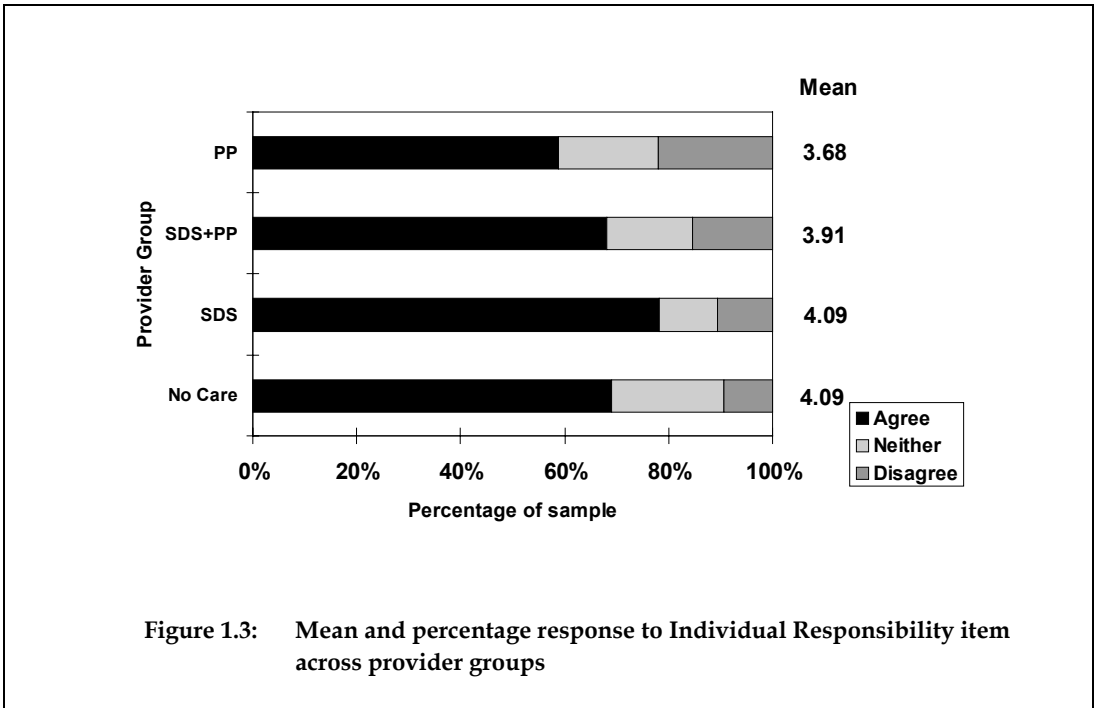


Figure 1.2: Mean and percentage response to Freedom of Choice item across provider groups

Figure 1.3 presents data on the percentages of people agreeing, disagreeing, or neither agreeing nor disagreeing with the statement concerning individual responsibility. Here, disagreeing with the statement is an endorsement of the importance of individual responsibility through the rejection of community responsibility for their child’s dental care. The value of individual responsibility was most important to parents of children who had received only private care during the previous two years, while the parents of children who had attended both a private practitioner and the School Dental Service placed a lower level of importance on this value. The importance of individual responsibility was lowest for parents of children who had received care at the School Dental Service only during the previous two years, and for parents of children who had received no professional dental care during the previous two years.



Significant differences can also be seen in relation to the value of equality of care (see Figure 1.4). The parents of children who had visited only the School Dental Service or who had made no dental visits during the previous two years responded with the highest percentage agreement that similar problems should result in similar care. However, the parents of children who had made dental visits only to a private practitioner during the previous two years showed considerably less agreement with regard to the equitable outcome of dental services. The same was the case for the parents of children who had visited both the School Dental Service and a private practice during the previous two years.

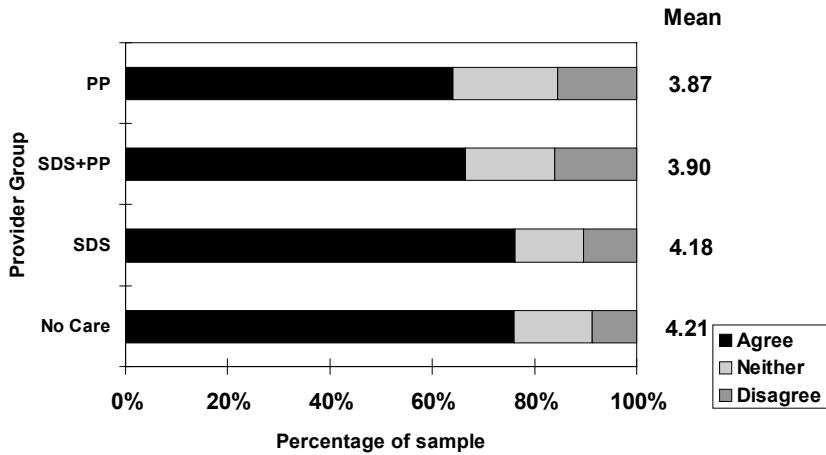


Figure 1.4: Mean and percentage response to Equality of Care item across provider groups

The results for the social value items indicate that parents' social values significantly predict their choice of dental provider for their children. It is possible, however, that the value position of parents is related to other factors, such as educational attainment, income, or insurance status, and that it is these factors which drive provider choice and not social values per se. To test this possibility, the relationship between social values and provider choice was examined across different levels of parental education, income, and insurance status.

Table 1.1 shows the mean agreement with the statement relating to social concern ('Dental services for children should be directed only to disadvantaged groups.') across different levels of highest parental educational attainment, gross family income, and insurance status. Across all education, income, and insurance status groups, parents of children who attended a private practitioner indicated more agreement with the statement than did the parents of children who had attended the School Dental Service only within the previous two years. Across almost all categories, the parents of children who had attended both the School Dental Service and a private practitioner had ratings of agreement in between the ratings for School Dental Service only and private practitioner only children. Agreement with the social concern statement by parents of children who had not received any care during the previous two years was generally higher than that indicated by parents whose children had attended the School Dental Service only, or both the School Dental Service and a private practitioner. Overall, at each level of education, income, and insurance status, social concern significantly predicted use of dental provider. Results for parents with single insurance cover are not shown due to the small numbers of people in this category ($n=34$).

Table 1.1: Mean response to Social Concern statement across educational attainment, income, and insurance status groups

	PP	SDS+PP	SDS	No care	F	p
Education						
Not completed secondary	1.96	1.43	1.29	2.00	13.6	<0.001
Completed secondary	1.84	1.51	1.35	1.64	9.9	<0.001
At least some tertiary	2.06	1.50	1.40	1.68	25.1	<0.001
Income						
Up to \$20,000	1.72	1.80	1.59	2.40	9.3	<0.001
\$20,001–\$30,000	2.03	1.45	1.32	1.86	14.2	<0.001
\$30,001–\$40,000	1.85	1.41	1.37	1.33	7.5	<0.001
\$40,001–\$60,000	1.88	1.48	1.27	1.66	14.7	<0.001
Over \$60,000	2.30	1.57	1.29	1.22	18.3	<0.001
Insurance status						
No insurance	2.11	1.60	1.45	2.14	17.1	<0.001
Family	1.94	1.50	1.31	1.54	40.2	<0.001

Table 1.2 shows the breakdown of agreement with the statement ‘It is important to have a choice of dental providers for children’ by education, income, and insurance status. As for the overall results, across all categories the parents of children who had most recently attended a private practitioner regarded freedom of choice as more important than did the parents of children who had attended the School Dental Service only. Again, parents of children who had utilised both provider groups generally had intermediate ratings for this social value. Freedom of choice for parents whose children had received no dental care in the previous two years was similar in importance to that indicated by parents of children who had been to the School Dental Service only in the previous two years. For all categories of the socioeconomic variables, except parents with single insurance cover, social value ratings were significant predictors of provider choice.

Table 1.2: Mean response to Freedom of Choice statement across educational attainment, income, and insurance status groups

	PP	SDS+PP	SDS	No care	F	p
Education						
Not completed secondary	4.70	4.52	4.18	4.10	10.3	<0.001
Completed secondary	4.66	4.55	4.02	4.14	24.7	<0.001
At least some tertiary	4.59	4.49	4.17	4.21	15.1	<0.001
Income						
Up to \$20,000	4.67	4.68	4.19	4.10	7.2	<0.001
\$20,001–\$30,000	4.68	4.26	4.08	4.08	11.8	<0.001
\$30,001–\$40,000	4.74	4.52	4.14	4.20	18.3	<0.001
\$40,001–\$60,000	4.55	4.52	4.07	4.28	11.8	<0.001
Over \$60,000	4.59	4.57	4.13	4.00	6.7	<0.001
Insurance status						
No insurance	4.53	4.30	4.06	4.05	5.7	<0.01
Family	4.65	4.56	4.17	4.33	36.4	<0.001

As shown previously (see Figure 1.3), parents of children who attended a private practitioner endorsed the concept of individual responsibility (indicated here by lower mean scores) to a greater extent than the parents of children who attended the School Dental Service within the previous two years. Table 1.3 shows that this relationship is maintained across most education, income, and insurance status groups. As with the previous two tables, parents of children who attended both the School Dental Service and a private practitioner generally had intermediate ratings for the importance of this social value. Ratings by parents of children who had not received dental care in the previous two years were aligned with those of parents whose children had attended the School Dental Service only.

Table 1.3: Mean response to Individual Responsibility statement across educational attainment, income, and insurance status groups

	PP	SDS+PP	SDS	No care	F	p
Education						
Not completed secondary	3.64	3.89	4.03	3.96	2.3	>0.05
Completed secondary	3.53	3.76	4.01	4.04	6.8	<0.001
At least some tertiary	3.79	3.92	4.21	4.28	8.0	<0.001
Income						
Up to \$20,000	3.70	4.05	4.02	4.11	1.5	>0.05
\$20,001–\$30,000	3.54	3.60	4.12	4.03	6.5	<0.001
\$30,001–\$40,000	3.63	3.97	4.12	4.23	5.6	<0.01
\$40,001–\$60,000	3.71	3.71	4.11	4.04	4.3	<0.01
Over \$60,000	3.86	4.24	4.15	4.11	2.1	>0.05
Insurance status						
No insurance	3.63	4.05	4.03	4.19	3.6	<0.01
Family	3.69	3.85	4.13	3.97	12.8	<0.001

Finally, across all education, income, and insurance status groups, parents of children who had only attended the School Dental Service showed greater endorsement of the value of equality of outcome than did parents of children who had been to a private dentist only within the last two years (see Table 1.4). Parents of children who had not received care also had relatively high support for the value of equality of service outcomes. Parents of children who had been to both the School Dental Service and a private practitioner within the previous two years had intermediate ratings of belief in equality of outcome. The effect of the value of equality on provider choice was significant across most categories of education and income but only reached significance for those parents who had family dental insurance.

Table 1.4: Mean response to Equality statement across educational attainment, income, and insurance status groups

	PP	SDS+PP	SDS	No care	F	p
Education						
Not completed secondary	3.96	4.12	4.16	4.33	1.6	>0.05
Completed secondary	3.93	3.78	4.19	4.11	3.5	<0.05
At least some tertiary	3.85	3.81	4.18	4.08	5.8	<0.01
Income						
Up to \$20,000	3.73	4.28	4.10	4.25	2.7	<0.05
\$20,001–\$30,000	3.92	3.87	4.22	4.38	2.8	<0.05
\$30,001–\$40,000	3.98	3.76	4.17	4.27	2.5	>0.05
\$40,001–\$60,000	3.91	3.69	4.24	3.79	5.6	<0.01
Over \$60,000	3.77	4.11	4.13	4.33	2.6	>0.05
Insurance status						
No insurance	3.83	4.18	4.13	4.29	2.6	>0.05
Family	3.89	3.85	4.21	4.15	9.2	<0.001

1.4 Discussion

The results of this study show that the position a person holds in relation to social values significantly predicts their choice of dental provider for their children. The finding that this relationship is largely unaffected by the parent's educational attainment, income, or insurance status gives weight to the possibility that the relationship is causal. That is, people's social values play a significant part in the determination of the dental provider they choose for their children. Additionally, the relationship between value endorsement and provider choice appears to follow a consistent pattern. Donabedian (1973) has identified two fundamental, opposing stances which can be taken in relation to the four social values used in this study. These have been termed libertarianism and egalitarianism. Brief descriptions of these positions across the four social values used in this study are shown in Table 1.5. In relation to social concern, libertarians and egalitarians generally differ in their view of charity. Libertarians espouse the appropriateness of targeting free dental care to disadvantaged groups only. Egalitarians, on the other hand, believe that charity demeans the recipient and prefer, therefore, an oral health system that is available to all. Both libertarians and egalitarians favour freedom of choice; however the free-market orientation of libertarians means that freedom of choice assumes more importance to this group than to egalitarians. In relation to individual responsibility, libertarians believe that free dental care should not be provided but that provision of dental care is a service which should be bought as part of the reward system tied to the earning of income. Egalitarians reject this viewpoint, arguing that all health services are part of the 'public good' and should not be a part of the reward system, but available to all. Finally, while libertarians believe in the potential for equality of care rather than its realisation, egalitarians believe that all people should have available to them the same opportunity for dental care.

Table 1.5: Opposing perspectives of social values (adapted from Donabedian, 1973)

Value and relation to question used in this study	Libertarianism (Free Market Individualism)	Egalitarianism (Welfare Stateism)
Social Concern (disagree = egalitarianism)	Limited Charity is appropriate expression of concern	Charity least desirable expression of social concern
Freedom of Choice (disagree = egalitarianism)	Imperative Government intervention should be eliminated	Desired but not necessary Government intervention required
Individual Responsibility (agree = egalitarianism)	Dental care part of reward system Should be earned	Dental care should not be part of reward system Society should help
Equality (agree = egalitarianism)	Potential for equality rather than actual realisation	Equality of opportunity Health care a right, not a privilege

Based on this classification, responses to the social value statements in this study can be seen as more or less egalitarian. It is noteworthy that overall responses to all value statements indicate a high level of egalitarianism in the community. However, between groups, the parents of children who attended the School Dental Service showed higher levels of egalitarianism across all four social value items than did the parents of children who had attended a private dentist only. Parents of children who were seen by both the School Dental Service and a private practitioner revealed intermediate levels of egalitarianism across all four social values. These findings fit neatly into the theoretical framework provided by Donabedian (1973) and demonstrate that the more egalitarian the value system of an individual, the more likely they are to use public sector services rather than make private dental arrangements.

In conclusion, this study found that the social values held by parents in relation to child dental care have a significant effect on the choice of dental provider for their children. The study also uncovered a pervasive bias towards egalitarianism across the overwhelming majority of participants, suggesting strong endorsement of the continuation of government provided, equitably delivered, dental assistance for all children.

1.5 References

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- Epstein S (1989). Values from the perspective of cognitive-experiential self-theory. In N Eisenberg, J Reykowski & E Staub (eds) *Social and moral values*, 3–22. New Jersey: Lawrence Erlbaum.
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2 Patient mobility

Information on the mobility of dental patients may be useful in allowing the profession to see what occurs beyond the surgery door: why do some patients remain with a practice while others appear to be more transient, and which patients are more likely to change? Why have newcomers to a particular practice left their previous dentist? Together with patient recruitment, patient retention has been highlighted as an issue of paramount importance for dental practitioners and the public, for two main reasons:

- stability in clientele is a key determinant of practice viability; and
- it was reported from the United Kingdom in 1984 by Davies that patients who change dentist frequently get more fillings, hopefully not because of any deliberate over-treatment, but as a result of their new dentists' lack of familiarity with their recent dental history, and the associated tendency for operators in such situations to err on the side of intervention when faced with uncertainty.

A third possible reason is that such information may be useful in dental policy making and workforce planning.

What previous work has been done on how often people change their dentist? In 1982, Murtomaa and Masalin reported from a national sample of Finns that 38% had been seeing the same dentist for more than three years, from which it can be assumed that 62% had changed in the previous three years. A 1963 survey of attendees of 12 dental practices in Florida reported that 50% of patients had changed dentist in the previous five years (Collett, 1969). Even taking into account the fact that regular dental attendees would be expected to have higher retention rates than the general population, it is apparent that a surprisingly high proportion of people attend a dentist as new patients in a given period.

Information on patient mobility in Australia would enable both the profession and dental policy makers to assess the extent of, and reasons for, different groups and individuals changing their dentist, and would aid in the development of strategies for maximising patient retention. Accordingly, this study aimed to provide baseline Australian data on people's movement among dental practitioners.

The survey was conducted as a postal survey follow-up to the 1995 National Dental Telephone Interview Survey, which collected data from a random sample of Australian residents aged five years and over in all States and Territories. Telephone numbers for the survey were randomly sampled from the most recent edition of the electronic 'white pages' listing distributed by Oz Info Ltd, Prahran, Victoria. Separate samples were selected for the States and Territories, resulting in eight strata and a total of 5,101 participants in the survey.

Standard telephone interview methods were employed, including a primary approach letter which was sent to the address associated with each number approximately 10 days prior to the first attempt at the interview. Each sampled telephone number was called up to six times at varying times of the day and week, after which, if there had been no answer, the number was abandoned and designated a non-contact outcome. At the time of telephone contact, it was ascertained that the number served a residential dwelling, and then selection was made of the target person. Where only one person resided at the

dwelling, that person was interviewed. At other dwellings, the person answering the telephone was asked to name the resident aged five years or more who was due to have the next birthday, as well as the resident who had the last birthday. The computer program then randomly selected one of those names as the target person. Up to six attempts were made to directly contact the target person. Proxy interviews were conducted where the target person was (1) aged 15 or under; (2) unable to communicate due to illness or language barriers (although interviews were conducted using interpreters where practicable); or (3) away from the household for the duration of the study.

At the completion of the telephone interview, the program randomly selected participants (aged 18+) for the follow-up postal questionnaire. A one-in-three sampling ratio was used. Subjects who failed to return their questionnaires within three weeks of the initial mail-out were sent another questionnaire and reminder note. This procedure was repeated twice more for those who failed to respond to the mail-outs.

Responses were sought to five closed questionnaire items. The available answer choices were 'yes', 'no' and 'don't know'. The questions were:

1. I attend a different dentist now than I did two years ago.

If you answered yes, why did you change dentist?

The previous dentist moved or retired

I moved

It was inconvenient to attend the previous dentist

I was unhappy with the care provided by the previous dentist

Other (please specify)

2. I am able to seek care from a different dentist if I wish.
3. I prefer to see the same dentist every time.
4. I would change dentist if I felt that my dental treatment was unsatisfactory.
5. I would change dentist if I felt that my dental treatment was too expensive.

Questionnaire responses were matched to the telephone interview survey data using common identifiers.

Responses were received from 1,010 of the 1,185 contacts attempted, representing a response rate of 85.2%. This was higher among females than males, and highest among dentate older females, and lowest among edentulous older males. Of the sample 42% were male, and the mean age was 47. Most people lived in major urban areas. Only 1.3% were Aboriginal people or Torres Strait Islanders. A language other than English was used in the home by 69 of the dentate respondents (7.8%).

Some 88% were dentate, and this proportion was higher among males than females, but more females reported a routine dental attendance pattern. Younger respondents, and those with higher education and income levels, visited the dentist routinely rather than episodically. Most used the private dental sector. Fewer older people had visited in the previous year, and older people were more likely to report an episodic visiting pattern.

Subsequent analyses refer only to the 885 dentate respondents. For each dependent variable examined, only the multivariate findings are reported here; that is, the odds ratios reported here are derived from logistic regression models which have controlled for potential confounders such as age, sex, and socioeconomic status.

A change of dentist in the previous two years was reported by 33.4% of respondents. People whose last dental visit was to a public dental clinic had 1.5 times the odds of seeing a different dentist compared with those using the private sector. Data with which to compare these findings are scarce. The 1982 Finnish report (Murtomaa & Masalin) that 62% had changed dentist in the previous three years has already been mentioned. The equivalent figure from the current study is somewhere between 46 and 64% having changed dentist within the previous three to five years (assuming that the rate of change found in the current study remained constant), so it appears that this surprisingly high turnover is not unique to Australia. The Florida survey reported that 50% of general practice patients had changed dentist in the previous five years (Collett, 1969). An equivalent five-year estimate for the current study is 64%.

The reasons given for changing dentist were examined. The most frequent reason was that the respondent had moved (34.8%), followed by the dentist having moved or retired (23.6%). Dissatisfaction with the care provided by the previous dentist was cited by 15.2%, while 3.0% changed because their previous dentist was too expensive. More (16.1%) of the 18–34-year age group reported having changed dentist because they had moved compared with members of the 35–44, 45–64 and 65+ age groups (14.3, 7.1 and 6.5% respectively). Health-card-holders were more likely than others to report having changed dentist because their previous dentist was too expensive (3.6 and 0.4% respectively). Those with household incomes of \$30,000 or less were more likely than others to report having changed dentist because their previous dentist was too expensive (2.2 and 0.2% respectively).

The current study's finding that movement of respondents was the predominant reason for changing dentist is consistent with other findings. Scarrott reported in 1969 that it was the most common reason for changing dentist, particularly among the middle classes. A 1984 United States study reported that the main reason for changing dentist was patients changing address. O'Shea et al. (1986) cited United States national survey data from 1959 which showed that 40% of individuals who had changed dentist had done so because they or the dentist had moved. It is not possible to compare that figure with this study's equivalent of 58%, as the time period covered by the 1959 survey was not specified. However, it is apparent from all of these reports that the patient or dentist moving is the dominant reason for people changing their dentist. Such a determinant is clearly beyond the profession's control. Only some 18% of respondents to the current study who had changed dentist reported reasons that were within the immediate control of dentists. The 1959 United States survey reported the remarkably similar finding that 19% of those who changed had done so because of factors which could be considered to be within the dentist's control: 4% of those who had moved had done so because of their previous dentist being too expensive; quality of care was cited by 9%; and 6% were unhappy with the way in which they had been treated by the previous dentist.

Some 86% preferred to see the same dentist every time they visited. This was higher among older people – the odds ratio here can be interpreted as meaning that, for every year older than 18, the person had 1.03 times the odds; thus, someone aged 40 would have 1.97 times the odds of someone aged 18. This preference was also higher among those

whose last visit was either in the private sector or less than two years previously, or those who did not have a health card.

In total, 92% felt able to change dentist if they so wished. The odds ratio was higher among those who spoke English in the home, were not health-card-holders, or whose last visit was to a private clinic. Those who last visited a public clinic had the lowest perceived freedom to change dentist. People vary greatly in their perceived freedom to seek care from another dentist. It may be that this reflects the existence of barriers faced by some individuals in any search for a new dentist, rather than any greater loyalty to an existing dentist.

Almost all said that they would change dentist if their dental care was unsatisfactory. Not surprisingly, perhaps, the odds ratio was higher for people with a tertiary education. It was also higher for those who had had care relatively recently.

Some 725 said that they would change dentist if they felt that the care was too expensive. The odds ratio was higher for people whose last visit was not to a private clinic, and for those who did not speak English at home. People with lower incomes had 1.23 times the odds of reporting that they would change dentist if they felt that their treatment was too expensive.

2.1 Implications

The greatest mobility of patients was among the users of public clinics. The public's preference for continuity of care may be an issue which public dental authorities need to address, given that card-holders who prefer to see the same dentist each time outnumber those who do not. The significance of this finding is underlined by a report that the main difference between the Swedish public and private dental care systems was in how the public perceived contrasts between them with respect to treatment by the dentist of choice (Arnbjerg et al., 1992).

The private sector does not escape scrutiny either: the finding that nearly one-third of dentate individuals change private dentist over a two-year period is surprisingly high, and is certainly higher than would be regarded as desirable by either dental public health personnel or the organised dental profession. From the latter's viewpoint, stability in clientele is a key determinant of practice viability, and probably also career satisfaction. However, that only 6.1% of the dentate Australian population had changed dentist because of factors which may be amenable to change by dentists raises the issue of whether it is worth the considerable effort which may be involved, in practice, in arresting such attrition. However, attrition due to dentist or practice characteristics may also be inversely associated with attraction of patients and, hence, a larger issue for the viability of dental practices. Therefore, a 6.1% turnover due to patient concerns about the quality or expense of treatment should probably be viewed by the profession as unacceptable.

From a dental public health perspective, the relatively high turnover raises two concerns. The first is that it may partly reflect the persistence of an unacceptably high proportion of people who attend for care only when symptoms dictate. The second concern has already been raised: the likelihood that a substantial proportion of people who change dentist may be undergoing unnecessary treatment, not because of any deliberate over-treatment, but as a result of their new dentists' lack of familiarity with their recent dental history.

2.2 Acknowledgement

This chapter has drawn upon some material previously presented in:

Thomson WM, Stewart JF, Carter KD & Spencer AJ (1996). Patient mobility in Australian dentistry. *Community Dent Health* 13(2):99-104.

2.3 References

Arnbjerg D, Soderfeldt B & Palmqvist S (1992). Factors determining satisfaction with dental care. *Community Dent Oral Epidemiol* 9:295-300.

Collett HA (1969). Influence of dentist-patient relationship on attitudes and adjustment to dental treatment. *J Amer Dent Assoc* 79:879-84.

Davies JA (1984). The relationship between change of dentist and treatment received in the General Dental Service. *Brit Dent J* 157:322-4.

Murtomaa H & Masalin K (1982). Public image of dentists and dental visits in Finland. *Community Dent Oral Epidemiol* 10:133-6.

O'Shea RM, Corah NL & Ayer WA (1986). Why patients change dentists: practitioners' views. *J Amer Dent Assoc* 112:851-4.

Scarrott DM (1969). Attitudes to dentists. *Brit Dent J* 127:583-90.

3 Patient preferences for dentist gender, age and cultural group

At present there is a paucity of information available on patient preferences for various dentist characteristics, there being only limited information available on preference for dentist gender, and cultural group, and no literature available on age preferences. Regarding patient preferences for dentist gender, a survey carried out in New Zealand in 1992 by Stokes et al. found that 13% of respondents had a preference for female dentists while 8.5% preferred a male. They also found that the patient's own gender influenced their choice of dentist, with preference being for a dentist of the same gender as themselves. A Los Angeles study carried out by Hardie et al. in 1995 explored patient preferences relating to dental provider ethnicity. They reported that the majority of patients had no ethnic preference. However, a sizeable minority expressed a preference for a dentist from the same ethnic group as themselves, with the percentage expressing such a preference ranging from 6.9 to 25% according to the ethnicity of the patient. The authors also reported that of those patients who preferred a dental provider of an ethnicity other than their own, more patients preferred Asian providers than any other ethnic group. Preferences were also found to vary by gender, socioeconomic background and anxiety level of the patient.

With the proportion of practising dentists who are female expected to increase from 18.3% at present, to around 25% in 20 years time (Brennan et al., 1995), and increasing cultural diversity among dental school entrants, it is an appropriate time to consider patient preferences for dentist gender, age and cultural group.

3.1 Aims

The aim of this study was to determine the prevalence of patient preferences for dentist gender, age and cultural group, and to explore the influence of patient gender, age and country of birth on these preferences.

3.2 Sample

The survey was carried out as a postal follow-up to the 1996 National Dental Telephone Interview Survey, which collected data from a random sample of Australian residents. On completion of the interview the computer program selected respondents aged 18 years and older using a five in twelve sampling ratio. The selected respondents were subsequently sent a mailed questionnaire. Standard mailed survey procedures were employed, with subjects who failed to return the survey being sent a reminder card, and two further replacement questionnaires at 2-3 weekly intervals. After up to three reminders, the response rate from the 2,639 subjects chosen was 81.5%.

Table 3.1: Age, sex and country of birth of respondents

	n	%
Age group		
18–24 years	166	7.7
25–44 years	829	38.7
45–64 years	705	32.9
65+ years	443	20.7
Sex		
Male	910	42.3
Female	1241	57.7
Country of birth		
Australia	1644	76.4
Other	507	23.6

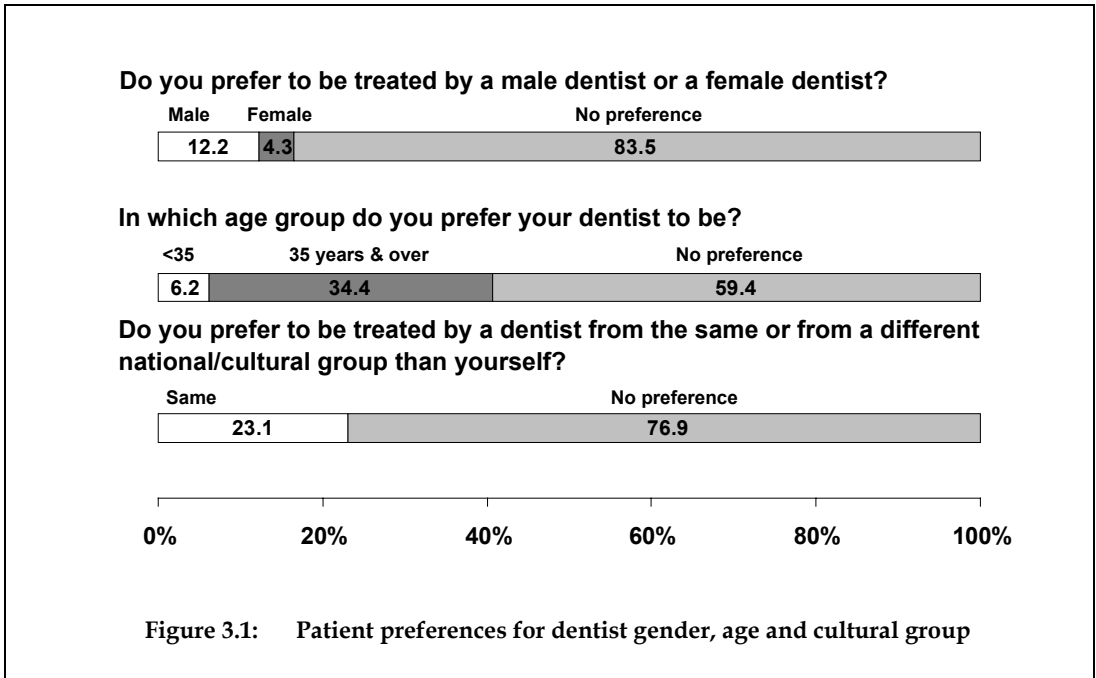
Details of the sample composition in terms of age group, sex and country of birth are presented in Table 3.1. Across the age groups and by country of birth the sample was fairly representative. However, distribution of respondents by sex was less representative with a greater proportion of the sample composed of female respondents (57.7%). The data were weighted by household size, and age and sex using the Estimated Resident Population of each State and Territory, based on 1994 figures, in order to reflect the distribution of the Australian population.

Table 3.2: Income and education of respondents

	n	%
Household income		
<\$12,000	355	17.5
\$12–20,000	341	16.8
\$20–30,000	302	14.9
\$30–40,000	307	15.2
\$40,000+	721	35.6
Educational attainment		
Primary	84	4.2
Some secondary	416	20.7
Secondary	228	11.3
Some vocational	64	3.2
Vocational	578	28.8
Some tertiary	166	8.3
Tertiary	470	23.4

Table 3.2 displays the income and education distribution of respondents. Respondents were distributed fairly evenly across income groups, with the \$40,000+ category being the largest. Distribution of respondents by education level indicated three main educational groups, up to secondary level, vocational or some vocational, and tertiary or some tertiary.

3.3 Results



Patient preferences were assessed by the respondents' selection of one response out of a maximum of four options for each question. For respondents who indicated a preference for dentist gender, an additional open-ended response question asking the reasons for that preference was included. Questionnaire results were then tested against a range of demographic information linked to the telephone interview survey. Other variables which were found to have significant interactions with preferences (results not included) included language, education and income.

In order to determine preferences for dentist gender the question 'do you prefer to be treated by a male dentist or a female dentist?' was asked. Overall preferences for dentist gender were as follows - 12.2% of respondents had a preference for a male dentist, 4.3% for a female and 83.5% had no preference (Figure 3.1). To determine age preferences the question 'in which age group do you prefer your dentist to be?' was posed. Possible responses were, no preference, under 35 years, 35 to 49 years, and 50 years and older. The latter two categories were collapsed to 35 years and older due to only 1.1% selecting the oldest age category. Preferences for dentist age were as follows - 6.2% of respondents preferred a dentist less than 35 years of age, 34.4% a dentist 35 years or older, and 59.4% had no preference. For cultural group preference the question 'do you prefer to be treated by a dentist from the same or from a different national/cultural group than yourself?' was asked. Possible responses were same, different and no preference. Less than 1.0% indicated a preference for a dentist from a different national/cultural group than themselves; this category was too small to further disaggregate by age, gender and country of birth and therefore was not included in the final analysis. Overall, preference for a dentist from the same cultural group was 23.1% while 76.9% had no preference.

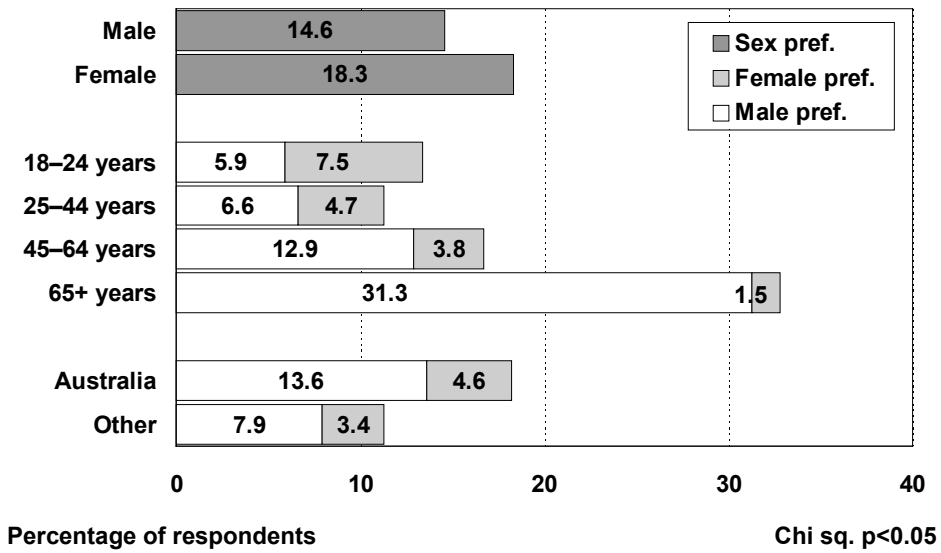


Figure 3.2: Preference for dentist gender by respondents' sex, age group and country of birth

Figure 3.2 presents the proportion of persons with a preference for dentist gender by sex, age group and country of birth of the respondent. Preference for dentist gender varied by all three patient characteristics. Analysis by patient sex indicated that females were more likely to have a preference for dentist gender; however, no significant differences were found between males and females for a dentist of a specific gender (not shown). Preference for dentist gender varied between age groups, with preference for a male dentist ranging from 5.9% for persons aged 18–24 years to a high of 31.3% for those aged 65 years and older. On the other hand, preference for a female dentist showed an opposite trend, with the youngest age group having the highest proportion with a preference and the oldest group the lowest.

Analysis by country of birth demonstrated that Australian-born persons were more likely to have a preference for a dentist of either gender, with the greatest difference being in the proportion preferring a male dentist; 13.6% of Australian-born persons having a preference as compared to 7.9% of those born overseas.

The influence of previous provider experience on gender preference was also explored, with respondents being asked if they had ever been treated by a female dentist (Figure 3.3). For persons who had never been to a female dentist, only 1.0% preferred a female dentist; however this proportion rose to 10.1% for those who had been to a female dentist. The converse was true for preference for a male dentist, with preference decreasing from 14.2% for those who had never visited a female to 8.9% for those who had.

Have you ever been treated by a female dentist?

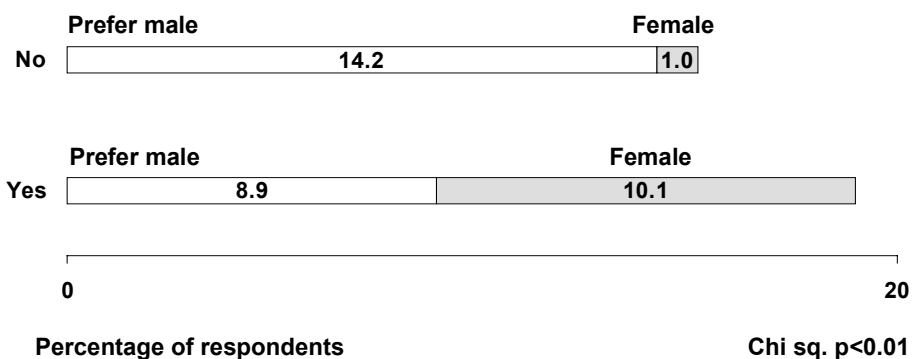


Figure 3.3: Influence of previous providers on preference for gender of dentist

Respondents who indicated that they preferred a dentist of a particular gender were asked to give their reason for this preference via the following open-ended response question: 'If you ticked male or female, what are your reasons for that preference?'. Of those who indicated a preference, 77.4% gave a reason (Figure 3.4). For respondents who preferred a male dentist the most commonly cited reason, given by 33.7%, was having always been to a male dentist or never having been to a female. For those who preferred a female dentist the most commonly cited reasons were related to 'gentleness' (19.2%) or to 'good communication' (15.1%).

If you ticked male or female, what are your reasons for that preference?

Prefer male	%
Always been to a male dentist / never been to a female	33.7
Prefer female	
Gentleness	19.2
Communication	15.1

Figure 3.4: Supplementary gender question

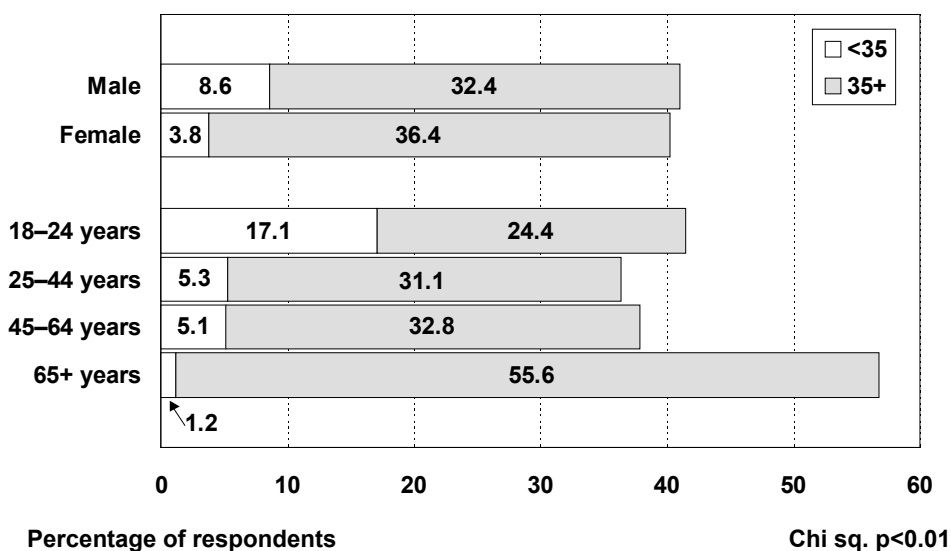


Figure 3.5: Preference for dentist age by sex and age group

Preference for dentist age when analysed by patient sex indicated that males were significantly more likely to prefer a younger dentist than females, while females showed a higher preference for a dentist aged 35 years or older (Figure 3.5). When dentist age preference was related to patient age group, it was found that persons in younger age groups were more likely to prefer a younger dentist than persons in the older age groups, with preferences ranging from 17.1% for 18–24-year-olds to 1.2% for those aged 65 years and older. The trend was reversed in relation to preference for a dentist aged 35 years or older, with a higher proportion of older persons having preferences than younger persons.

For both sexes and all age groups a higher proportion preferred a dentist in the older age category. Older persons were also more likely to have a preference for dentist age.

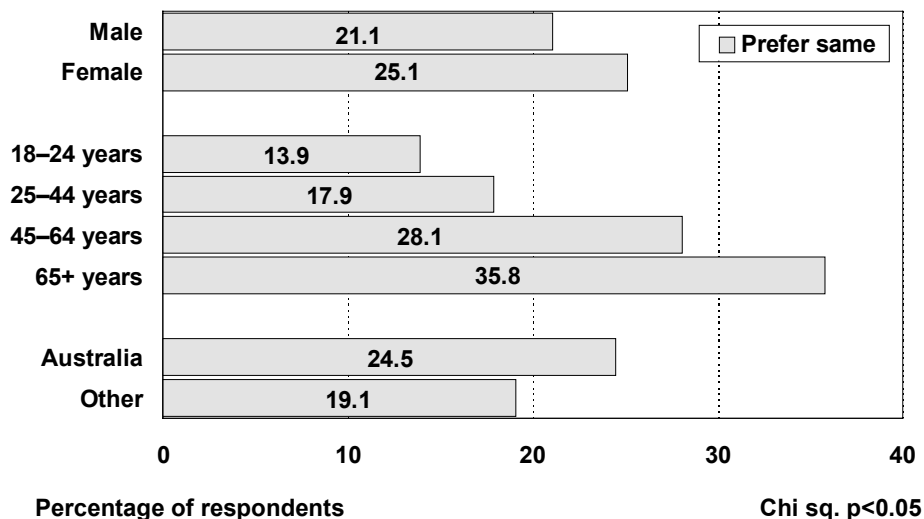


Figure 3.6: Preference for dentist cultural group by sex, age group and country of birth

Patient preference for cultural group of dentist was analysed by various patient characteristics (Figure 3.6). Preference for a dentist from the same cultural group varied by all three characteristics, that is, age, sex and country of birth. Significant variation in preferences was revealed between male and female patients, with 21.1% of males and 25.1% of females preferring a dentist from the same cultural group. When preferences for the same cultural group were analysed by patient age, strong trends were demonstrated, with preferences increasing across age groups from 13.9% for 18-24-year-olds, to 35.8% for those aged 65 years and older.

Finally, for country of birth, Australian-born persons were more likely to have a preference as compared to those who were overseas-born.

3.4 Conclusions

The majority of respondents reported no preference for gender, age or cultural group of dentist; however a sizeable minority did express preferences.

Older respondents were the most likely to have a preference relating to each of the dentist characteristics, that is, to prefer a male dentist, 35 years or older and of the same cultural group. This may be related to differences in education across age groups, with a greater proportion of older respondents having lower levels of educational attainment which may be associated with a greater likelihood of holding stereotyped views. Older persons may also have limited experience of a variety of dentist role models.

Australian-born and female respondents were more likely to have preferences relating to dentist gender and cultural group. These results require further investigation in order to determine reasons for these preferences.

Gender preferences showed a more variable pattern, possibly reflecting previous experience. Although overall preference for a female dentist was low, preferences rose substantially for those who had visited a female dentist in the past, indicating that present preference may be related to previous provider experience.

Comparison of the results of this study to those of the New Zealand study mentioned previously indicate a much higher preference for female dentists among the New Zealand sample; that is, 13% compared with 4.3% in Australia. This New Zealand figure more closely reflects the preference for female dentists expressed by those in the Australian sample who had previously visited a female dentist. This difference is most likely related to a disparity in the experience of the New Zealand and Australian samples with female dentists, with 50% of the New Zealand sample having visited a female dentist compared with 37% of the Australian sample. We therefore would expect that as the proportion of female dentists increases in Australia, so too will exposure and experience, and hence a greater proportion of the population may be expected to show preference for a female dentist in the future. However, it is anticipated that the proportion of persons with a preference for dentist gender will most probably remain at a low level in the near future.

The results of this study are encouraging in that the majority of the Australian population have no preference for dentist gender, age or cultural group. There is therefore no justification for concern as to the present diversity among dental school entrants or future changes in the composition of the practising dentist population.

3.5 References

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4 Public perceptions of dental auxiliaries

The changing oral health needs of the Australian community and recent examinations of public funding sources are having an impact on all aspects of dentistry and the dental profession. The different dental auxiliary labour forces are key components of the supply of dental services in Australia and are under scrutiny.

Recent studies such as the Victorian Government Review of the Dental Auxiliary Workforce (Doyle, 1995), the Australian Health Ministers' Advisory Council's pilot program and the Dever Report into Tasmanian Dental Services (Dever, 1997), among others, have all indicated that this is clearly an appropriate time to look at the public's perception of dental auxiliaries.

Dental auxiliaries include dental therapists, dental hygienists, and dental prosthetists. There are at present approximately 1,300 dental therapists, 280 dental hygienists and 900 dental prosthetists practising in Australia (Sherar & McCracken, 1998; Szuster & Spencer, 1997a; Szuster & Spencer, 1997b).

This chapter presents the findings of a recent study of the public perceptions of dental therapists and dental hygienists undertaken in 1996. Public perceptions of dental prosthetists were regrettably not included in the study.

4.1 Aims

The aims of this study were to examine the public perception of dental therapists and dental hygienists. In particular the study wished to identify the characteristics of the Australian population and their use of dental services related to these perceptions.

4.2 Methods

This study used a sub-sample of 5 in 12 respondents from the 1996 National Dental Telephone Interview Survey who were randomly selected and sent a four-page self-complete questionnaire in the mail. There were three follow-up mailings at 2- to 3-weekly intervals, with the survey achieving an 81.5% response rate from the 2,639 persons approached, aged 18 years and older.

This study examined descriptive statistics from eight statements that were included in this mail-out questionnaire. These statements referred to the work of dental therapists and dental hygienists and sought responses on a 5-point Likert scale, ranging from strongly disagree to strongly agree. In addition, there were questions on whether the respondent had ever received services from a therapist or hygienist, in Australia.

The questionnaire included the following descriptions of each auxiliary:

- dental therapists provide basic dental care in school dental clinics and in some Western Australian private dental clinics; and
- dental hygienists provide services such as cleaning and scaling of teeth and dental health education.

Factor analysis was carried out on the responses to these eight statements. Two dependent variables were created from the statements that loaded onto two factors and these were used in two separate ordinary least squares regression models.

4.3 Investigated characteristics

The respondent characteristics used in the study fall into the broad categories of sociodemographic characteristics and economic details, the social impact of dental health, financial constraints related to dental care, their dental visits and their perceived need for dental care.

This study found that 17% of the population aged 18 years and over had received services from a dental therapist at some time and about 12.9% claimed that they had received dental hygienist services.

4.4 Dental therapist statements

The four statements in the questionnaire relating to dental therapists were:

- dental therapists are good at caring for children's teeth and gums;
- I would prefer a dentist rather than a dental therapist to care for children's teeth and gums;
- dental therapists don't provide good advice on the care of teeth and gums; and
- dental therapists communicate well with children and parents.

The wording of the second and third statements is expressed in a negative fashion toward dental therapists while the first and fourth statements are presented in a positive fashion toward dental therapists.

A majority (59.1%) of the respondents reported at least one positive response to dental therapists. Figure 4.1 presents the responses to each of the four statements, ranging from strongly disagree on the left to strongly agree on the right. The 'neither' or neutral response is presented in the middle. The mean of the responses to each statement is displayed with an asterisk.

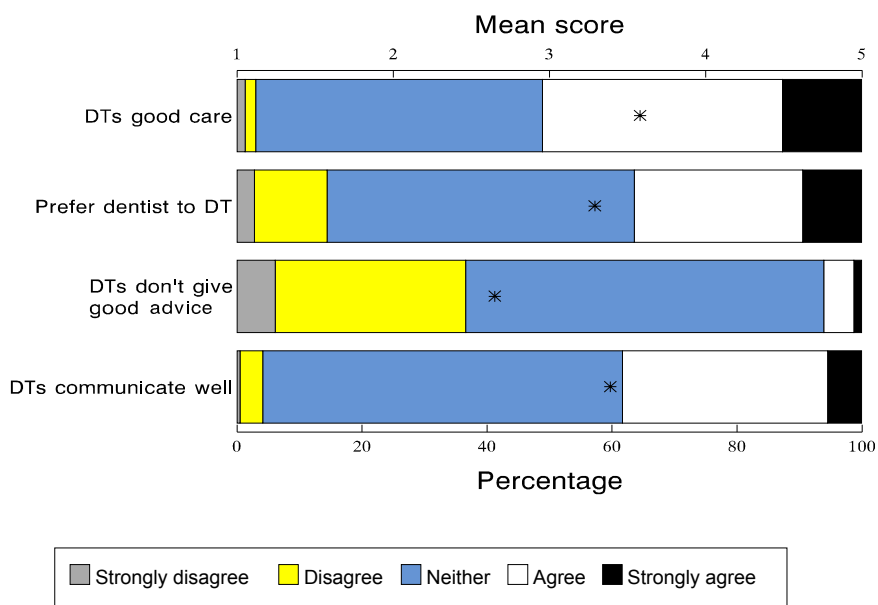
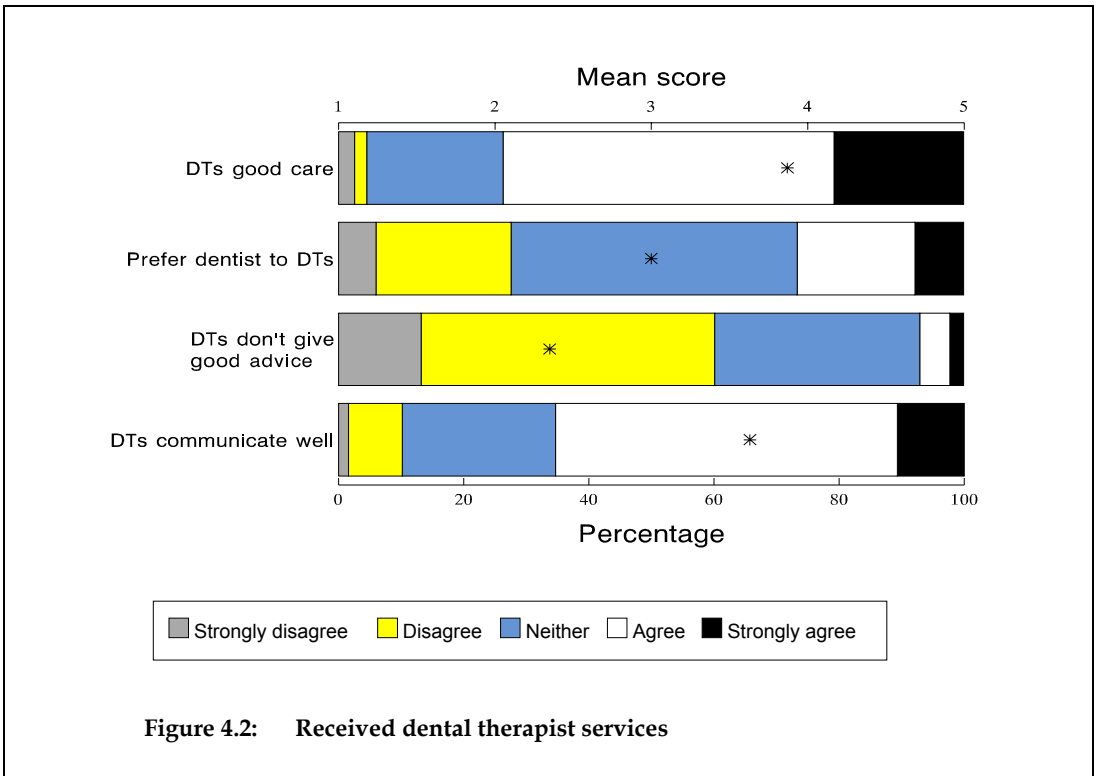


Figure 4.1: Dental therapist statements

The mean for the second statement is closest to the middle value of 3. It can also be seen that a positive perception of dental therapists exists in the responses to these statements, namely the right side of the first and last statements and the left side of the second and third statements.

There was only a small proportion who reported negative perceptions. However, it can also be seen that there were large proportions who reported the neutral response.

Figure 4.2 presents the same information but this time for the 17% who reported that they had received services from a dental therapist in Australia. Not surprisingly, the neutral responses are substantially reduced and the means reflect positive perceptions of dental therapists.



Dental therapists received positive support from those who have reported receiving services from them. Again this can be seen from the left side of the responses to the second and third statements and the right side of the first and fourth statements. Also there were small negative responses. It should be noted that agreement with the second statement is not necessarily a negative towards dental therapists.

4.5 Dental hygienist statements

The four statements in the questionnaire relating to dental hygienists were:

- I would prefer to go to a dental practice that employs a dental hygienist;
- dentists provide better preventive dental care than dental hygienists;
- dental hygienists provide good advice on the care of teeth and gums; and
- dental hygienists communicate well with dental patients.

The second statement is the only one that could be considered to have been expressed in a negative manner in relation to dental hygienists.

Figure 4.3 presents the responses to each of the four statements. For these statements there were even greater proportions of respondents who reported the neutral category, with positive responses for the first, third and fourth statements. The second statement on preventive dental care was the most symmetric of all of these distributions of responses.

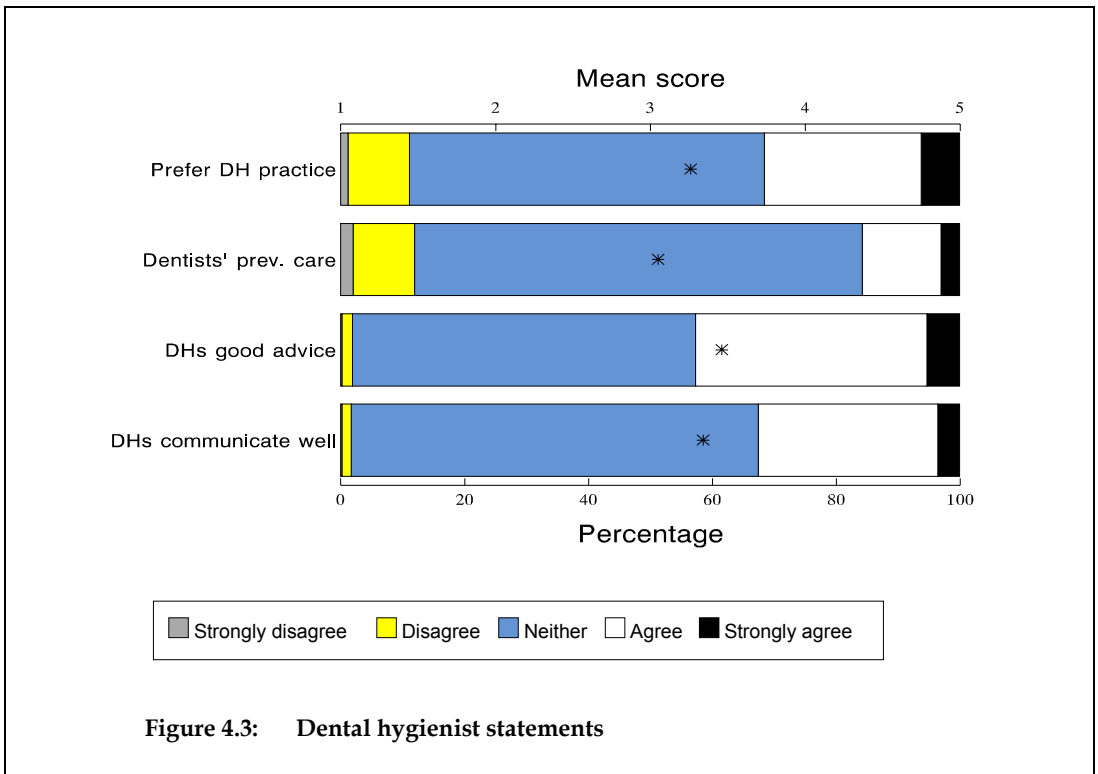
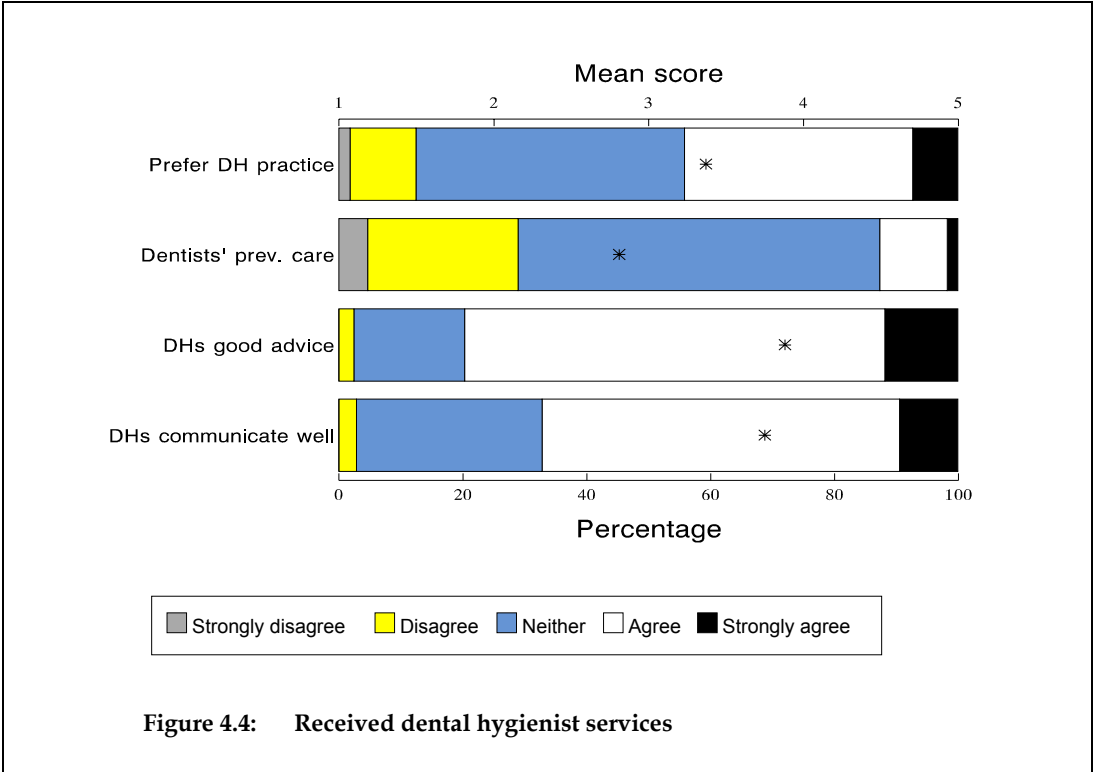


Figure 4.3: Dental hygienist statements

Figure 4.4 presents the same information from the 12.9% who reported that they had received services from a dental hygienist in Australia. There were substantially increased positive perceptions from this group and a small shift for the second statement. The means have moved substantially towards the positive responses. In addition, there were only minor negative responses, most importantly to the third and fourth statements.



4.6 Factor analysis

To explore the responses further, factor analysis was conducted on the eight statements. Factor analysis is a statistical technique used to identify a relatively small number of factors that can be used to represent relationships among sets of interrelated variables. The factor analysis results are displayed (Table 4.1) with the factor loadings presented for each statement against each of the two factors that resulted from the analysis.

Table 4.1: Factor analysis

	Factor 1	Factor 2
Dental therapist good care	0.67	0.09
Prefer dentist to dental therapist	-0.32	0.64
Dental therapists don't provide good advice	-0.50	0.49
Dental therapists communicate well	0.73	0.13
Prefer dental hygienist practice	0.35	0.42
Dentists better preventive care	-0.35	0.70
Dental hygienists provide good advice	0.80	0.25
Dental hygienists communicate well	0.80	0.24

Factor 1 could be described as a 'pro-auxiliary' factor and contains five of the statements using the 0.5 factor loading convention. Not only have the first, third and fourth dental therapist statements plus the last two dental hygienist statements been included, but for the statements with a 'dentist' orientation in their wording (namely the second therapist and second hygienist statement) the value is negative.

The second factor could well be described as a 'pro-dentist' factor with loadings from the second therapist and second hygienist statements. However, for this factor the signs for all statements are positive, indicating respondents are tending to agree (although only slightly in some cases) with all statements.

It should be noted that there was no respondent who reported disagreement with all eight statements and 22 or 1% reported agreement with all eight statements.

4.7 Regression

Table 4.2 presents the findings of two separate ordinary least squares regression models based on the two factors. In each column the beta values for the independent variables in the models are presented. Variables which showed significant bivariate differences were incorporated into the two regression models.

Table 4.2: OLS regression

	Factor 1 regression	Factor 2 regression
	<i>Beta</i>	<i>Beta</i>
Public/private		
Private = 1	0.14	
Card private = 2		
Card public = 3		
Visit frequency		
<2 visits per year = 0	-0.10	
2+ visits per year = 1		
Seen auxiliary		
Seen neither = 0	0.20	-0.31
Seen either = 1		
Avoided/delayed due to cost		
No = 0		-0.07
Yes = 1		
R squared	0.09	0.10

For the first model, the type of practice at last visit, usual visit frequency and whether they had seen an auxiliary were included. The sign of the beta value indicates that the ‘pro-auxiliary’ dependent variable was associated with being a public patient, visiting less frequently and, not surprisingly, having seen an auxiliary.

The results of the second regression show that the ‘pro-dentist’ dependent variable was associated with having not seen an auxiliary and not avoiding or delaying treatment due to cost.

4.8 Discussion

From the distribution of responses to the eight dental auxiliary statements it was seen that there was a large percentage who reported a neutral response and very few reported negative perceptions toward the work of dental therapists or dental hygienists.

Factor analysis showed that the responses could be allocated to two groups: a pro-auxiliary and a pro-dentist group. The regression analysis confirmed the earlier finding that greatest support came from those who had received services from dental therapists or dental hygienists. In addition, those who were public patients and those who reported less

frequent dental visits were associated with this group. The second 'pro-dentist' group was associated with having not seen either a dental therapist or a dental hygienist and not avoiding or delaying treatment due to cost.

One observation that might be made is that a number of population characteristics, such as sex and age, that were thought *a priori* to have been significant in the regression equations did not get included in the final models.

4.9 Conclusions

This study found that there is support for dental therapists and dental hygienists, with positive perceptions towards them, especially from those who have been in receipt of their services. This support was widespread and not related to particular demographic or oral health status sub-groups.

In the most populous States, especially in New South Wales, experience of dental therapists and dental hygienists has been limited, compared to other States and Territories such as Western and South Australia. As new courses come on-stream, and as more school dental service recipients move into adulthood, a higher percentage of the population will have received services from them. The findings of this study would indicate that this will result in an increase in positive perceptions by the public.

In conclusion, this is a time of change in dental health and in the examination of the roles of dental auxiliaries, certainly of dental therapists. When investigating the supply and function of these dental professionals, the impact on the public and the opinions of the Australian population need to be heeded. The perception by the public of the importance of these dental professionals within the dental team should be taken into account.

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The Technology of Dentistry

5 Public perceptions of radiation safety

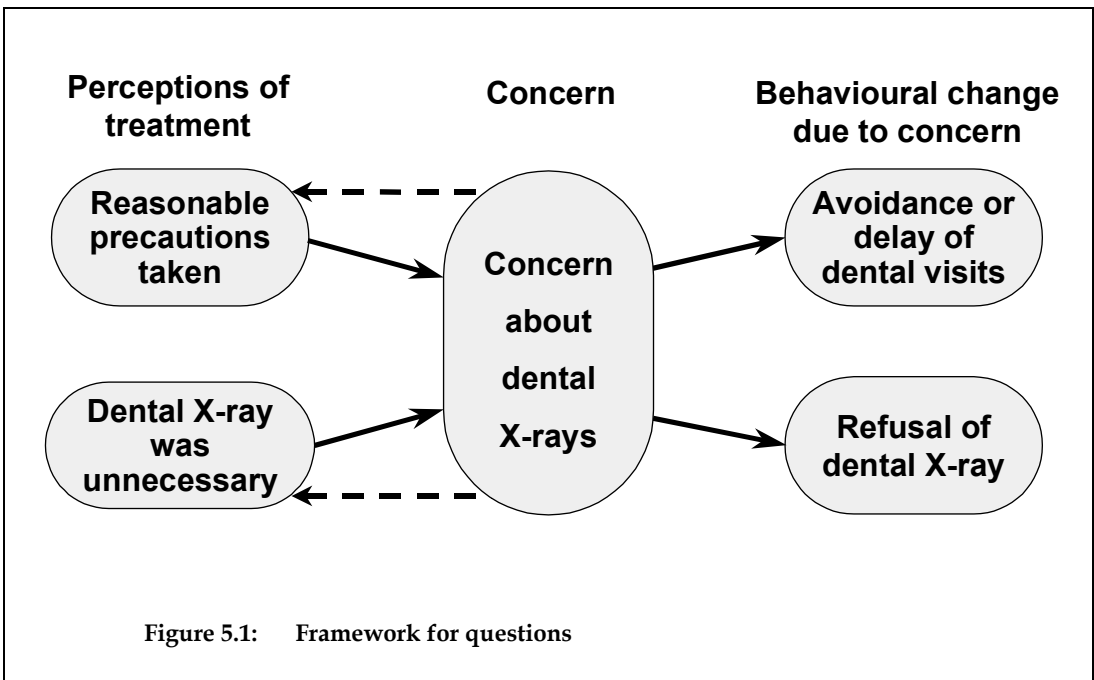
This chapter examines some data which captured information about public perceptions of radiation through the use of X-rays in dentistry. This data was collected in 1996 as part of a mailed follow-up questionnaire to a subsample of adult participants in the 1996 National Dental Telephone Interview Survey. There were 1,286 respondents to this follow-up questionnaire of whom 1,119 were dentate. The data were weighted by age group, sex, household size, and State/Territory to provide population estimates for Australia. There were six questions about dental X-rays, which were at the end of the questionnaire after some questions about perceptions of tooth loss and some questions about the use of fluorides.

The six questions about dental X-rays were:

- How long ago was your last dental X-ray?
- At your last dental X-ray did you think that the dental professional took all reasonable precautions to protect you when the X-ray was taken?
- Have you had a dental X-ray which you felt was unnecessary?
- Are you concerned about radiation from dental X-rays?
- Have you refused an X-ray because of concerns about dental X-rays?
- Have you avoided or delayed dental visits because of concerns about dental X-rays?

A framework in which to place these questions, in order to better understand and examine the relationships between them, is presented in Figure 5.1. The questions were grouped into three categories. The first group was called 'Perceptions of treatment', and it includes the questions which relate to direct treatment experiences of dental X-rays, 'were reasonable precautions taken?' or 'have you had an unnecessary dental X-ray?'. The second group, 'Concern', relates to general overall concern about dental X-rays. The results of this chapter are primarily based on the assumption that perceptions of treatment lead to concern; however, as indicated by the dashed arrows, it is also likely that concern will influence the way in which an individual will perceive the treatment which they have received. The final group was called 'Behavioural change due to concern', and it included the two questions which related to actions which individuals have undertaken as a result of their concern, that is, avoidance or delay of dental visiting, or refusal of a dental X-ray.

The question about time since last dental X-ray was not included in this framework, and has been used as a controlling variable in the subsequent analyses. All data presented in the remainder of this chapter are restricted to those persons who were dentate.



5.1 Results

Figure 5.2 shows the distribution of persons by time since last dental X-ray. A fairly even distribution is evident, with 21.6% of persons reporting a dental X-ray in the previous 12 months, 20.3% one to two years ago, 24.4% two to five years ago, 21.2% five or more years ago, and about 1 in 8 dentate adults reporting that they have never had a dental X-ray.

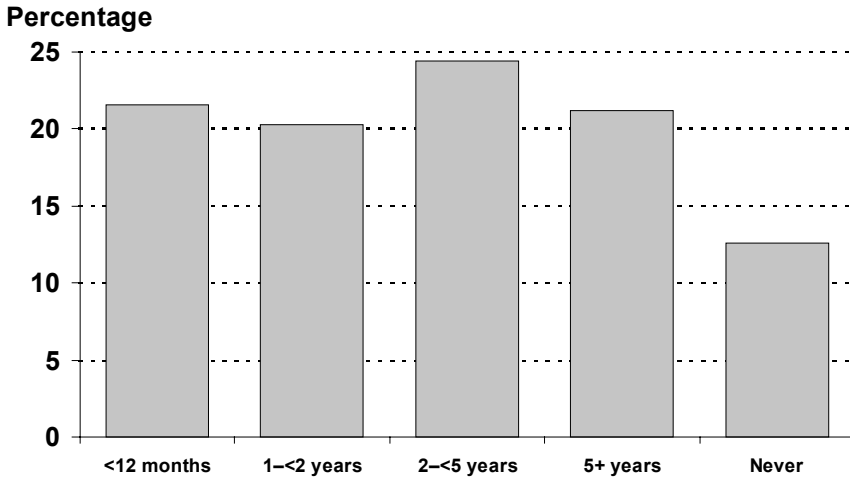
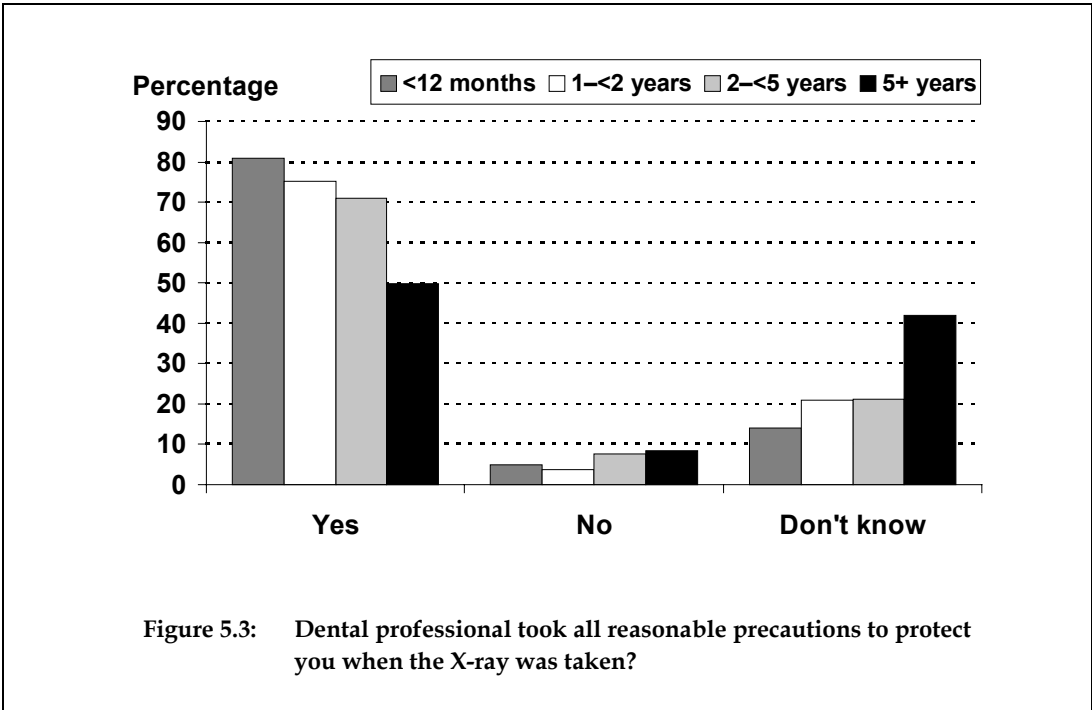


Figure 5.2: Time since last dental X-ray

Responses to the question about whether or not the dental professional took all reasonable precautions are restricted to only those persons who have had a dental X-ray. Responses to this question varied by the time since the person's last dental X-ray (Figure 5.3). The percentage of adults who thought that the dental professional did take all reasonable precautions was highest, at 81%, for those who had a dental X-ray in the previous 12 months, and declined to just 49.8% among those who had not had a dental X-ray for 5 or more years. This decline was predominantly due to an increase in the percentage of persons who reported that they don't know, which rose from 14.0% to 41.8%. The percentage of persons who thought that all reasonable precautions were not taken varied from 4 to 5% for persons who had had a dental X-ray in the previous two years, to approximately 8% for persons who had not had a dental X-ray for 2 or more years. While it would be expected that there would be an increase in the percentage of persons reporting 'don't know' as the time to the event in question increased, it is of some concern that 14% of persons who had reported a dental X-ray in the previous 12 months could not state positively that all reasonable precautions had been taken.



The same relationship with time since last dental X-ray is seen in Figure 5.4 with the percentage of persons who reported that they had had a dental X-ray which they felt was unnecessary. The percentage declined from 22.4% among persons who had a dental X-ray in the previous 12 months to 11.4% among persons who hadn't had a dental X-ray for five or more years. Corresponding to this decrease was an increase in the don't know category from 6.6% to 17.9%, while the percentage who didn't feel that they had had an unnecessary X-ray remained relatively stable at around 70%.

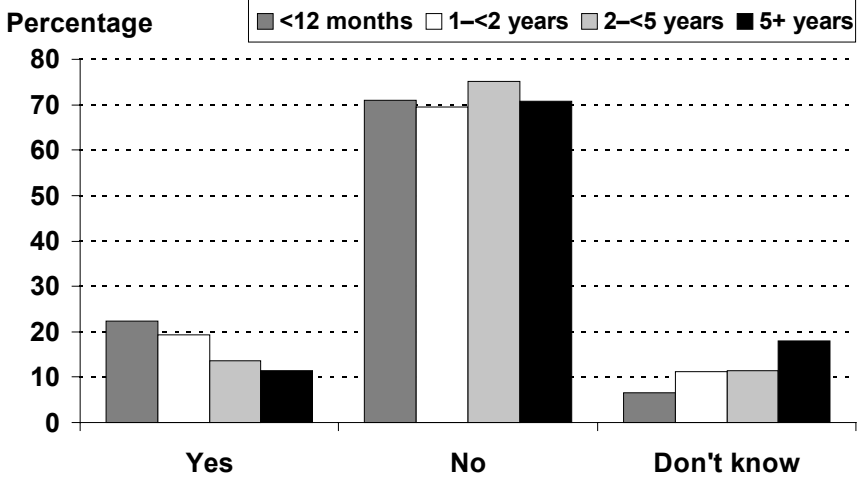
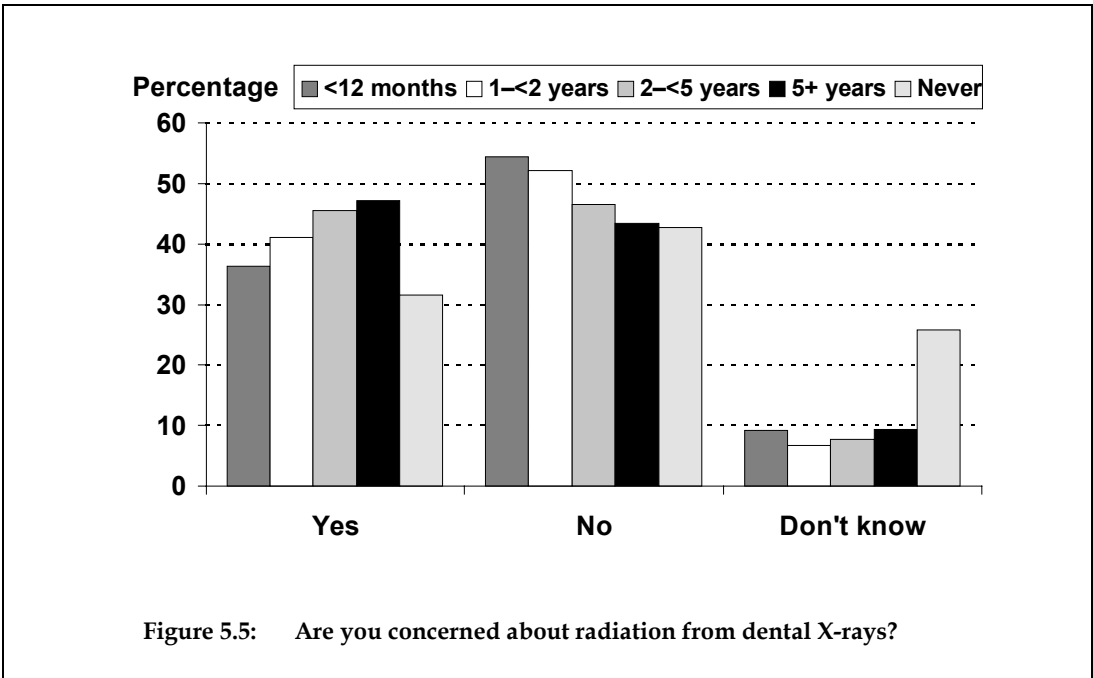


Figure 5.4: Have you had a dental X-ray which you felt was unnecessary?

Unlike the two perceptions of treatment questions, which only persons who have had a dental X-ray could answer, persons who have not had a dental X-ray may answer the question as to whether or not they are concerned about radiation from dental X-rays, as it may be such a concern which has resulted in them never having had a dental X-ray. Concern about radiation from dental X-rays increased with time since last dental X-ray from 36.4% among persons who had a dental X-ray in the previous 12 months to 47.1% among persons who hadn't had a dental X-ray for 5 or more years; the corresponding percentages of persons who expressed no concern were 54.4% declining to 43.4% (Figure 5.5). Among persons who had never had a dental X-ray, 31.5% expressed concern, 42.7% didn't have concerns, and 25.8% didn't know if they had concerns, compared with 6 to 9% who didn't know among persons who have had a dental X-ray.



Examined in Figure 5.6 is the distribution of concern by response to the question, 'At your last dental visit did you think that the dental professional took all reasonable precautions to protect you when the X-ray was taken?'. Concern was lowest at 35.9% among the group which responded that all reasonable precautions were taken at their last dental X-ray, while the group which thought that not all reasonable precautions were taken expressed the highest level of concern at 69.8%. Those who did not know if all reasonable precautions were taken had an intermediate level of concern, but one-in-five of this group also did not know whether or not they had any concerns about dental X-rays.

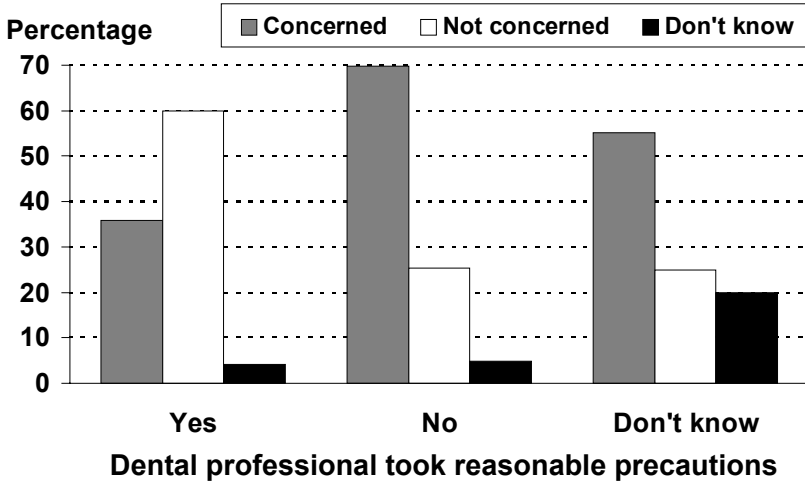


Figure 5.6: Concern about dental X-rays by perception of precautions taken

The same pattern of response is evident for the other perception of treatment question, 'Have you had a dental X-ray which you felt was unnecessary?' (Figure 5.7). Concern at 37.3% was lowest among those who did not feel that they had had an unnecessary X-ray, while it was highest at 63% among those who felt they had had an unnecessary X-ray, and intermediate among those who did not know, and again among this don't know group a relatively high 17.9% did not know if they had concerns about dental X-rays.

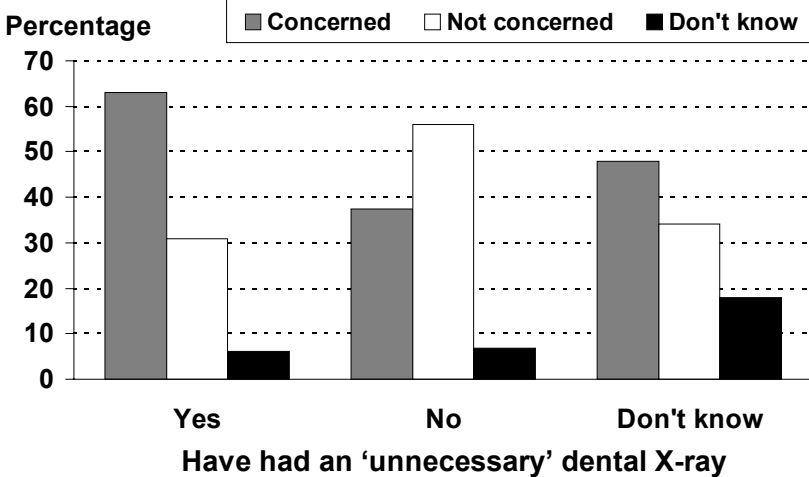
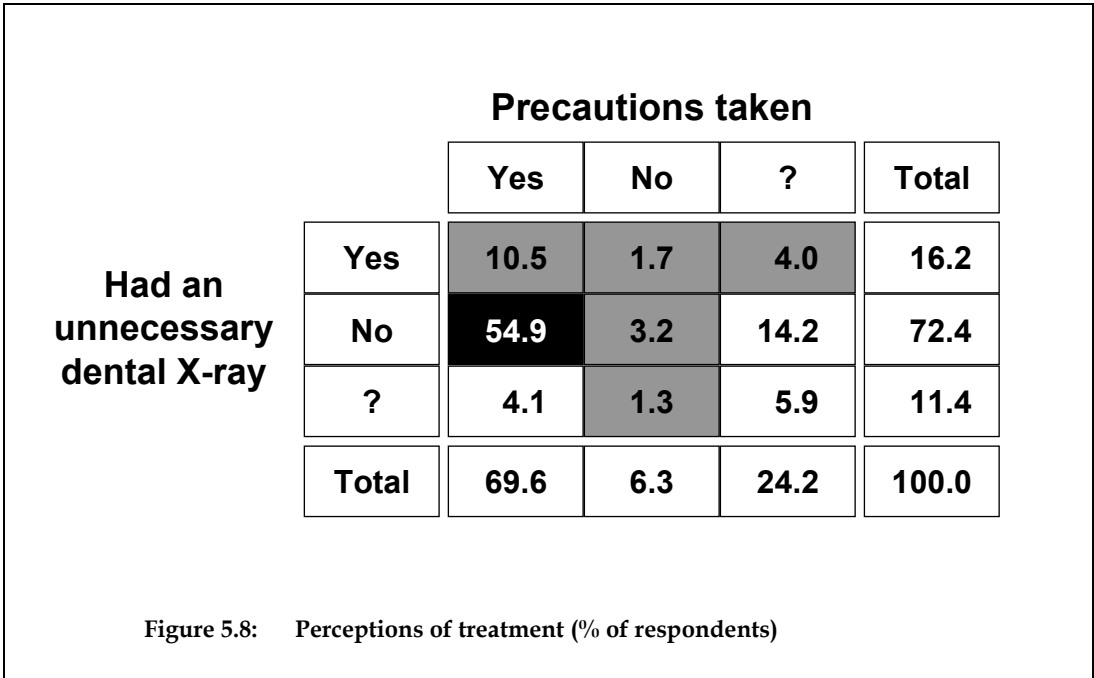


Figure 5.7: Concern about dental X-rays by perception of necessity of X-ray

In order to better understand the relationship between perceptions of treatment and concern, a composite variable was created (Figure 5.8). If a person responded positively to both questions, they were assigned to a group characterised as having positive perceptions of treatment, accounting for 54.9% of respondents. If a person responded negatively to either of the perception of treatment questions then they were assigned to a negative perception of treatment group. The remaining three combinations were assigned to a don't know group.



The relationship between this new composite variable, 'perception of treatment', and concern retains the structure of its individual components. Those who recorded a positive perception of their treatment had the lowest level of concern about dental X-rays, 33.6%, compared with 63.8% of persons with concern among those who reported a negative experience (Figure 5.9). Again concern was intermediate for the don't know group at 46.6%.

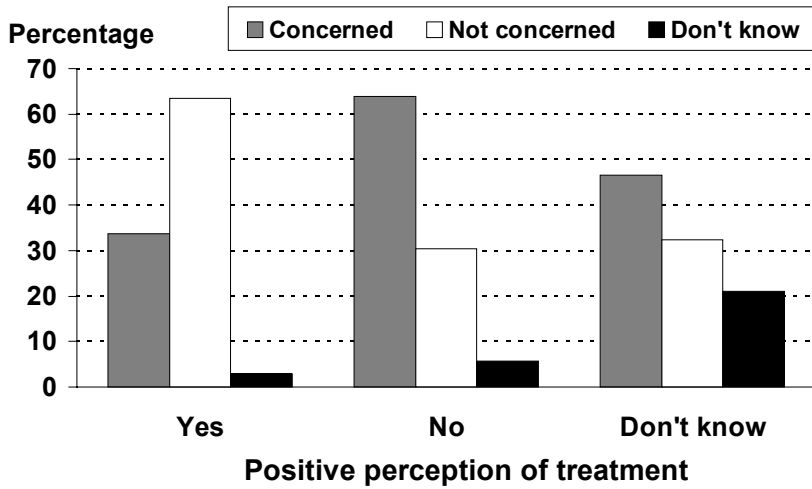
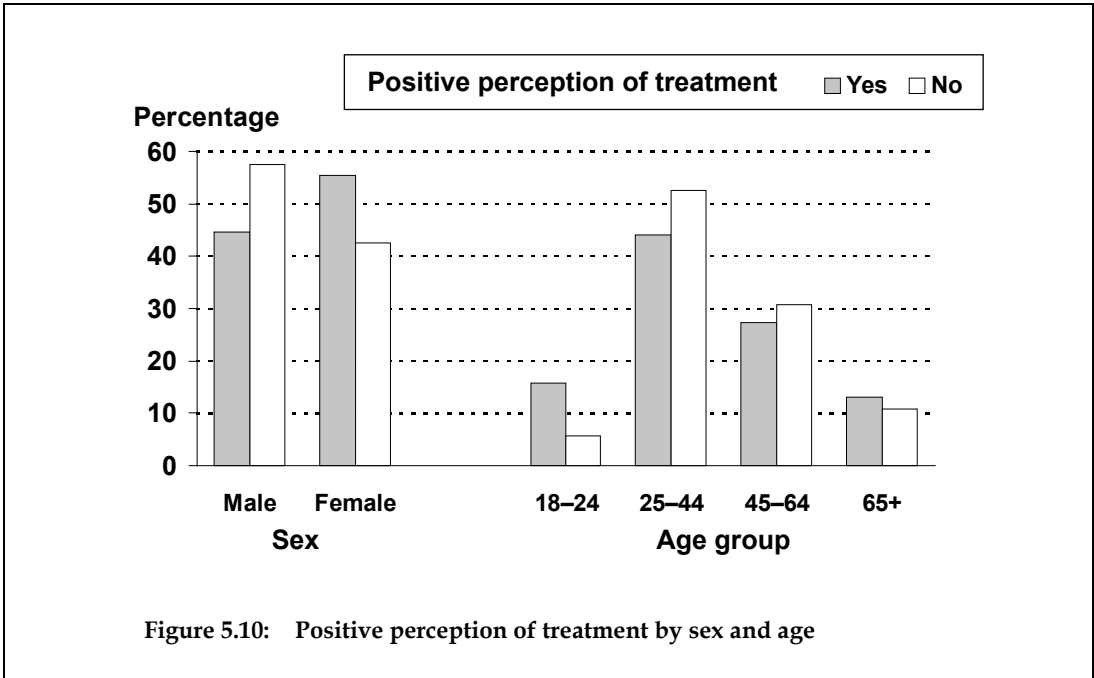


Figure 5.9: Concern about dental X-rays by perception of treatment

Having established that persons who recorded a positive perception of treatment reported lower concern about dental X-rays than did those with a negative perception, differences between persons with a positive perception and persons with a negative perception were examined. The differences observed in the Figures 5.10 to 5.12 were all found to be statistically significant.

There was a higher percentage of males in the group with a negative perception than in the positive perception group, 57.5% compared with 44.6%. The percentage of 25- to 64-year-olds was higher for the negative group than for the positive group.



Just over half, 52.2%, of the negative group were insured compared with 42.3% of the group which had a positive perception of their treatment (Figure 5.11). Although statistically significant, the only substantial differences between the positive and negative groups with respect to their income distributions was that there was a lower percentage of persons from the \$12–20,000 category, and a higher percentage of persons from the \$30–40,000 category, in the negative perception group compared with the positive perception group.

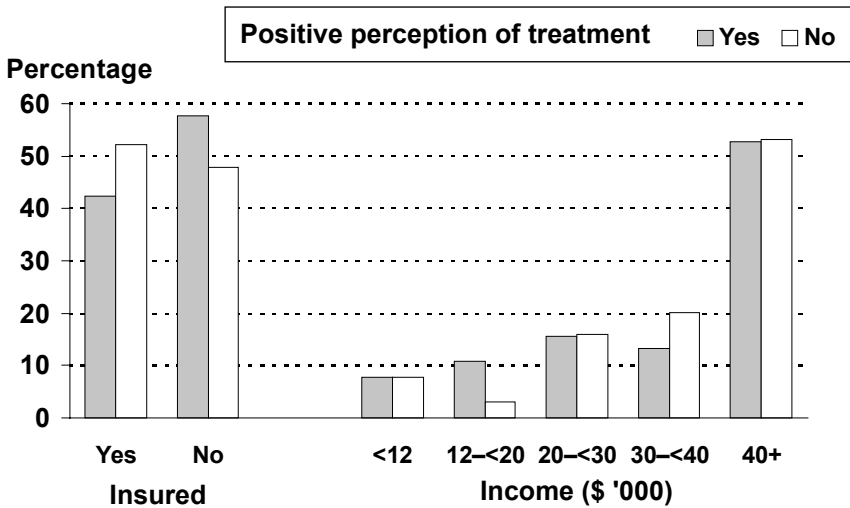


Figure 5.11: Positive perception of treatment by insurance status and income

The majority of persons (55%) in the negative perception group reported that their usual reason for a dental visit was for a problem, compared to 40.4% of the group with a positive perception of their dental treatment. Finally, there was a higher percentage of persons who spoke a language other than English in the negative perception group, 18.4%, compared to the positive perception group, 7%. Other variables which were tested but were not statistically significant were time since last dental visit, time since last dental X-ray, place of last dental visit, and card-holder status.

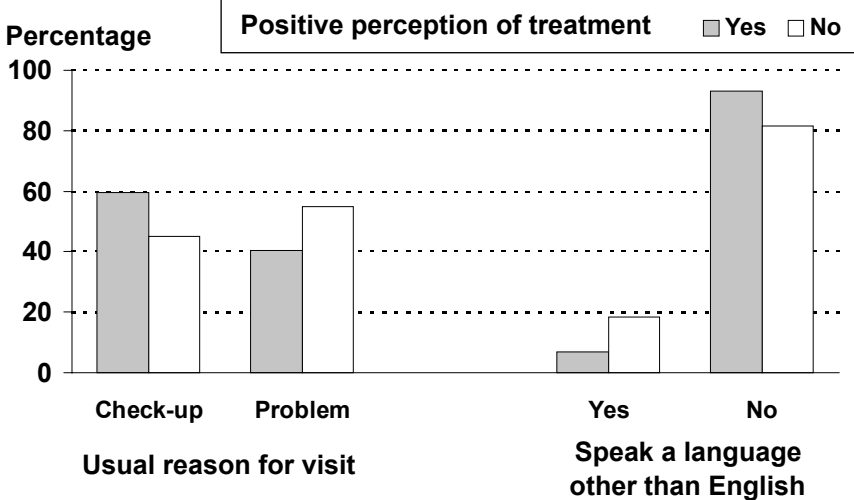


Figure 5.12: Positive perception of treatment by usual reason for visit and language

Table 5.1: Logistic regression of perception of treatment: odds of reporting a negative perception

	Odds ratio	95% CI	Reference group
Male	1.51	(1.07, 2.12)	Female
25–44 years	3.29	(1.69, 6.37)	18–24 years
45–64 years	2.76	(1.39, 5.47)	
65+ years	2.32	(1.06, 5.07)	
Insured	2.03	(1.43, 2.88)	Uninsured
Problem	1.72	(1.21, 2.44)	Check-up
Non-English	2.98	(1.77, 5.03)	English

The variables which exhibited significant bivariate associations were entered into a logistic regression. Annual household income did not remain in the model. The odds reported in Table 5.1 are the odds of reporting a negative perception of treatment as opposed to a positive perception of treatment. Males had 1.51 times the odds of being in the negative perception group compared to females. Compared to 18–24-year-olds, the odds of having a negative perception ranged from 3.29 for 25–44-year-olds down to 2.32 for dentate adults aged 65 years or more. Insured persons had 2.03 times the odds of uninsured persons, persons who usually visited for a dental problem had 1.72 times the odds of those who usually visit for a check-up, and persons who spoke a language other than English had 2.98 times the odds of being in the negative perception group compared with those who spoke English only.

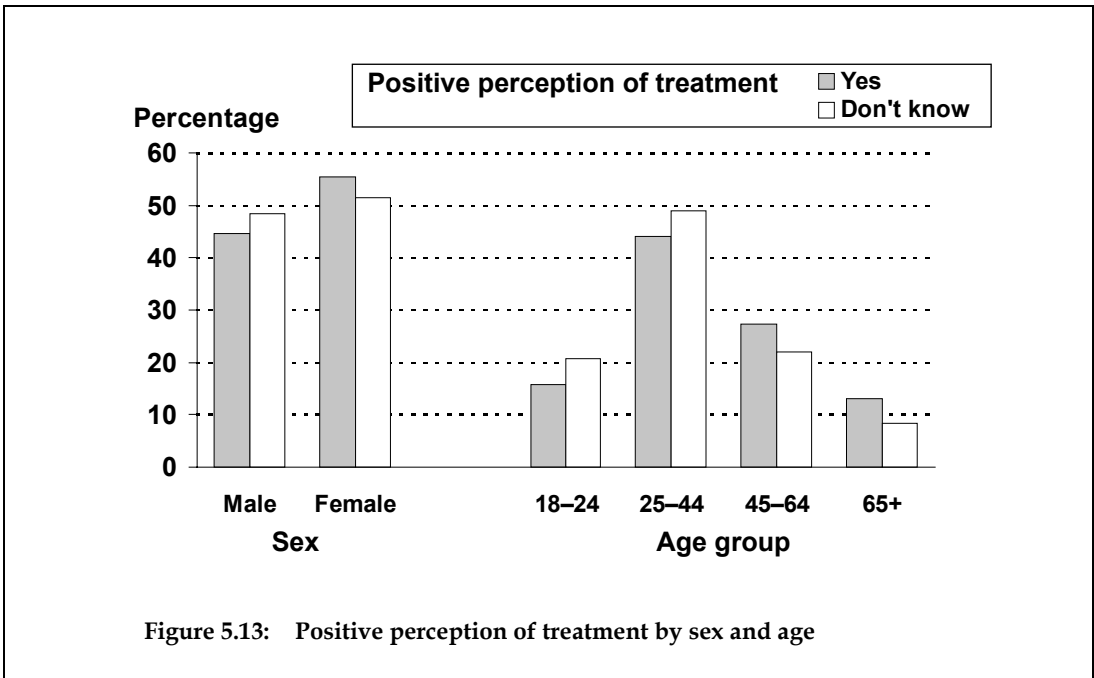


Figure 5.13: Positive perception of treatment by sex and age

The same method of analysis was then applied to comparing those with a positive perception to those who were assigned to the don't know group. There was no significant difference by sex; all other results presented in Figures 5.13 and 5.14 were found to be statistically significant. There was a greater percentage of 18 to 44-year-old persons in the don't know group than in the positive perception group.

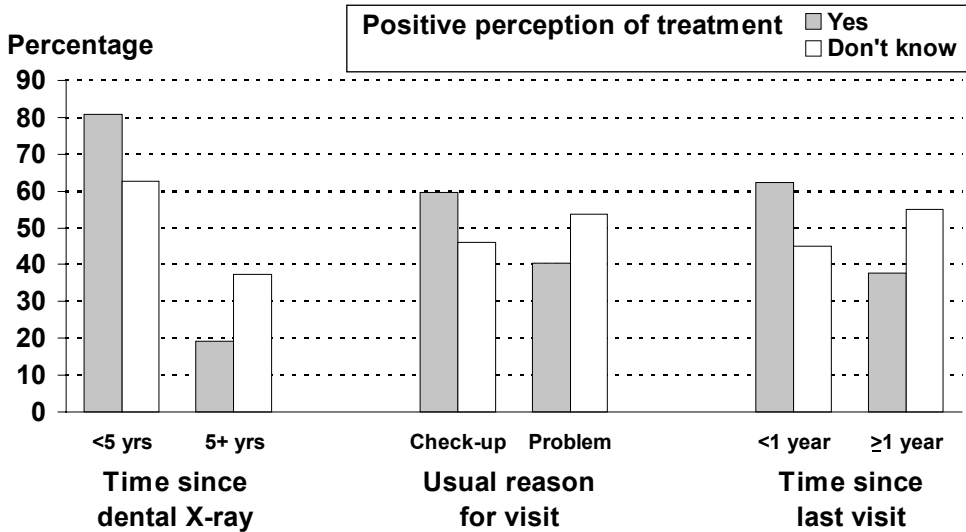


Figure 5.14: Positive perception of treatment by time since dental X-ray, usual reason for visit and time since last visit

Over a third, 37.3%, of the don't know group had their last dental X-ray 5 or more years ago compared to 19.3% of the positive perception group. Of the don't know group, 53.8% stated that their usual reason for a dental visit was for a problem compared to 40.4% stating so in the positive perception group, and 55% of the don't know group had not made a dental visit for more than a year, compared to 37.6% of the positive perception group. These were the only variables which were statistically significant; the same set of variables was tested for both the negative perception analysis and the don't know about perception analysis.

Table 5.2 presents the results of the logistic regression model. Age of respondent was not significant in the model, leaving only three variables. The odds reported here are the odds of being in the don't know perception of treatment group as opposed to the positive perception of treatment group. Persons whose last dental X-ray was 5 or more years ago had 1.99 times the odds of being in the don't know group. Those whose usual reason for a dental visit is for a problem had 1.39 times the odds of those usually visiting for a check-up, and persons whose last dental visit was more than a year ago had 1.61 times the odds of being in the don't know group compared with those who had visited in the previous year.

Table 5.2: Logistic regression of perception of treatment: odds of reporting don't know for perception

	Odds ratio	95% CI	Reference group
5+ years since last dental X-ray	1.99	(1.39, 2.84)	<5 years
Problem	1.39	(1.01, 1.92)	Check-up
≥1 year since last dental visit	1.61	(1.16, 2.23)	<1 year

Responses to the behavioural change due to concern questions were as follows:

- 28 respondents, 3.3%, reported that they had refused a dental X-ray because of concerns about dental X-rays, and
- 23 respondents, 2.2%, reported that they had avoided or delayed dental visits because of concerns about dental X-rays.

While concern about dental X-rays was relatively high at a little over 40%, the translation of that concern into either refusal of dental X-rays, or avoidance or delay of dental visiting was low. However, even a rate of only 2 to 3% represents over a quarter of a million Australian adults taking measures to avoid dental X-rays due to their concerns about them.

5.2 Discussion

This chapter has examined some public perceptions about the use of X-rays in dentistry. The framework presented in Figure 5.1 does not attempt to fully explain the intricacies of the problem, and has been used to sensibly organise the questions asked in this survey. There are likely to be other treatment-related perceptions which lead to a concern about dental X-rays, as well as many other factors totally independent of treatment experiences, such as media coverage, which will also contribute to a person's level of concern. This is evidenced by 31.5% of persons who have never had a dental X-ray, and therefore have no treatment experiences, expressing concern. At the outcome end of the framework, there may also be many other behavioural changes which people undertake as a result of their concern. While it is unlikely that the dental profession could eliminate all levels of public concern and its consequential behavioural change, measures could be taken to reduce negative perceptions of treatment experience, thereby reducing overall levels of concern, and subsequently reducing levels of behavioural change. More explanation of precautionary measures may relieve an individual's concern, as may a further explanation of why a dental X-ray is necessary.

Overall levels of concern about X-rays in the dentate Australian population were relatively high at around 40%. Positive treatment perceptions were reported by 55%, and negative perceptions by 21% of persons. Despite the high level of concern, behavioural change due to that concern was low at around 2–3%. Persons more likely to report a negative perception of treatment were more likely to be male, aged 25–44 years, insured, usually visit a dentist for a problem, and to speak a language other than English.

6 Perceptions on health risk from mercury and dental amalgam restorations in Australia

6.1 Introduction

Each year approximately 11 million Australians make some 18 million dental visits. Caries, failure of past restorations and cuspal fracture are among the six most frequent diagnoses of the main reason for those visits (Brennan et al., 2000). These diagnoses lead to restorative services being those most frequently provided (Brennan et al., 1998).

The total number of restorative services provided in a year has increased then slightly decreased across the period 1983/84 to 1997/98. The total number increased from 10.6 million in 1983/84 to peak at 14.9 million in 1993/94, then decreased to 12.4 million in 1997/98. Restorative services include direct restorations using dental amalgam, composite resins and glass ionomer cements, and indirect restorations involving gold, porcelain bonded to metal and porcelain. Historically dental amalgam has been the most frequently used restorative material. However, the total number of dental amalgam restorations has decreased over the same period from 6.2 million in 1983/84 to 3.5 million in 1997/98 (Brennan et al., 1998; D Brennan, personal communication, May 1998).

While the number of dental amalgam restorations provided has decreased, public comment on the safety or risks of dental amalgam has increased. The media has not infrequently given coverage to claims and counter-claims on dental amalgam, potentially shaping rather than reflecting the public's perceptions. Both those convinced of the safety and those concerned or convinced of the risks of dental amalgam have claimed the high ground of public support. Yet, little has been known, anywhere in the world, and certainly in Australia, about the public's perception of mercury and dental amalgam in dentistry.

Therefore, the purpose of the present study was to facilitate a rational, objective discussion about mercury and dental amalgam in dentistry by documenting and analysing current public perceptions and their possible consequences for dental care.

The specific aims of the present study were to:

- determine the degree to which dental amalgam is perceived as a health risk;
- examine variation in risk perception of dental amalgam by individual sociodemographic characteristics; and
- examine whether risk perception may be associated with modified dental care behaviour.

6.2 Methods

The study was conducted as a nested survey associated with the 1995 National Dental Telephone Interview Survey. This telephone interview survey collected data from a sample stratified by the eight States and Territories of Australian household residents aged 5+ years. A total of 5,101 interviews were completed with a response rate of 69.8%.

At the completion of the telephone interview, a computer program randomly selected 1 in 3 (1,185) persons aged 18-years or more for a follow-up nested survey. Address details were checked and each selected adult was sent a mailed questionnaire. After three weeks, a reminder card was sent to those persons who had not yet responded. A second and third approach, consisting of a letter and replacement questionnaire was made subsequently at two-weekly intervals. A total of 1,010 responses to the mailed questionnaire were received, a response rate of 85.2%.

A series of items in the mailed questionnaire related to mercury and dental amalgam restorations. These were presented as statements to which respondents answered yes, no or don't know.

The statements were:

- I am concerned about mercury in fillings;
- I have asked to have fillings that don't contain mercury;
- I have avoided dental treatment because of mercury in fillings; and
- I have had fillings replaced because they contain mercury.

Responses to the mailed questionnaire were coded, prepared and linked by personal identifiers with the data from the telephone interview survey to produce the data set used in this analysis. Cases within the data set were re-weighted by the population age and sex distribution within the eight State and Territory strata across Australia.

6.3 Results

The 1,010 respondents had an age range of 18–90 years, with a mean age of 47 years. Slightly more than half, 58.3%, were female. Most, 71.4%, were residents of a capital city in one of the eight States or Territories. Only 9.9% of the respondents were edentulous, leaving 90.1% as dentate adults. These dentate adults are the subjects for all further analyses.

Over one third, 37.5%, of dentate adults were concerned about mercury in fillings. However, only 16.2%, or less than half the percentage of those concerned, had asked to have fillings that don't contain mercury. Few, 5.8% of dentate adults, had avoided treatment because of mercury in fillings and a similar percentage, 4.7%, had had fillings replaced because they contained mercury.

The associations between concern about mercury in fillings and selected sociodemographic variables are presented in Figure 6.1. Concern about mercury in fillings was significantly associated with age and number of missing teeth. Younger and late middle-aged adults and those missing no teeth had significantly higher percentages of responses expressing concern. No significant differences were found in the percentage of dentate adults reporting concern by sex, education or income.

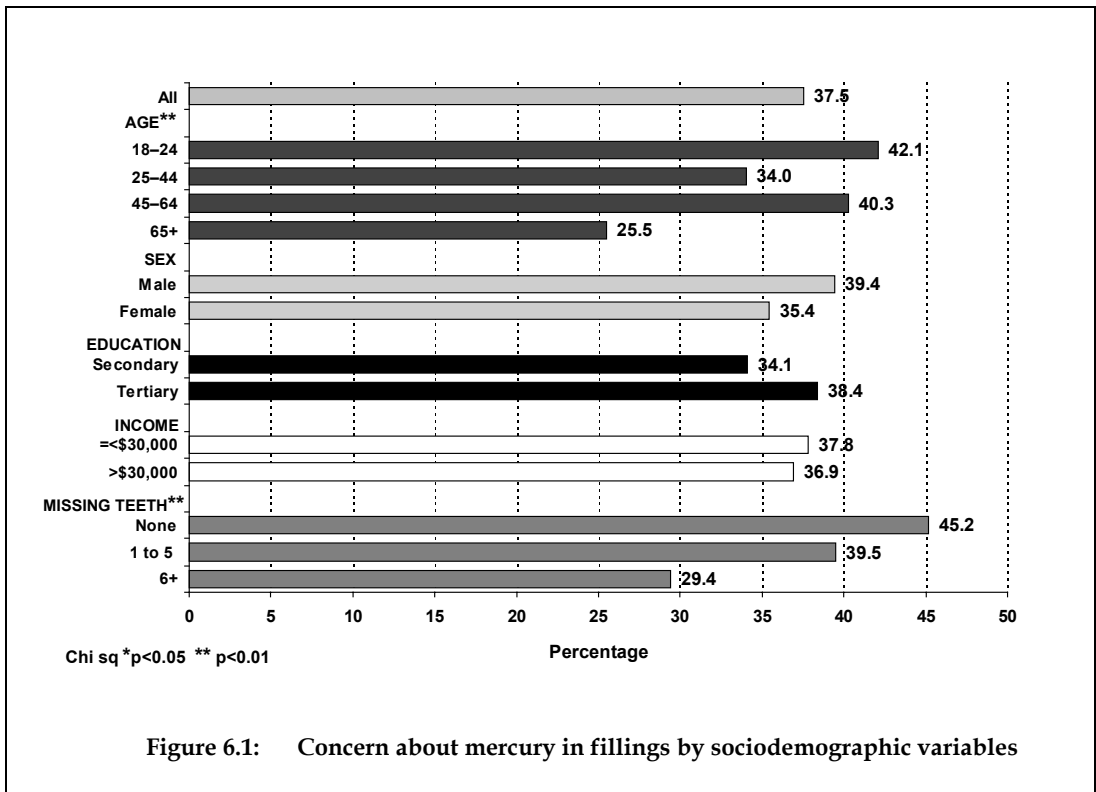


Figure 6.1: Concern about mercury in fillings by sociodemographic variables

Figure 6.2 presents the associations between asking to have fillings that don't contain mercury and selected sociodemographic variables. A significantly higher percentage of female dentate adults had asked to have fillings that didn't contain mercury. No significant differences in asking to have fillings that don't contain mercury were found by age, education, income or number of missing teeth.

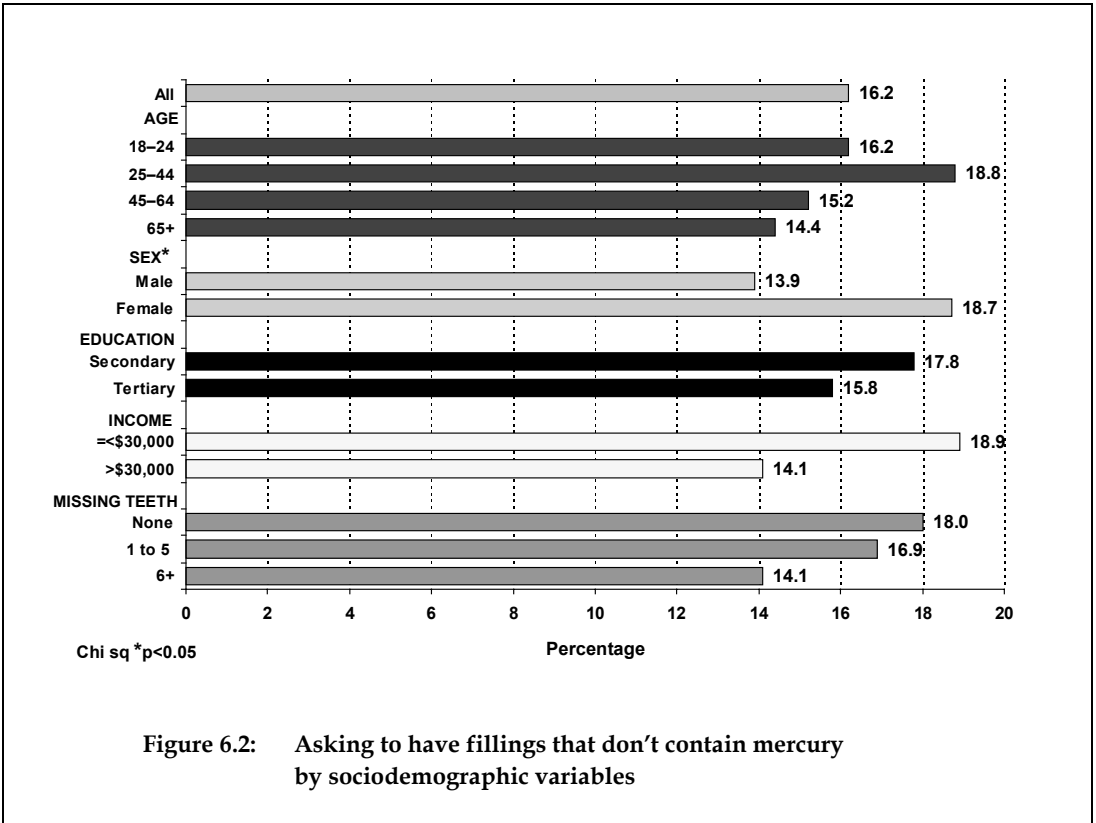
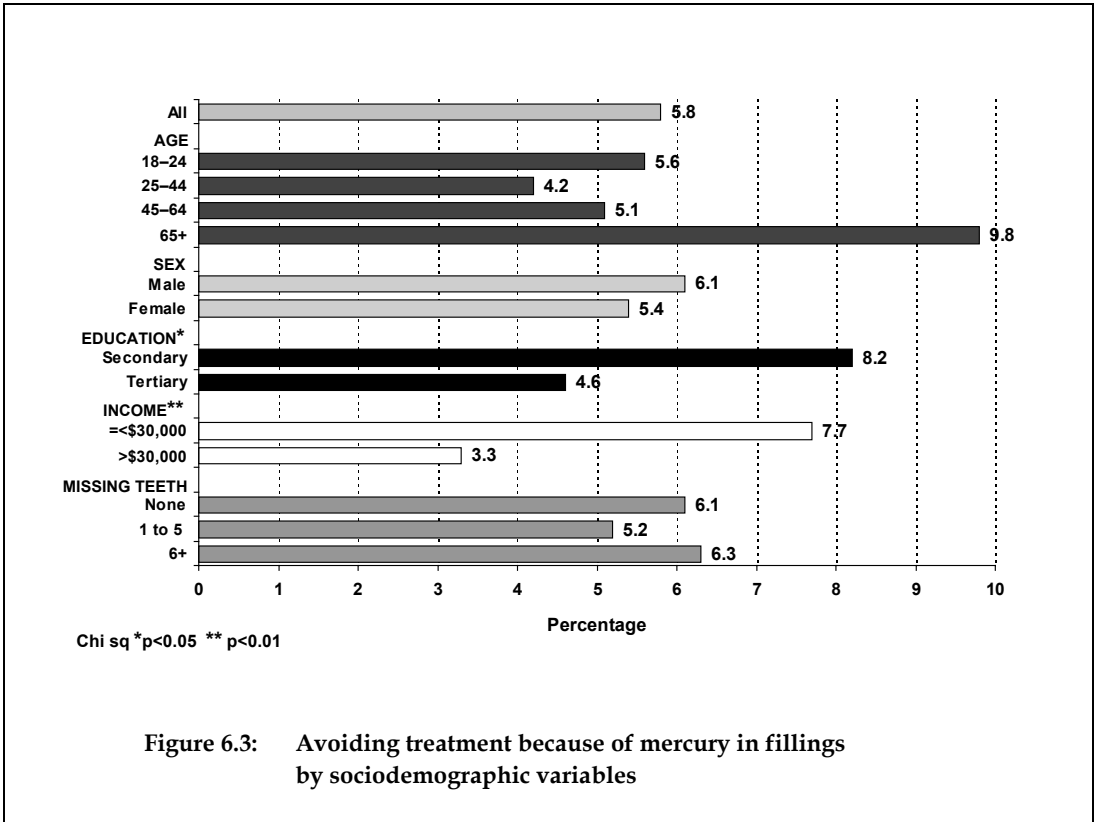
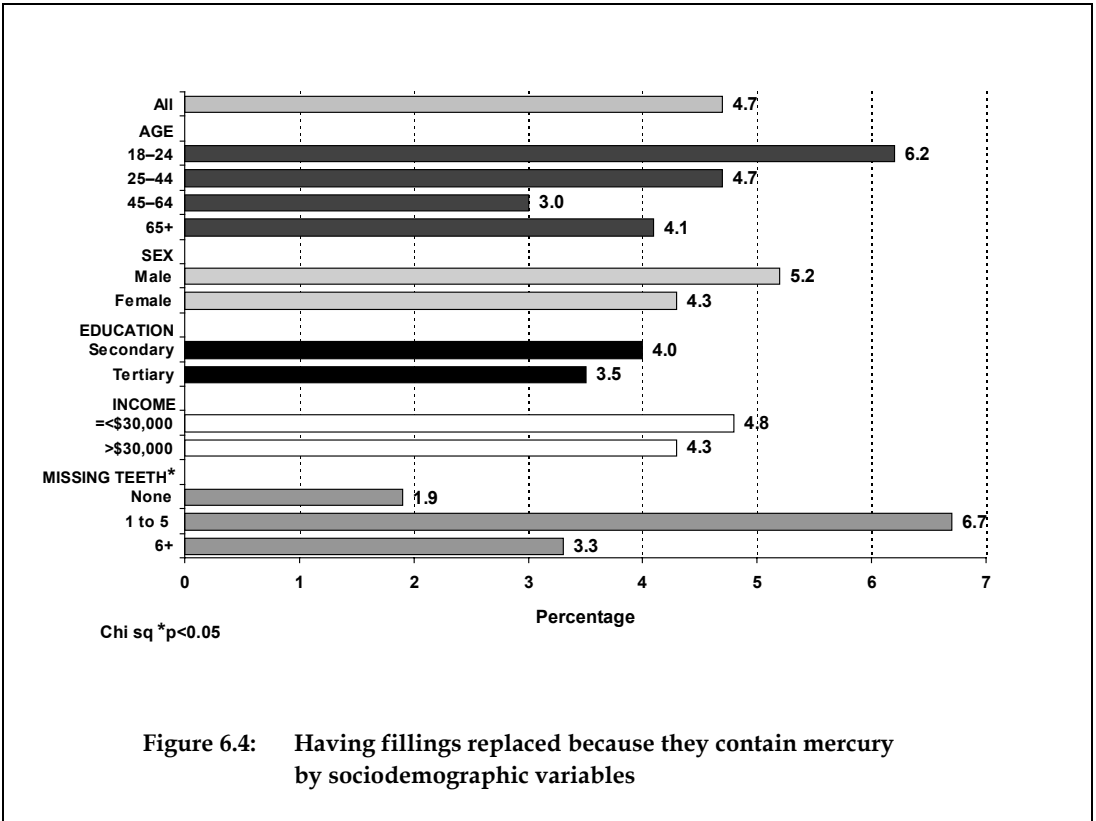


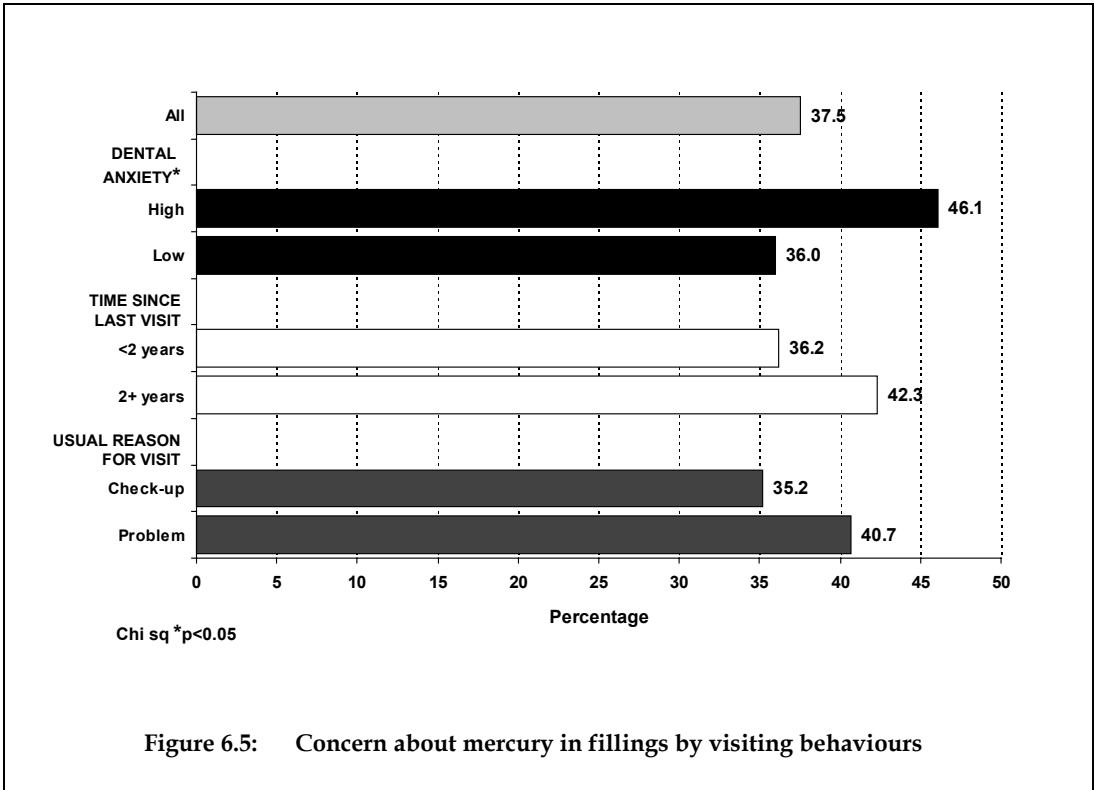
Figure 6.3 presents the associations between avoiding treatment because of mercury in fillings and selected sociodemographic variables. Avoiding treatment because of mercury in fillings was significantly more frequent among dentate adults with lower education and income. The percentage of dentate older adults who reported avoiding treatment because of mercury in fillings was high, but there was no significant association with age. Also no significant differences in the percentage reporting avoiding treatment were found with sex or number of missing teeth.



The associations between having had fillings replaced because they contain mercury and selected sociodemographic variables are presented in Figure 6.4. Having had fillings replaced because they contain mercury was significantly associated with the number of missing teeth. Those dentate adults with 1–5 missing teeth had the highest percentage of respondents reporting filling replacement. Dentate adults with many missing teeth and no missing teeth had much lower percentages of respondents reporting filling replacement. A higher percentage of dentate young adults reported filling replacement, but the association between age and filling replacement was not significant. Nor was filling replacement associated with sex, education or income.



Further consequences of these perceptions were examined through associations with visiting behaviour. The visiting behaviours examined were dental anxiety, time since last visit and usual reason for visiting. Figure 6.5 presents the associations between concern about mercury in fillings and visiting behaviour. Concern about mercury in fillings was significantly associated with dental anxiety. Causality may be hypothesised in either direction. Adults anxious about visiting may be more anxious about mercury, or concern about mercury in fillings may add to dental anxiety. No significant association was found with time since last visit or usual reason for visiting.



The associations between asking to have fillings that don't contain mercury and visiting behaviours are presented in Figure 6.6. Asking about having fillings that don't contain mercury was significantly associated with time since last visit. Those who have visited more recently had a higher percentage reporting asking about fillings that don't contain mercury. No significant association was found with dental anxiety or usual reason for visiting.

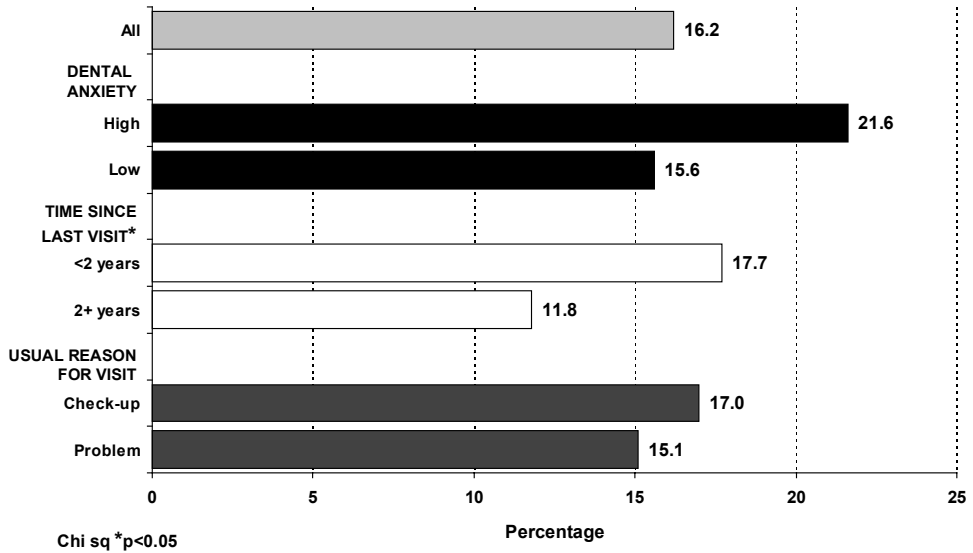


Figure 6.6: Asking to have fillings that don't contain mercury by visiting behaviours

Figure 6.7 presents the associations between having avoided treatment because of mercury in fillings and visiting behaviours. Avoiding treatment because of mercury in fillings was significantly associated with dental anxiety. A higher percentage of those with high anxiety levels reported they avoided treatment because of mercury in fillings. The lack of significant association between avoiding treatment and either time since last visit or usual reason for a visit supports perceptions of mercury and dental amalgam being just part of wider issues in dental anxiety and visiting.

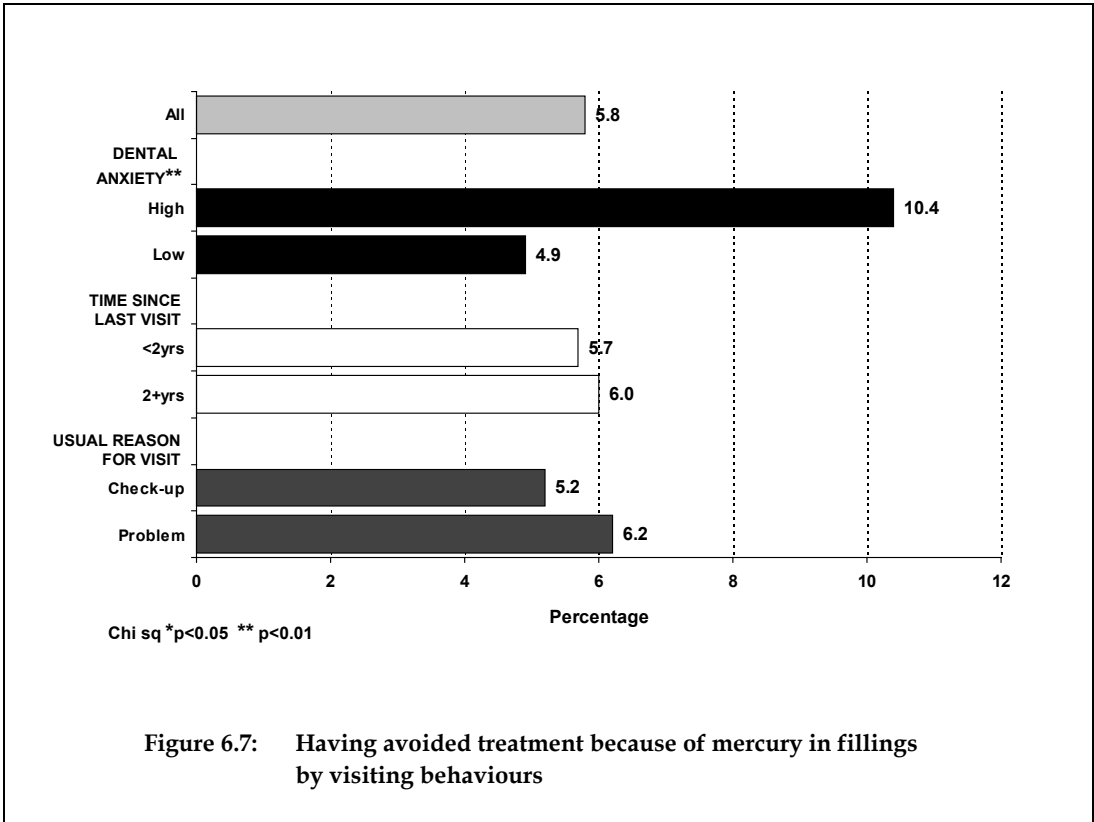


Figure 6.8 presents the associations between having had fillings replaced because they contain mercury and visiting behaviours. Replacement of fillings because they contain mercury was significantly associated with time since last visit and usual reason for visiting. Dentate adults who visited more recently and usually for a check-up reported higher percentages having had fillings replaced because they contain mercury. There was no significant association with dental anxiety.

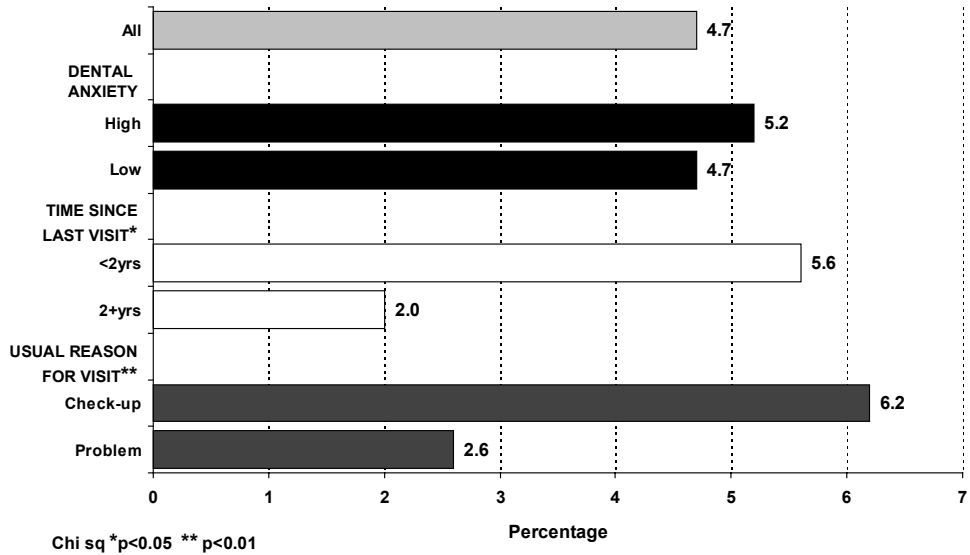


Figure 6.8: Having had fillings replaced because they contain mercury by visiting behaviours

6.4 Discussion

Over one-third of dentate adults were concerned about mercury in fillings. Concern was highest among young, and late middle-aged, adults and those with few or no missing teeth. These are groups likely to have had more recent experience of dental amalgam restorations. Possibly greater direct experience is linked to more individual uncertainty about amalgam fillings being expressed as a concern. Only about 40% of those concerned had also asked to have fillings that don't contain mercury. Given the percentage of those with concern who would have visited in the last year, opportunity to ask about fillings that don't contain mercury may have been restricted. However, the minority asking about fillings that don't contain mercury may also reflect a reluctance to raise issues with dentists, emphasising that the dentist-patient relationship is still one that gives rise to passive or cooperative patients rather than patients who fully participate in clinical decisions. Avoiding treatment because of mercury in fillings was reported by 1 in 20 dentate adults. The percentage was higher among those with lower education and income. This may be evidence of a different perception of the benefit-risk relationship, or responses on avoiding treatment because of mercury in fillings may be confounded by more pervasive barriers to the use of dental services. Confounding with more pervasive barriers to use seemed likely because concern was not significantly associated with time since last visit. The association between having fillings replaced with number of missing teeth may reflect an opportunity bias linked to a necessary disease experience and requirement for fillings at one extreme through to the requirement for fillings being diminished by the extraction of previously filled teeth.

While concern over mercury in amalgam fillings is quite prevalent, there appear to have been only limited consequences for dental care. This situation may arise from individual assessment of benefit-risk relationships, where well understood benefits of dental amalgam as a material to restore form and function are balanced against uncertain risks. A benefit-risk trade-off has been encouraged by the dental profession, not only in the absolute sense in relation to amalgam fillings, but also in a comparative sense against other direct restorative materials.

Despite the seemingly limited consequences in terms of behaviour for most individuals, it might be argued that many individuals' concern may be going unaddressed, thereby diminishing the dentist-patient relationship and creating a hidden issue for dentistry. Consumer sovereignty, informed consent and dental litigation are among the issues demanding that the dental profession inform and empower their patients on issues like mercury and dental amalgam in dentistry. Mercury and dental amalgam are clinical care issues in which individual patients have a right to benefit from available scientific knowledge and to participate in decision making.

For the dental profession to better inform individual patients, there needs to be:

- a greater emphasis on research relevant to the release of mercury from dental amalgam and the health effects of low levels of mercury intake, the efficacy of dental amalgam and other direct restorative materials, and the cost-effectiveness of different materials;
- more detailed information available to dental students and the practising profession; and
- a more proactive campaign to inform the public of reasonable assessments of benefits and risks.

It is ironic that as the use of dental amalgam diminishes – due to changes in caries patterns and stage at which it is diagnosed, as well as new materials and approaches to managing caries – public concern, at least as evidenced by media attention, may be rising. The public needs to be informed about such general trends as they provide the context for discussion and some solace that, regardless of benefit-risk relationships, dental amalgam fillings are rapidly becoming a minor aspect of dentistry.

6.5 Conclusions

1. Just over one-third (37.5%) of the dentate adult population in Australia reported concern about mercury in fillings. Concern was greatest among young, and late middle-aged, adults and those with no or few missing teeth.
2. Less than half this percentage (16.2%) had asked to have fillings that don't contain mercury. Asking to have fillings that don't contain mercury was more frequent among women.
3. Far fewer, approximately 1 in 20, had avoided treatment because of mercury fillings or had had fillings replaced. Those with lower education and income levels more frequently avoided treatment because of mercury fillings.
4. While concern over mercury in fillings may have had only limited consequences for dental care behaviour, it is yet another pressure on the dental profession to inform and empower the public in decisions on its dental care.

6.6 Acknowledgement

This chapter has drawn upon some material previously presented in:

Thomson WM, Stewart JF, Carter KD & Spencer AJ (1997). The Australian public's perception of mercury risk from dental restorations. *Community Dent Oral Epidemiol* 25:391–5.

6.7 References

- Brennan DS, Spencer AJ & Szuster FSP (2000). Service provision patterns by main diagnoses and characteristics of patients. *Community Dent Oral Epidemiol*. 28:225–33.
- Brennan DS, Spencer AJ & Szuster FSP (1998). Service provision trends between 1983–84 and 1993–94 in Australian private general practice. *Aust Dent J* 43:331–6.

7 Public perception of cross-infection control in dentistry

7.1 Introduction

One of the most dramatic changes that has occurred in the practice of dentistry in the past 10–15 years has been the widespread increase in the use of cross-infection control procedures. From the viewpoint of the patient this change is manifest in the use by the dentist of personal barrier techniques – the wearing of gloves, masks and protective eyewear.

In the two-year period from 1986 to 1988 the American Dental Association reported a trebling of the number of dentists using gloves routinely.

In Australia a survey of general dental practitioners by Lange et al. (1996) in Queensland found 84.6% wore gloves, 55.1% wore masks, and 77.6% wore eyewear.

The Australian Dental Association, public dental services and peak health bodies such as the National Health and Medical Research Council (NHMRC) have been at the forefront of change in Australia. However, it must be acknowledged that the media, legislatures, and pressure from patients have also contributed to the impetus for change.

The HIV/AIDS epidemic which initiated this process has received extensive media coverage and has increased the awareness of the public about the potential risk of cross-infection to a substantial degree.

In response, many surgeries seek to reassure patients that their sterilising practices are adequate by displaying in their waiting rooms evidence of compliance with particular standards. The reaction of the public to the issue in Australia is not known.

However, it should be noted that some of the 'hype' about the risk of infection from dental and other health procedures has been sensationalised so that perceived risks may be exaggerated and may create a barrier to use of dental services for some persons.

Studies in the United States and the United Kingdom have sought to discover the extent of patients' knowledge about cross-infection control and attitudes towards use of various types of barrier protection in particular. In 1988 Gerbert and coworkers surveyed public concern in the United States about HIV/AIDS and dentistry, and found that 30% of users of dental services had thought about the possibility of contracting HIV through dental treatment; of those, two-thirds expressed concern about it. The rate of concern was high amongst very frequent attendees, anxious patients and those living in areas of high AIDS prevalence. Most respondents thought that barrier control techniques should be used by the dentist.

Two surveys in the United Kingdom found that most people preferred their dental practitioner to wear gloves.

However, one third of the Scottish respondents to a survey in 1990 were ignorant about the sterilisation methods used in dentistry, with there being some confusion about the reasons for wearing gloves, reuse of gloves and other issues.

A 1988/89 survey of regular patients of an industrial dental service in Liverpool in the United Kingdom rated dentistry as posing a lower HIV transmission risk than blood transfusion, operating theatres and acupuncture, but risk from dental practice was rated higher than that of general medical practice.

The study reported here is the first population-based survey of Australian attitudes to cross-infection control in dentistry.

7.2 Aims

This study aimed to clarify whether particular groups in Australia differ in their perception of cross-infection control in dentistry.

It sought to determine whether routine dental attendees differ in their perception of cross-infection control as compared with those who only seek care when they have a problem and whether some people are deterred from seeking dental care because of their concern.

7.3 Methodology

The data presented in this chapter were collected as part of a supplementary mailed questionnaire to a sample of respondents to the 1995 National Dental Telephone Interview Survey.

Responses to these questions were received from 1,010 persons of the 1,185 contacted, a response rate of 85.2%.

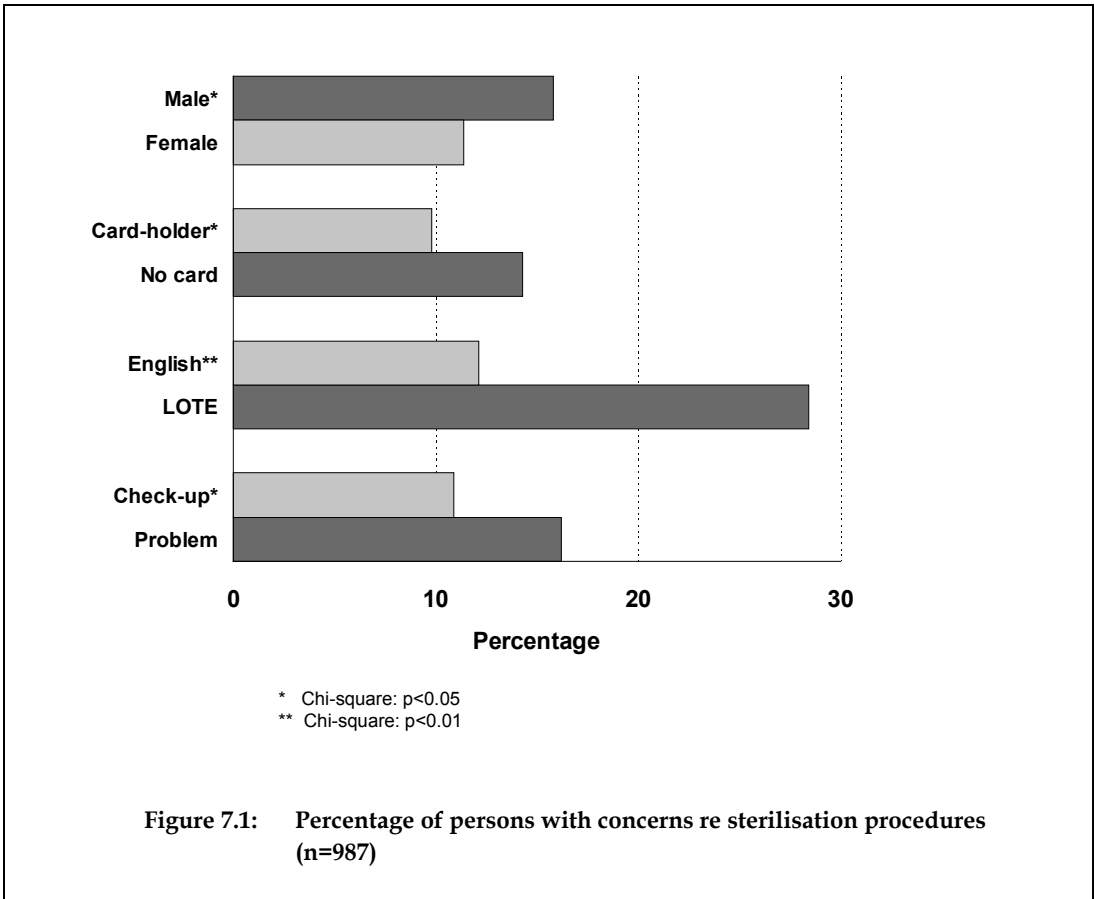
There were four statements to which participants were asked to respond. The possible responses were yes, no and don't know:

- I have concerns about the procedures used by my dentist to sterilise instruments.
- I have avoided or delayed dental visits because of the risk of infection from dental equipment.
- My dentist wears rubber gloves when treating patients.
- My dentist wears a mask when treating patients.

7.4 Results

Concerns about procedures used in sterilisation were expressed by 13.3% of respondents.

Figure 7.1 presents the results of the bivariate analysis of those who reported concern by sociodemographic variables. Concern was reported by more males than females, more of those who do not hold a health card than those with a card, a greater percentage of persons who spoke a language other than English (LOTE) at home and a greater percentage of those who usually visit a dentist because of a problem. Factors such as age, income, educational level, dentate status, time since last visit and place of last visit were not significant.



The impact and significance of such concern can be measured to some extent by the degree to which people avoid or delay dental care due to the perceived risk from cross-infection.

Figure 7.2 shows the results of the bivariate analysis of those who reported having avoided or delayed dental visits due to risk of infection from dental equipment, by sociodemographic variables. Overall, 3.6% of persons reported having avoided visits because of infection risk.

In this case more females than males had avoided visiting, as had a greater proportion of those who spoke a language other than English at home than English speakers, more of those who had not made a dental visit in the past two years than those who had, more of those who visited at clinics other than private practice and more of those who did not hold dental insurance. Other factors were not significant.

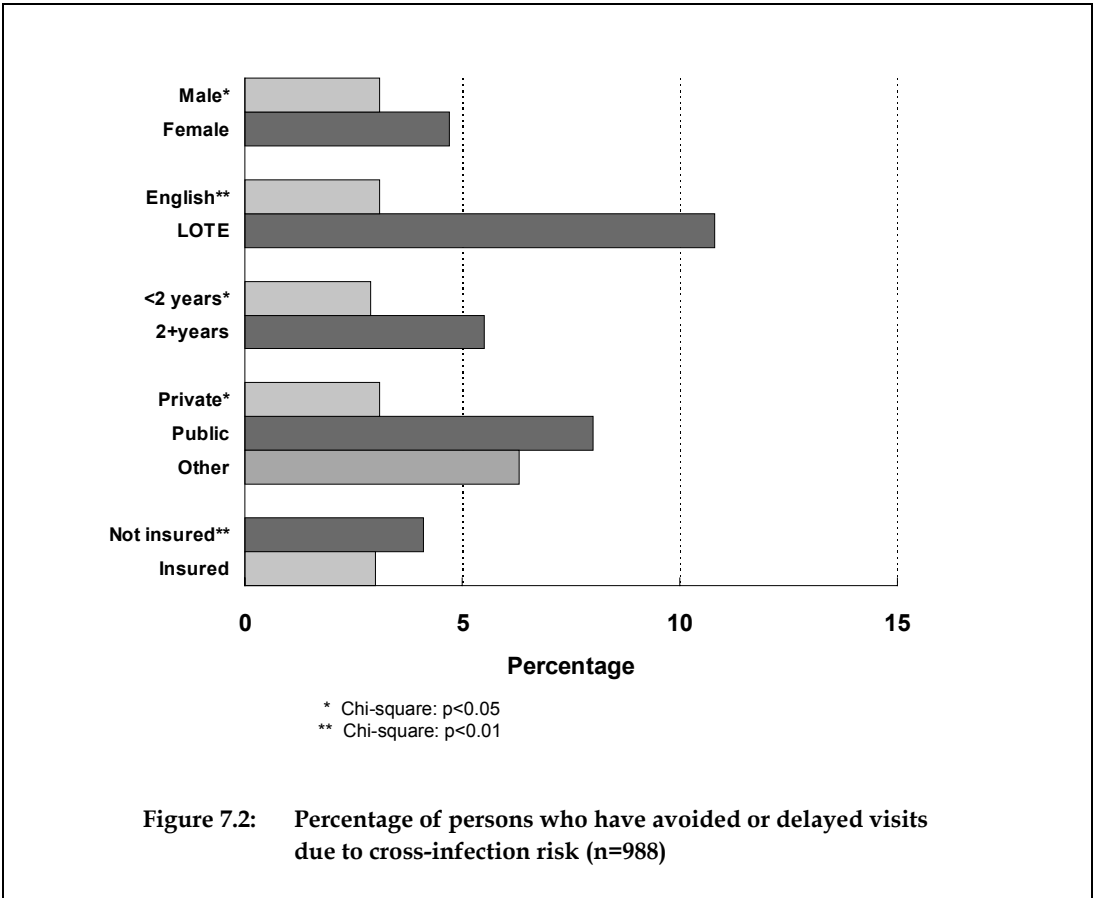


Table 7.1 shows the percentage of persons who reported that their dentist wore rubber gloves when treating patients. A total of 81.8% of persons reported use of gloves, but this was significantly lower amongst males than females, those 65 years and over than other age groups, those on lower incomes than higher incomes, holders of health cards than non-holders, edentulous persons than dentate, those whose usual reason for a visit is for a problem than those who visit for a check-up, those who have not visited in the previous two years than more recent visitors, and those whose last visit was not to a private clinic.

Table 7.1: Recall of dentist’s use of personal barriers – wearing of rubber gloves (n=982)

	Percentage	p value
Gender		
Male	77.5	<0.01
Female	84.9	
Age group		
18–34 years	80.7	<0.01
35–44 years	86.4	
45–64 years	84.1	
65+ years	73.3	
Annual household income		
\$30,000+	85.7	<0.01
<\$30,000	76.5	
Card-holder status		
Card-holder	71.8	<0.01
Non-card-holder	84.6	
Dentate status		
Dentate	83.5	<0.05
Edentulous	67.3	
Usual reason for visit		
Check-up	88.5	<0.01
Problem	75.2	
Time since last visit		
<2 years	90.7	<0.01
2+ years	60.6	
Place of last visit		
Private	84.0	<0.01
Public	71.4	
Other	62.5	
All	81.8	

Table 7.2 shows the percentage of persons who reported that their dentist wears a mask when treating patients. Overall, a lower percentage of persons, 67.7%, reported that their dentist wears a mask than reported use of rubber gloves. This was significantly lower amongst both the oldest and youngest age groups, those in the lower income group, card holders, edentulous persons, those who usually visit for a problem than those who visit for a check-up, those who have not made a dental visit in the previous two years compared with those who have, and users of dental technicians or other dental care providers.

Table 7.2: Recall of dentist's use of personal barriers - wearing of mask (n=978)

	Percentage	p value
Age group		
18–34 years	64.6	<0.01
35–44 years	74.0	
45–64 years	71.0	
65+ years	58.8	
Annual household income		
\$30,000+	74.2	<0.01
<\$30,000	59.9	
Card-holder status		
Card-holder	56.8	<0.01
Non-card-holder	71.0	
Dentate status		
Dentate	69.9	<0.05
Edentulous	48.5	
Usual reason for visit		
Check-up	77.2	<0.01
Problem	58.7	
Time since last visit		
<2 years	75.8	<0.01
2+ years	48.3	
Place of last visit		
Private	69.0	<0.05
Public	67.0	
Other	43.8	
All	67.7	

People who reported that they were concerned about cross-infection control were more likely to also report that they had delayed dental visiting because of their concern, with 13.7% of those with concerns reporting not visiting for infection control reasons compared with 1.8% of those who had no concern. In addition, of those who reported that they would be uneasy, afraid, or very frightened if they had an appointment the next day, a greater proportion said that they had delayed or avoided care due to risk of infection (Figure 7.3).

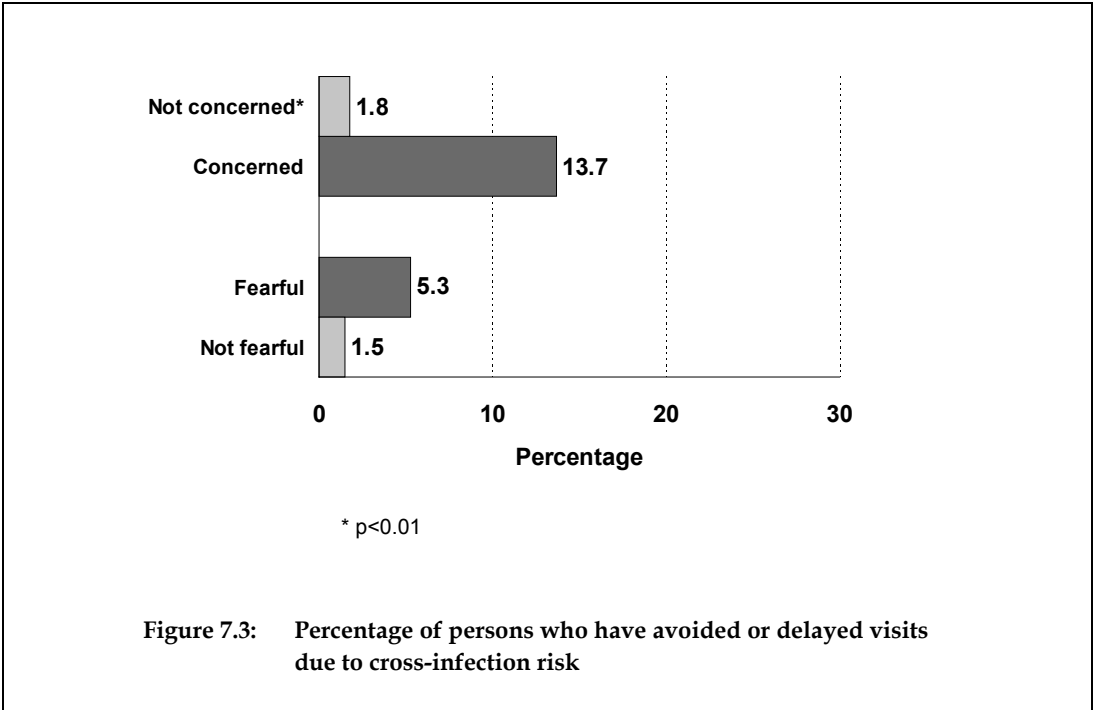


Table 7.3 shows the outcome of the logistic regression analysis for being concerned about the procedures used by the dentist to sterilise instruments. Individuals who usually visit for a problem had 1.28 times the odds of being concerned compared with those who usually visit for a check-up, and those who speak a language other than English at home had 1.78 times the odds of being concerned about sterilisation procedures compared with English speakers. Other factors were not significant.

Table 7.3: Logistic regression model for having concerns about procedures used by my dentist to sterilise instruments

	Odds ratio	95% CI lower	95% CI higher	Reference group
Usually visit for problem	1.28	1.06	1.55	Usually visit for check-up
Speak language other than English	1.78	1.35	2.34	Speak English at home

Table 7.4 shows the outcome of the logistic regression analysis for having avoided or delayed a dental visit because of the risk of infection from dental equipment. Females had 1.79 times the odds of having avoided visiting compared with males. Other factors were not significant.

Table 7.4: Logistic regression model for having avoided or delayed dental visits because of risk of infection from dental equipment

	Odds ratio	95% CI lower	95% CI higher	Reference group
Female	1.79	1.10	2.90	Male

7.5 Discussion

This study found that 13.3% of Australians express concern about dental sterilisation procedures; this is a considerably lower figure than has been found in British or United States studies which report figures of between 20 and 30%.

The findings in a survey such as this may be significantly influenced by timing, particularly in relation to sensationalised reporting in the media. The British and United States studies were conducted in the late 1980s, approximately seven years prior to this survey and at a time when media coverage of HIV/AIDS was more intense. Prevalence of disease (and other perceptions of risk) may also influence levels of concern. Australia has lower levels of prevalence of HIV/AIDS than either the United States or the United Kingdom.

In the six-month period prior to this 1995 study, the Australian Dental Association reported that there were three separate episodes of reporting on dental cross-infection control in the Australian media, two negative and one positive. In addition, since 1988/89 the dental profession has taken the practice much more seriously and been open about their procedures, to the extent of advertising accreditation for infection control in public areas such as waiting rooms so that patients are aware of the measures undertaken. All these factors would contribute to a diminution of public concern.

The fact that only a small minority of persons (3.6%) in Australia report having avoided or delayed visiting for dental care due to their perception of risk of infection is reassuring. In the only previous report on avoidance of dental care due to concerns about cross-infection control, Horowitz and coworkers in 1992 found that 9.6% of a sample of attendees to a private practice in the United States admitted such behaviour. The estimate from this study would be closer to the population estimate for Australia and the low figure compares with the one per cent of persons who volunteered their dissatisfaction with infection control procedures through comments to open-ended questions, such as:

- "The wearing of gloves by the dentist, I suspect these are not always changed between patients."
- "I remain concerned that my dentist and other dentists may not have the sterilising equipment to prevent this transference of blood particles from one patient to the next."

Females were more likely than males to have avoided or delayed dental care due to their perception of the risk of infection. This may be due to their higher levels of reported fear and their reported tendency to possess more health knowledge than men. It is reassuring that only 13.7% of those who stated they had concerns about cross-infection control, reported that they avoided or delayed dental visiting because of that concern. Of the remaining 86.3% who visited, despite their concern, the concerns for their dental health in relation to not visiting must have outweighed their concerns about the risks from cross-infection.

The multivariate findings give an indication of the profile of public concern about this issue in the community. The greater concern among those who use dental services when they have a problem may reflect both lack of familiarity with routine dentistry and the extra stress associated with the receipt of emergency treatment. The greater concern amongst those who speak a language other than English at home may also reflect a lack of

familiarity, but possibly also a lack of information on cross-infection control in languages other than English.

One may argue that those who delay or avoid treatment may rationalise their action as a response to particular situations; certainly those who reported higher levels of apprehension about dental care also have higher rates of avoidance because of perceived risk of infection.

Concern in the 'problem visitors' and the LOTE group raises issues in relation to communication and familiarisation with procedures which could be addressed. The will and methods for communicating sufficient information to address and alleviate such concern in ways that are appropriate is a generic issue which is important in infection control. Do we in the dental profession know enough about effective communication techniques for health promotion? Equally how do we find the time and motivation to make sure we get it right?

The NHMRC recommends that health establishments should display a written statement or poster indicating their compliance with infection control standards, to improve public confidence in the health care system. One wonders whether that is enough.

In terms of dentists' use of personal barrier measures, such as gloves and masks, as recalled by the respondents, this study found that four out of five respondents report that their dentist wears rubber gloves and that two-thirds report the use of a mask. As both are in current recommendations for cross-infection control that may raise some concerns. However, in relation to gloves the figure was over 90% amongst recent attendees, which is close to the 87% found in a United States study. Secondly, there is some evidence that the patient's recall may not be very accurate in this area, particularly in relation to the wearing of masks.

Comparisons between Australian and overseas studies may have limited relevance in relation to infection control, as the prevalence of HIV/AIDS, Hepatitis C and other such diseases differs markedly between countries. In Australia, where the prevalence of blood-borne infections is relatively low, and there have been effective preventive measures such as needle exchanges, it is not surprising to have comparatively low levels of concern and avoidance of dental care due to risk of cross-infection.

Another consideration is that in the early stages of the HIV/AIDS virus, there were high levels of fear and misunderstanding in the community; as time passes and people know more about the diseases and the levels of risk, levels of concern about health treatment may also diminish. However, despite the relatively low percentage figures, in reality that translates to a significant number of persons; for instance, half a million adults have avoided or delayed visiting because of concern about risk of infection from dental care. Clearly, the effort needs to be maintained and, if possible, concerned persons identified and their concerns alleviated.

In addition, if and when other infections arise, the lessons learnt from recent years will need to be remembered.

7.6 Conclusions

Levels of public concern in Australia about cross-infection control are lower than found in previous overseas studies.

While the levels are low, still a substantial number of adults avoid or delay seeking care due to perceived risk from cross-infection in dentistry

The dental profession has an important role in communicating information to minimise undue public concern and avoidance of dental care.

7.7 Acknowledgement

This chapter has drawn upon some material previously presented in:

Thomson WM, Stewart JF, Carter KD & Spencer AJ (1997). Public perception of cross-infection control in dentistry. *Aust Dent J* 42:291-6.

7.8 References

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Fears and Phobias

8 Dental anxiety in Australia

What is dental anxiety? All dentists probably have an intuitive grasp of the concept, but finding an adequate definition in the literature is actually very difficult. Dental anxiety has been defined as a vague, unpleasant feeling accompanied by the sense that something unpleasant will occur in the course of getting dental care (AJ Spencer, personal communication). It is rather less specific than dental phobia.

The origins of dental anxiety are poorly understood, but they can be conceptualised as being either 'endogenous' or 'exogenous' (Weiner & Sheehan, 1990). Examples of exogenous stimuli are: early dental episodes which may be unpleasant enough to provide an aversive conditioning experience; vicarious learning, whereby the experiences of others observed first hand or recounted later (and embellished, no doubt) initiate an individual's dental anxiety; and at a less immediate level, the passing-on of beliefs about dentistry from family and community members. Endogenous dental anxiety can arise as a facet of the individual's personality type, or as part of a coexisting general anxiety syndrome.

Why should the profession be concerned about dental anxiety? It has been reported to impact upon both dental status and the use of dental services, and is associated with a range of adverse dental health behaviours and outcomes in cross-sectional studies which have been conducted since the early 1980s (Hallstrom & Halling, 1984; Locker & Liddell, 1992). Recent reports from longitudinal studies indicate that it is also less stable than initially thought, particularly among adolescents (Locker & Liddell, 1995; Thomson et al., 1997).

Dental anxiety may be a component in a 'cycle of dental disadvantage' among individuals who are afflicted by it. Their tendency to avoid dental care acts to exacerbate their dental problems, in that the infrequent occasions on which dental visiting does occur are likely to be emergency situations which require immediate resolution, and are most likely stressful for both patient and dentist. It follows that dentally anxious individuals would be more likely to experience marked social impact from impairing oral conditions; that is, not only are they more likely to avoid care, they are more likely to need it, and to suffer the dental and social consequences of not seeking it (Thomson et al., 1996).

Dental anxiety is associated with the avoidance of regular dental care. Recent evidence of the adverse dental health consequences of such avoidance among Australians means that the estimation of the prevalence and severity of dental anxiety is of dental public health importance in this country. The prevalence of dental anxiety in the Australian population is unknown, although Francis and Stanley's 1990 review of data from various qualitative and quantitative data sources tentatively estimated it to be between 10 and 14%.

The aims of this study were: (1) to obtain precise estimates of the prevalence and severity of dental anxiety; and (2) to examine the sociodemographic associations of dental anxiety among Australian adults.

The sampling and other methods used in the postal follow-up to the 1995 National Dental Telephone Interview Survey have been described in the chapter on patient mobility. Self-reported dental anxiety was measured using the 4-item Corah Dental Anxiety Scale (DAS) (Corah, 1969), which has a long history of use and validation in other populations and settings.

In all, 1,010 responses were received. The 50 people (13 dentate and 37 edentulous) for whom a DAS could not be computed (because of failure to complete all four items) were omitted from subsequent analyses.

The prevalence of dental anxiety (defined by a DAS score of 13 or more) in the sample was 14.9%, with overall severity represented by the mean score of 9.04 (sd, 3.45). Dentate and edentulous people did not differ in their prevalence or severity of dental anxiety. Weighting of each case was used to arrive at a dental anxiety prevalence estimate of 13.7% for the Australian adult population (dentate and edentulous people combined), with a mean severity score of 8.92 (sd, 3.21). It is noteworthy that this falls within the 10–14% range estimated by Francis and Stanley (1990).

Subsequent findings are unweighted, and are reported for dentate respondents only. The prevalence and severity of dental anxiety were greater among women than among men. This gender difference may be due to either (1) real differences in anxiety levels between the genders, (2) a greater readiness among females to acknowledge feelings of anxiety, or perhaps both factors acting in combination. Respondents aged 35–44 years had the most severe dental anxiety of the four age groups, with people aged 65+ having the lowest.

There were interesting associations between high dental anxiety and dental service use. Individuals who visited dentists only when they experienced dental problems had twice the prevalence of dental anxiety of those who visited routinely. Those who had not attended for dental treatment in the previous two years had greater prevalence and severity of dental anxiety than those who had.

Individuals who reported frequent toothache had higher mean DAS scores than those who claimed that they 'never' or 'hardly ever' experienced that symptom. Similarly, those who reported frequently being uncomfortable with the appearance of their teeth or mouth had greater prevalence and severity of dental anxiety than those who did not. Individuals who reported avoidance of some foods because of dental problems had higher mean DAS scores than those who did not. Similar relationships were observed in a representative sample of Seattle adults (Milgrom et al., 1988), this study providing further evidence for the cycle of dental disadvantage with which many dentally anxious individuals are afflicted.

It is illuminating to compare the Australian findings with those from other cultures. In 1995, Schwarz and Birn published their findings on the occurrence of dental anxiety in population-based samples of adult Danes and Hong Kong Chinese. It should be pointed out that they used a DAS score of 12+ instead of 13+ to identify dentally anxious individuals, and that the Australian data had to be reanalysed accordingly. Comparison of the Australian findings with theirs suggests that there are substantial cross-cultural differences, and that dental anxiety prevalence among middle-aged and older Australians is rather closer to Danish than Hong Kong Chinese norms.

8.1 Implications

One in seven Australians suffers from dental anxiety. The associations identified in our study suggest that dental anxiety may have far-reaching consequences, not only for perceived oral health and its impact among the one-in-seven dentally anxious people in the population, but also for the way in which they interact with dental services. Accordingly, there are implications for the dental profession and both the private and publicly funded dental sectors. We should be asking ourselves how we as a profession can help make a difference for those people and endeavour to alter the situation:

- at the clinical level in our day-to-day interaction with patients;
- collectively at the profession's level; and
- at the dental public health level.

It should be pointed out that there are still big gaps in our knowledge base. Our knowledge of the natural history of dental anxiety is extremely limited, and it is important that this deficiency is addressed. There is also an acute shortage of evidence-based health promotion practice upon which to base strategies aimed at reducing dental anxiety in the wider population.

8.2 Acknowledgement

This chapter has drawn upon some material previously presented in:

Thomson WM, Stewart JF, Carter KD & Spencer AJ (1996). Dental anxiety among Australians. *Int Dent J* 46(4):320-4.

8.3 References

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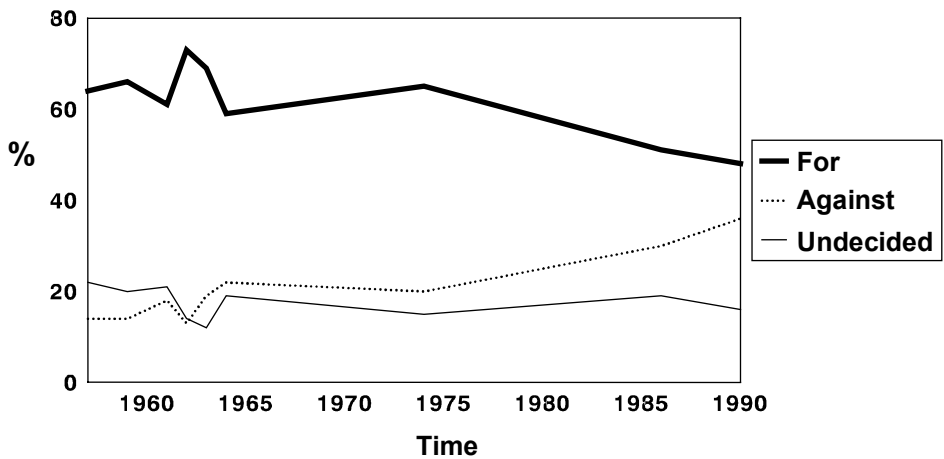
Oral Health Promotion

9 Support for water fluoridation in Australia

9.1 Introduction

The association between exposure to fluoridated water supplies and reduced caries experience has been supported in Australian dental public health research spanning three decades. Water fluoridation has become the cornerstone of caries control, with two-thirds of Australians having access to fluoridated water supplies. Most major water supplies were fluoridated in the late 1960s or early 1970s and there has been only spasmodic attention to water fluoridation as a public health issue in the ensuing years. This attention can be characterised as either scholarly, but of low public profile; or of higher profile, but confrontational or questioning.

It was, therefore, not surprising when market research at the start of the 1990s indicated that support for water fluoridation may have been declining. Figure 9.1 presents a time-series of public support for water fluoridation from opinion polls spanning three decades (Roy Morgan Research Centre Pty Ltd, personal communication with M Thomson, March 1995). Most waves of this monitoring were conducted in the 1960s when professional, public health and political consideration of water fluoridation was most intense. Few waves of this monitoring were conducted in the last two and a half decades. The percentage of Australians favouring water fluoridation has run at 50% or over across most of the period, the remainder of the population being split between undecided or against positions. Of concern, however, was the indication that recently the percentage in favour was decreasing and against increasing.



Source: Roy Morgan Research Centre Pty Ltd
 Personal communication with M Thomson, March 1995

Figure 9.1: Community support for water fluoridation

If water fluoridation was to maintain its position as the preferred population strategy for the control of caries, more attention needed to be given to its support in the community as a public health measure. Community support was seen as essential to the maintenance of existing programs and a prerequisite for any new effort to extend water fluoridation in Australia.

Therefore, this study aimed to:

- determine the level of support;
- examine variation in support by individual sociodemographic characteristics; and
- examine the association of knowledge and sources of information with support for water fluoridation.

9.2 Methods

The study was conducted as a nested survey associated with the 1996 National Dental Telephone Interview Survey. This telephone interview survey collected data from a stratified random sample of 8,292 Australian household residents aged 5+ years in all States and Territories. The response rate to the interviews was 71.5%.

At the completion of the telephone interview, a computer program randomly selected 1,576 persons aged 18+ years for a follow-up nested study. Address details were checked and each selected adult was sent a mailed questionnaire. After two weeks, a reminder card was sent to those persons who had not yet responded. A second and third approach, consisting of a letter and replacement questionnaire, were made subsequently at two-weekly intervals. A total of 1,285 responses were received, a response rate of 81.5%.

A series of items in the mailed questionnaire related to water fluoridation:

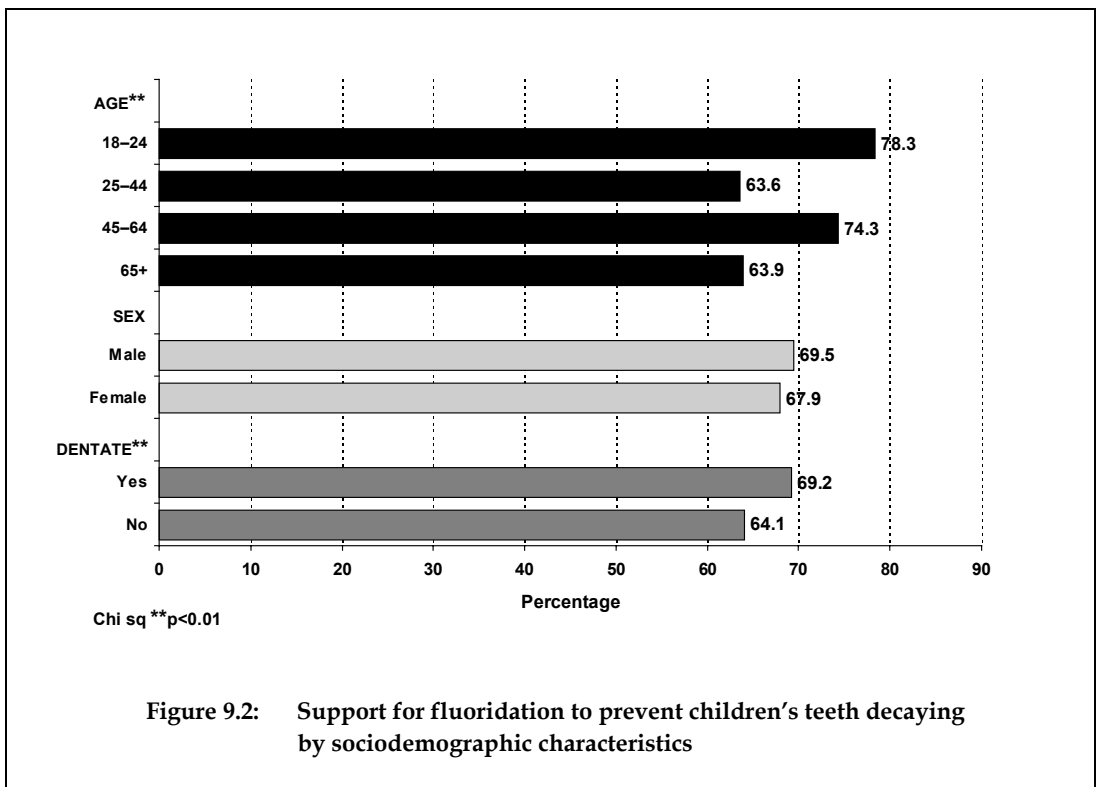
- self-reported fluoridation status of the local water supply;
- identified and preferred decision-makers on water fluoridation;
- purpose of water fluoridation;
- relative effectiveness of water fluoridation for prevention of caries;
- sources of information; and
- support for water fluoridation.

Responses to the mailed questionnaire were coded, prepared and linked by personal identifiers with the data from the telephone interview survey to produce the data set used for this analysis. Cases within the data set were re-weighted by the population age and sex distribution within 13 regional strata across Australia.

9.3 Results

Support for water fluoridation was high. Over two-thirds (68.7%) of respondents favoured water fluoridation to prevent children's teeth decaying, while only slightly less (60.5%) favoured water fluoridation to prevent adults' teeth decaying. As support for water fluoridation to prevent children's teeth or adults' teeth decaying was similar and highly associated, the remaining analyses focus only on support for water fluoridation to prevent children's teeth decaying.

Support for water fluoridation was significantly associated with a number of sociodemographic characteristics of respondents. These associations are presented in Figures 9.2, 9.3 and 9.4. Support was significantly higher among younger, and late middle-aged adults, dentate persons, and those with higher education, higher income, who did not hold a health card, spoke English at home, lived in capital cities and whose water supply was fluoridated.



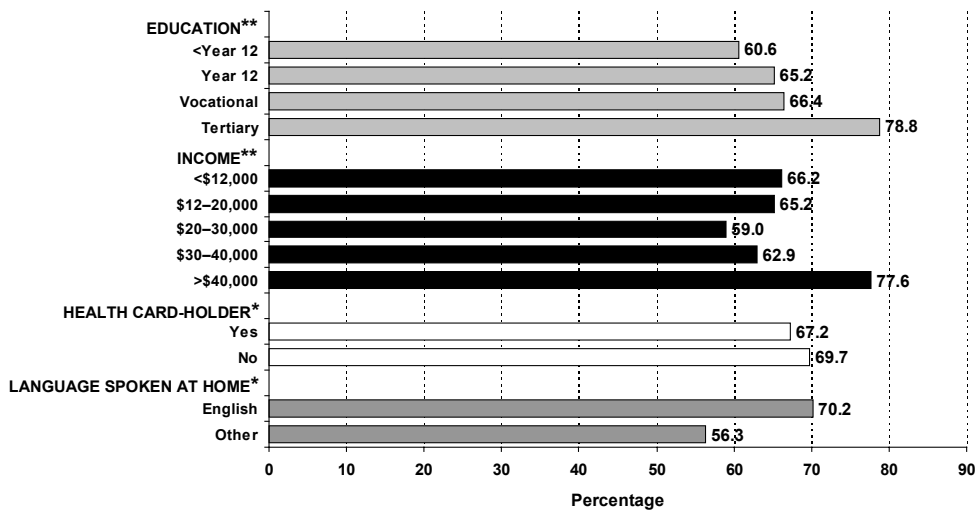


Figure 9.3: Support for fluoridation to prevent children’s teeth decaying by sociodemographic characteristics (cont.)

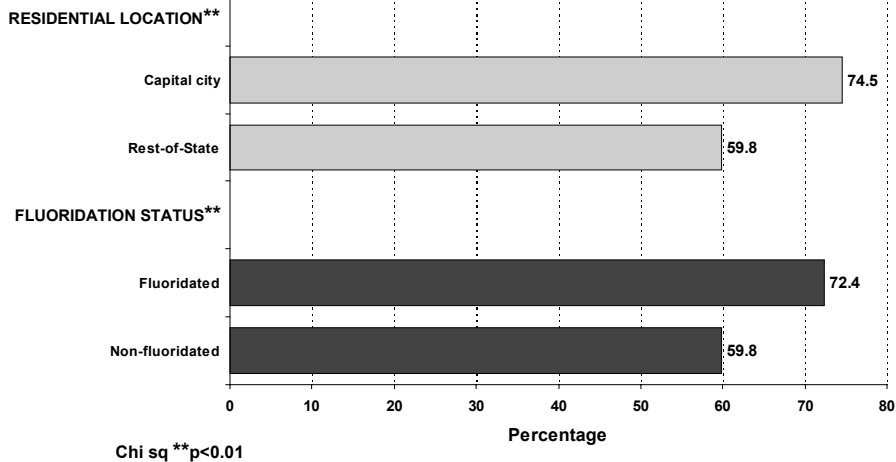
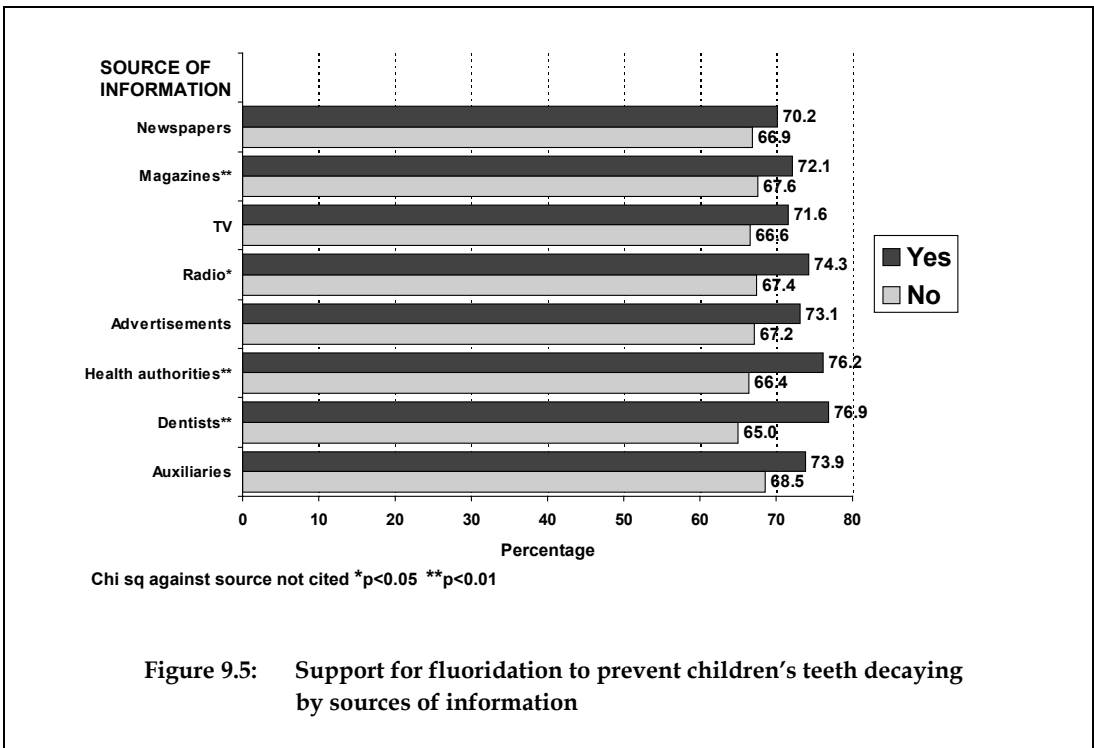


Figure 9.4: Support for fluoridation to prevent children’s teeth decaying by sociodemographic characteristics (cont.)

Respondents gained information on water fluoridation from a range of sources, frequently more than one source. The most frequent sources of information were media sources: newspapers (54.3%) and television (42.2%). Less than one-third (31.3%) of respondents identified dentists and less than one-quarter (23.9%) identified health authorities as a source of information.

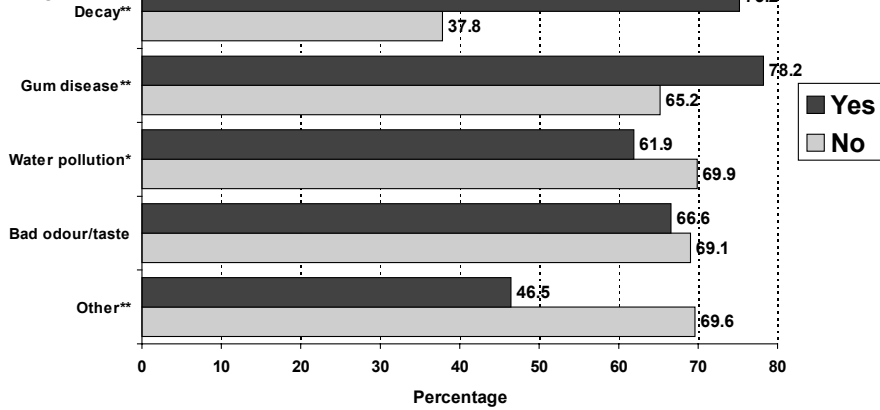
The respondents' knowledge about water fluoridation showed some confusion and uncertainty. While the majority correctly identified the purpose of water fluoridation as preventing dental decay (81.3%), many respondents also identified purposes like preventing gum disease (26.8%), water pollution (14.6%) or bad odour or taste in water (13.7%). Further, one-quarter of respondents (25.6%) did not know whether their water supply was fluoridated.

Support for water fluoridation was significantly associated with a number of the information and knowledge variables. Support was significantly higher among those who identified magazines and the radio within the media, and health authorities and dentists as their sources of information. These associations are presented in Figure 9.5.



Similarly, support was significantly higher among those who identified the purpose of water fluoridation as being prevention of decay and gum disease, and significantly lower among those who identified the purpose of water fluoridation as being the prevention of water pollution or some other purpose. These associations are presented in Figure 9.6.

PURPOSE OF WATER FLUORIDATION – EFFECTIVE IN PREVENTING

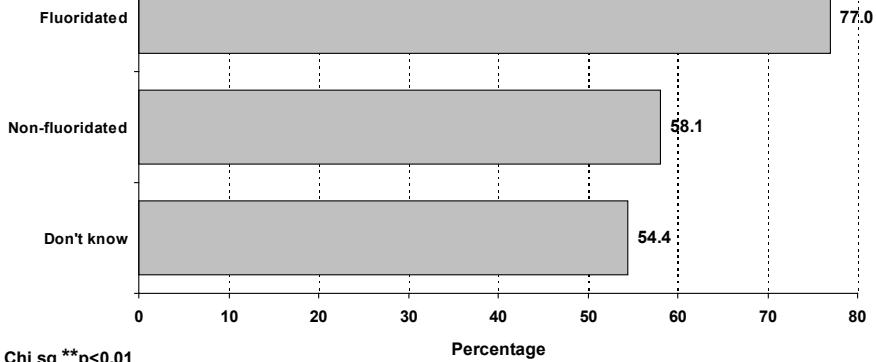


Chi sq against source not cited *p<0.05 **p<0.01

Figure 9.6: Support for fluoridation to prevent children's teeth decaying by knowledge

Support was significantly higher among those dentate adults whose self-report was that their water supply was fluoridated, versus those who reported their water supply was non-fluoridated or who did not know. This is presented in Figure 9.7.

SELF-REPORTED FLUORIDATION STATUS**



Chi sq **p<0.01

Figure 9.7: Support for fluoridation to prevent children's teeth decaying by self-reported fluoridation status

Lack of knowledge about the fluoridation of water supplies was further investigated by comparing the self-reported fluoridation status with the official fluoridation status of water supplies. This is presented in Table 9.1. The majority of respondents (72.2%) lived in fluoridated areas, and most (52.7% of all respondents) were aware that their water supply was fluoridated. Few respondents living in fluoridated areas reported that their water supply was not fluoridated. Of the 27.8% of respondents living in non-fluoridated areas, approximately equal proportions reported correctly that their water supply was not fluoridated and incorrectly reported that their water supply was fluoridated. Some 25.6% of respondents did not know the fluoridation status of their water supply. However, this response was proportionally more frequent among respondents living in non-fluoridated areas.

Table 9.1: Self-reported versus official fluoridation status of water supply

Self-reported status	Official status		Total percentage
	Fluoridated	Not fluoridated	
Think it is fluoridated	52.7	8.9	61.2
Think it is not fluoridated	3.0	9.8	13.2
Don't know	16.5	9.1	25.6
Total percentage	72.2	27.8	100.0

The likelihood of favouring water fluoridation to prevent children’s teeth decaying was then modelled using logistic regression against all sociodemographic, information source and knowledge variables that had significant bivariate associations with support for water fluoridation. The results are presented in Table 9.2.

The odds of favouring water fluoridation were highest among 18–24-year-olds and middle-aged adults, compared to the reference group, 65+-year-olds; there was twice the odds of support among the dentate compared with the edentulous; the odds increased across higher educational attainment groups, being over twice the odds among the tertiary educated as compared to the reference group of less than Year 12 education; there was twice the odds of supporting water fluoridation among those who spoke English compared to other languages at home; 1.8 times the odds of support among those residing in capital cities; twice the odds of support among those who self-reported that their water supply was fluoridated compared with those reporting non-fluoridated water supplies or who did not know; twice the odds of support among those who thought the purpose of water fluoridation was to prevent decay compared to all other purposes; 1.7 times the odds of support among those who thought its purpose was to prevent gum disease compared to all other purposes; and there was 1.6 times the odds of support when information had been obtained from dentists as compared to all other sources.

Table 9.2: Logistic regression of support for water fluoridation
(Dependent variable: Favour = 1, Oppose or Don't know = 0)

Variable	Odds ratio
Age	
18–24 years	2.9
25–44 years	1.4
45–64 years	2.0
65+ years	Reference group
Dentate status	
Edentulous	Reference group
Dentate	2.0
Education	
Less than Year 12	Reference group
Year 12	1.2
Vocational	1.6
Tertiary	2.2
Language spoken at home	
Not English	Reference group
English	2.1
Residential location	
Capital city	1.8
Non-capital city	Reference group
Self-reported fluoridation status	
Fluoridated	2.1
No/don't know	Reference group
Purpose of fluoridation	
Prevent decay	2.2
All other purposes	Reference group
Prevent gum disease	1.7
All other purposes	Reference group
Source of information	
Dentists	1.6
All other sources	Reference group

9.4 Discussion

Little has been known about the contemporary level of support for water fluoridation in Australia. Previous estimates of support have been available only from market research and most are somewhat dated. Therefore, these data offer a much needed social context for the community's perceptions on water fluoridation.

Over two-thirds (68.7%) of the community favoured water fluoridation to prevent children's teeth decaying. This percentage favouring water fluoridation was as high as that in the historical data collected in market research. Hence, support for water fluoridation does not appear to be decreasing in Australia. This conclusion has been reinforced by more recent market research by Reark Research on behalf of the Brisbane City Council in February 1997, which found 62% of respondents in favour of the introduction of fluoride treatment of the Brisbane water supply (P Jackman, personal communication with Professor AJ Spencer, 27 February 1997).

It is no accident that in Australia where State or Territory governments have centralised the decision-making, generally through advice provided to the Minister of Health by health authorities, water fluoridation has proceeded and been maintained. Where the decision-making has been devolved to local councils or water boards, decisions have been difficult and not infrequently have gone against implementing water fluoridation. This situation arises because of the difference in the balance of power of various 'envelopes of influence' on central and local decision-makers. This relationship is illustrated in Figure 9.8. Central decision-makers have been more influenced by formal organisations, while local decision-makers have been more influenced by grass-roots community groups. Health professions, particularly dentists, together with the scientific and public health community have generally taken a positive perspective on water fluoridation, emphasising the benefit-risk relationship and public good arguments in favour of water fluoridation. Through non-partisan support from political parties, enabling or mandating legislation for water fluoridation has been enacted by State parliaments. On the other hand, a range of alternative health groups, environmental groups, civil libertarians and community activists have had a negative perspective, focusing on hazards and individual freedom of choice. This perspective has been put to the media, both local and national, and to local council members. Consideration has been clouded in uncertainty and concern, leading to what are regarded by those opposing fluoridation as cautious or prudent decisions of non-action.

Two situations emerge from this description. First, Australia has been able to implement water fluoridation widely because most decisions have been centralised and strongly influenced by the professional and scientific domains. Secondly, where decisions are devolved to local councils, support for water fluoridation will depend on the willingness of professionals and scientists to engage in strategies for promoting water fluoridation. Both situations place dentists and their professional associations at the center of promoting water fluoridation.

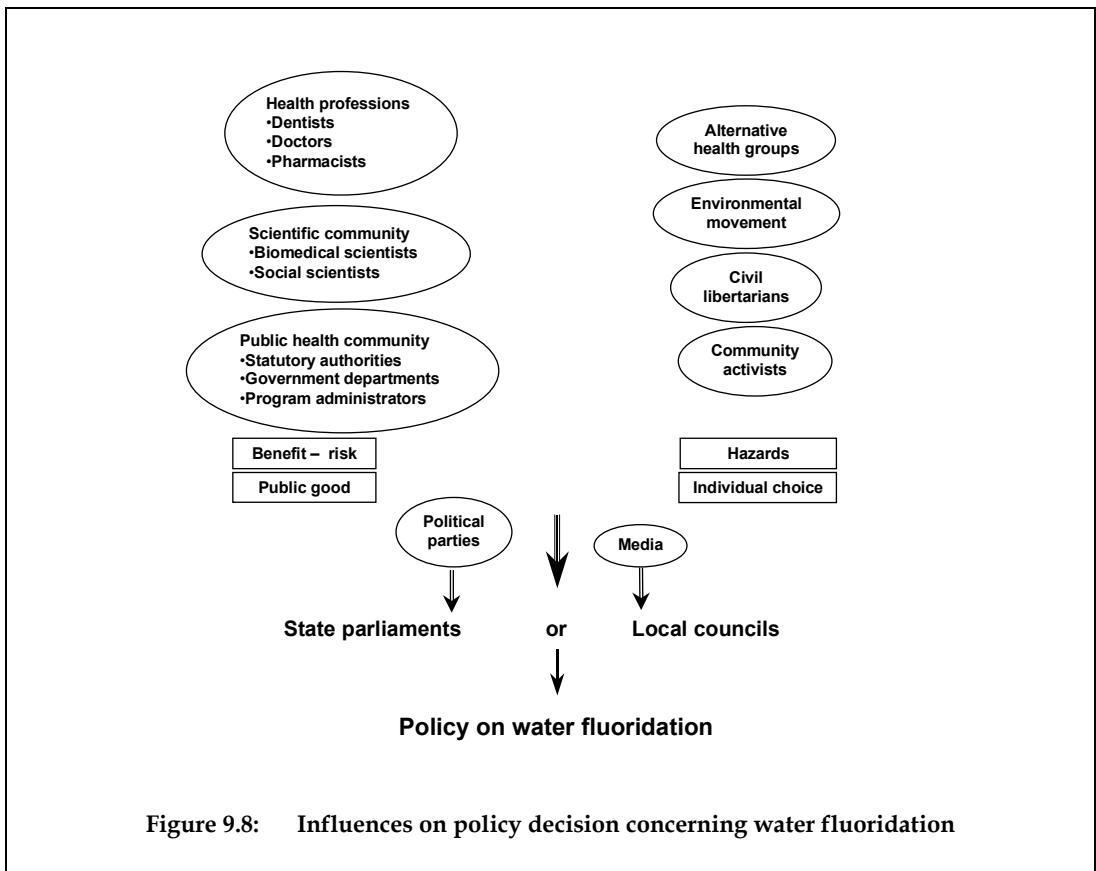


Figure 9.8: Influences on policy decision concerning water fluoridation

Water fluoridation, like any public health measure with potential benefit and risk, requires ongoing monitoring and review. A disturbing feature in Australia is the lack of any systematic process of ensuring research on benefit and risk, or the periodic review of published research. Efforts in these areas are ad hoc and spasmodic.

Given research provides positive support on benefits and no evidence of deleterious health effects, then more proactive strategies of promotion also need to be pursued. Dental students need to be well educated about prevention and particularly the fundamentals relating to fluorides, oral health and general health. Practising dentists need to be brought up-to-date on new information about water fluoridation. Some 11 million Australians make 18 million dental visits each year, providing an opportunity for dentists to be at the centre of information transfer on fluorides and water fluoridation. The public's knowledge will reflect the ability and willingness of dentists to discuss with and counsel patients about the appropriate use of fluorides. In Australia at present there is some initial activity being undertaken to better inform dental students and practicing dentists, but much remains to be done.

Efforts to promote water fluoridation also need to directly reach out to the wider population. There is a need to publicise the benefits and reasonable assessments of the risks. This needs to be proactive, rather than in response to criticism. Finally, there is a need to conduct pro-fluoridation campaigns, especially where the population coverage by water fluoridation is low. Frazier (1985) has described the components of such promotional approaches as including:

- redefining fluoride use from a political to a public service issue;
- stressing individual rights to benefit from available scientific knowledge about fluorides;
- targeting collective decision-making bodies and key information gatekeepers;
- building supportive coalitions;
- packaging water fluoridation with other dental preventive measures; and
- recognising that education is lobbying and vice versa.

9.5 Conclusions

1. The majority of the Australian community support water fluoridation.
2. Support was stronger among younger persons, the dentate, those with higher education, those speaking English at home and residents of capital cities.
3. Support was also stronger among those who reported that their water supply was fluoridated, who thought the purpose of water fluoridation was to prevent dental problems, and who obtained information from dentists.
4. The association between gaining knowledge from dentists and support for water fluoridation challenges the dental profession to inform the public and decision-makers visiting their surgeries about the appropriate use of fluorides and water fluoridation as the cornerstone to community-wide control of caries.
5. Greater attention needs to be focused on ongoing monitoring and review of water fluoridation and on proactive strategies for the promotion of water fluoridation.

9.6 References

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10 Public knowledge of the prevention of caries and gum diseases

10.1 Introduction

Oral diseases continue to be prevalent health problems in Australian society. In particular, dental caries and gum disease create a significant and costly burden on the Australian public. This is despite the fact that both dental caries and gum diseases are known to be preventable by appropriate dental health behaviours (Axelsson et al., 1991).

While not sufficient on its own, the conveying of information to the public remains a central theme of oral health promotion. Knowledge of effective preventive measures is one of the essential prerequisites for the practice of these measures.

Knowledge of effective preventive measures for both dental caries and periodontal diseases has been available in the dental literature for many years (Sutton & Sheiham, 1985).

The most effective means of preventing dental caries are drinking fluoridated water and regular use of fluoride-containing toothpastes (NHMRC, 1991). Fluorides provide protection more for smooth surfaces than pitted surfaces of teeth where the use of fissure sealants is particularly effective (Ripa, 1985). The combination of these preventive strategies, fluorides and fissure sealants, provides a potent tool for the prevention of dental caries.

Personal and professional plaque removal and professional calculus removal are the most widely accepted methods of prevention of gum diseases (Loe & Kleinman, 1986).

The public's understanding and knowledge of preventive behaviours may be correct, as in the case of knowledge of the importance of fluoride in water supplies in the prevention of dental caries.

However, understanding may also be completely fictitious and in the realm of popular wisdom or folklore. It is the latter that is termed 'myth' in this chapter. Myths relating to the effective prevention of dental caries include measures such as sufficient calcium in the diet, regular toothbrushing per se, eating fibrous foods and regular dental visits.

It has been known for at least two decades that in contrast to the methods supported in these myths, effective caries preventive methods involve fluorides and fissure sealants.

In relation to gum diseases, the belief that massaging gums will harden them or stimulate blood circulation to prevent gum disease is a myth. A good understanding of the effective preventive measures of plaque and calculus removal is needed to maintain healthy periodontal tissues ensuring retention of a functional dentition for life.

10.2 Aims

The aims of this study were to assess knowledge in an Australian population about the prevention of dental decay and gum diseases, and to explore the variation in knowledge by sociodemographic groups to facilitate improvement in oral health promotion.

10.3 Methods

In 1992 questionnaires were mailed to persons who had participated in the South Australian component of the 1987/88 National Oral Health Survey of Australia.

That study had used a probability sample of non-institutionalised persons five years of age and over (these people were therefore aged 10 years and over in 1992). Completed questionnaires were received from 838 persons. This represents a response rate of 51.6% of those who fully participated in 1987.

Respondents were asked to rate the importance of self-care preventive behaviours on a 5-point Likert scale. The responses were then dichotomised into important (which included definitely important and probably important) and other (which included responses from neutral to definitely not important) for further analysis.

The responses were then cross-tabulated with a number of sociodemographic factors including age, sex, and educational level attained.

A question concerning the sources of information for knowledge of preventive measures was also asked. In this question multiple responses were possible.

10.4 Results

Respondents rated four myths concerning the prevention of dental caries as the most important: 78% rated eating fibrous foods; 85% rated calcium in the diet; 87% rated regular visiting; and 97% rated regular toothbrushing as definitely or probably important (Figure 10.1).

In contrast 72% rated using fluoride toothpaste; and 56% rated drinking water with fluoride as important.

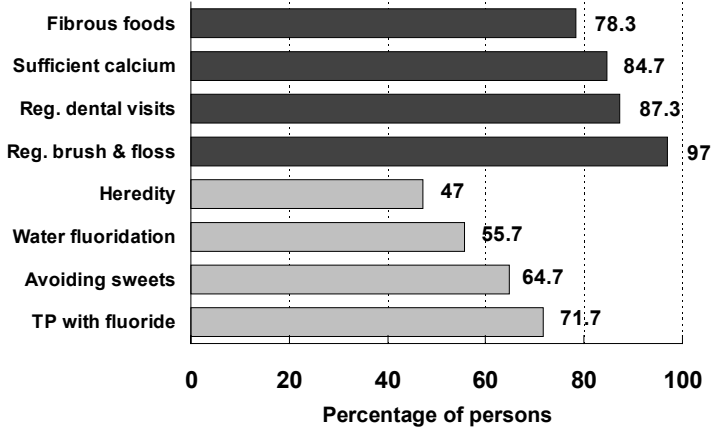
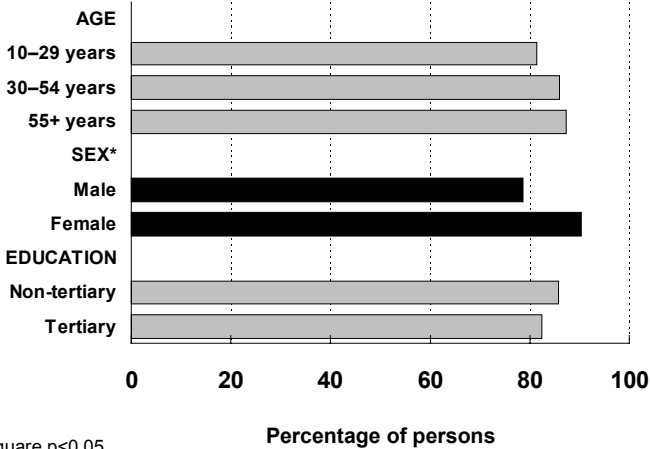


Figure 10.1: Measures rated as important in prevention of dental caries

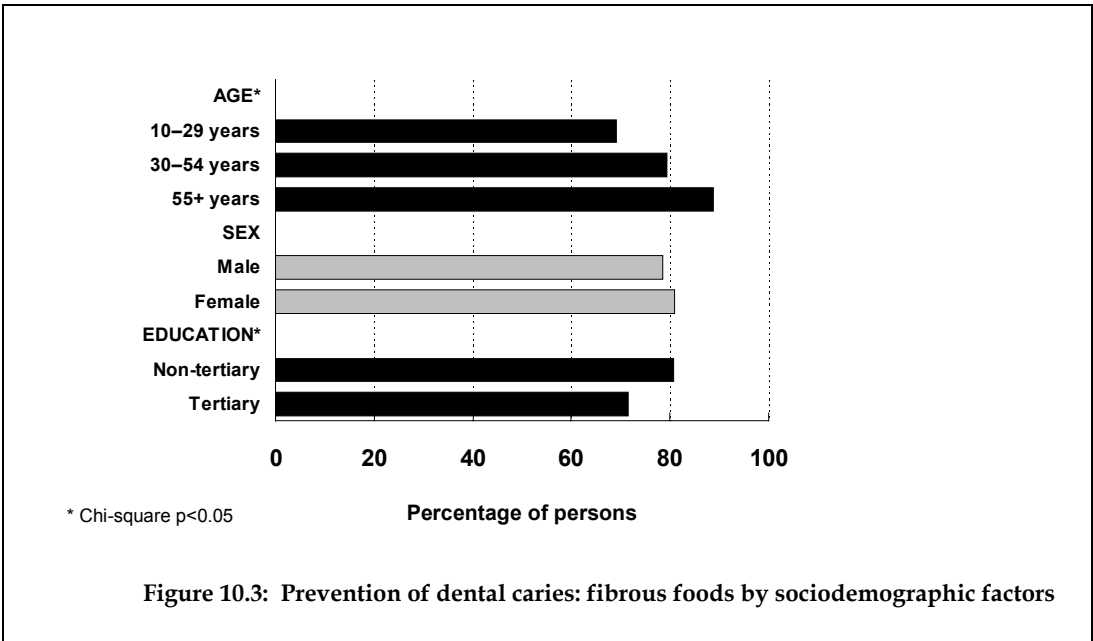
Figure 10.2 shows the results of the bivariate association tested for significance by Chi-square, for those who regard sufficient calcium in the diet as definitely or probably important in the prevention of dental caries. Females were significantly more likely to hold this view than males.



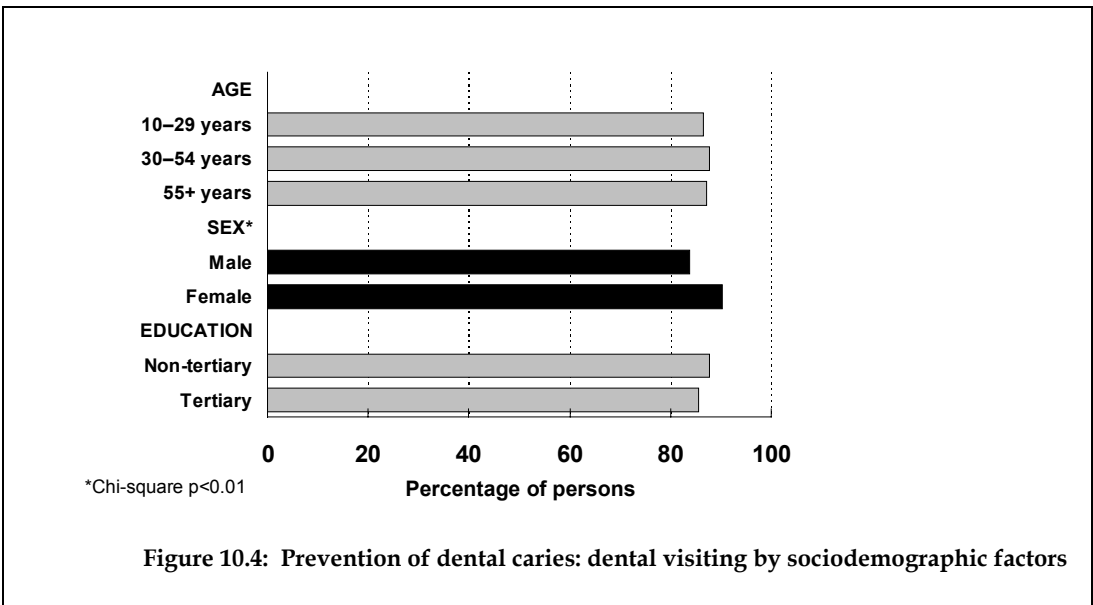
* Chi-square $p < 0.05$

Figure 10.2: Prevention of dental caries: sufficient calcium by sociodemographic factors

Figure 10.3 shows that a greater proportion of older than younger persons, and of those who had not received a tertiary education compared with those who had, rate the myth of eating apples and fibrous foods as important in the prevention of dental caries.



A higher percentage of women than men regarded regular dental visits as important in the prevention of dental caries as shown in Figure 10.4.



It should be noted that none of the sociodemographic variables tested were significant in bivariate analysis of the importance of toothbrushing and flossing in relation to prevention of dental caries. Over 95% of all groups thought toothbrushing was important (Figure 10.1).

More respondents were able to correctly rate regular brushing and flossing (96%) and regular dental visits (87%) as definitely or probably important in the prevention of gum diseases. However, the myth of massaging the gums was regarded as important by 67% of respondents.

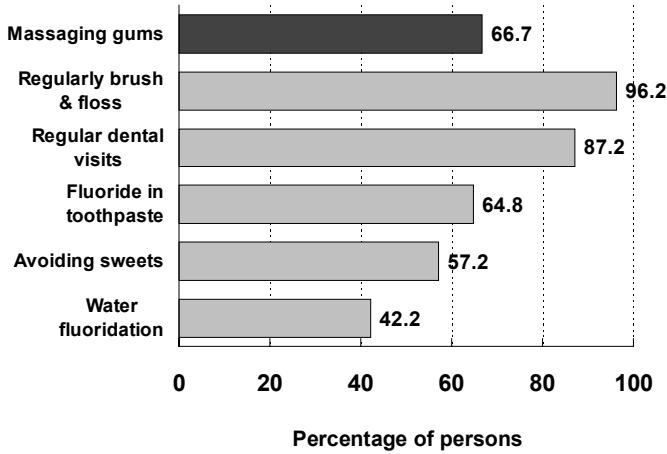


Figure 10.5: Measures rated as important in the prevention of gum diseases

Figure 10.6 shows the bivariate associations tested by Chi-square of those who regarded massaging of the gums as important in the prevention of gum diseases. A greater proportion of females than males regarded this measure as important.

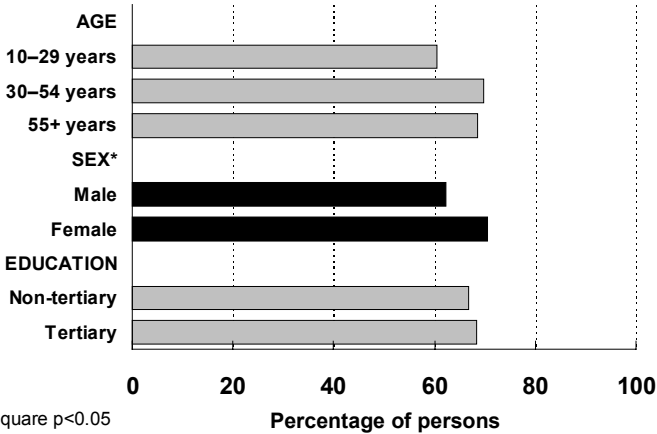


Figure 10.6: Prevention of gum diseases: massage by sociodemographic factors

Respondents reported the sources of information for their knowledge of preventive behaviours as outlined in Figure 10.7. It should be noted that multiple responses were possible. Approximately 84% of respondents reported that they gained preventive information from the print media, 65% from private dental practitioners, 57% from television, and 50% from friend or family.

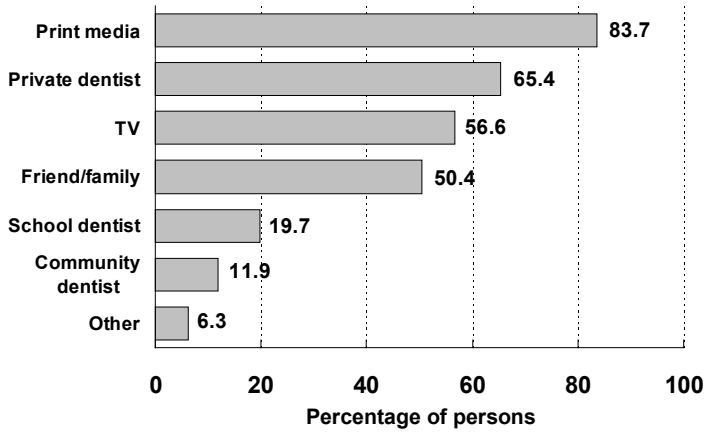


Figure 10.7: Sources of preventive information

10.5 Discussion

Major differences exist between the general public's understanding of the prevention of dental diseases and current scientific knowledge.

High percentages of the public ascribe importance to myths concerning the prevention of caries and gum diseases. The sociodemographic factors which were significantly associated with the rating of myths as important were sex, age and education. Higher percentages of females ascribed importance to myths. This is possibly related to the role females continue to play as the bearers of family traditions and the myths in relation to health matters may form part of such traditions; however, as they are also more likely to take primary responsibility for children's health, and for the health of elderly and infirm family members, their relative lack of knowledge is of great concern.

Concerning age, older adults were more likely to hold erroneous views on effective preventive methods; this is perhaps more understandable as older persons may not have received more up-to-date information, but again of concern when considered in conjunction with the increased risk of dental disease in an aging population who are increasingly dentate.

In relation to education, more of those with lower educational attainment credit myths with importance. Lower educational attainment is associated with poorer health outcomes and lower utilisation of health services, so the result in this study is consistent with other findings in relation to educational level and health. The lack of knowledge demonstrated raises the issue of the level at which health messages are normally pitched and the need for better targeting of oral health promotion.

There are some methodological issues which may limit interpretation of the findings presented. It is possible that respondents did not distinguish between toothbrushing and fluoride toothpaste use, despite there being a separate category for the toothpaste, and so rated toothbrushing as important. Visiting a dentist may have been identified with fissure sealant placement or topical fluoride application and so regular dental visits may have been regarded as preventive.

It must also be added that there is a possible response bias in this sample. The sample consisted of respondents to a five-year follow-up survey and as such therefore they should be regarded as compliant persons, perhaps more interested in dental matters than the general population. This possible bias towards dentally interested persons would tend to overestimate the extent of knowledge of appropriate preventive measures in the population.

Respondents' acknowledgement of the importance of newspapers and magazines as a source of information should alert those involved in oral health promotion to the importance of that vehicle and the need for accurate information to be disseminated through it.

The second most frequently reported source of information was private dentists. School and community dental services were also mentioned. The dental profession, if it is to promote preventive dentistry effectively, must know and communicate the scientifically proven methods of prevention; this particularly applies to the role of fluorides.

10.6 Implications of this research

The data presented in this study confirm the findings of Corbin and coworkers (1987) that people are unable to distinguish between preventive measures in terms of the diseases which the measures were designed to prevent.

The greater proportion of women who regarded calcium as important may reflect misappropriation of the osteoporosis message.

Toothbrushing and dental visits which have been greatly promoted by health professionals were regarded as much more important than the use of fluoride in the prevention of dental caries; while fluoride was regarded as important in the prevention of gum diseases by many people. Gift et al. (1991) have found that dentists and physicians overemphasise oral hygiene measures relative to the use of fluorides and fissure sealants.

One could ask the question: to what extent does the issue of knowledge matter? It might be argued that the critical point is that people do the right thing. The issue then arises: to what extent does knowledge determine action?

Certainly, the demonstrated lack of appreciation for the critical importance of fluorides in preventing tooth decay is of concern at two levels.

First, individuals may opt for water sources such as bottled water which seem increasingly popular and so not receive the protective effect of fluoridated water. Secondly, at a public health level, public support for fluoridation of water supplies may be jeopardised by lack of knowledge of its effectiveness and importance.

The lack of community knowledge demonstrated in this study raises the issue of promotion of oral health messages, and the level at which health messages are pitched. Appropriate targeting of oral health promotion is required to address the misconceptions demonstrated, so that effective preventive measures can be maximised at both an individual and community level. Targeting of the dental health message to the less knowledgeable groups within the community and the health professions, and the appropriate use of both print and electronic media are important areas on which to focus.

Oral health researchers have a major responsibility to communicate their findings to both their professional colleagues and to the community, for as stated by Corbin et al. (1987), a "suboptimal and inconsistent pattern of knowledge about oral diseases and their prevention can be expected to limit effective disease prevention efforts on both an individual and a community level".

10.7 Summary

The results in this study show that people rate drinking water with fluoride as much less important in the prevention of dental caries than other preventive measures and mythical methods, and that younger people, those who speak a language other than English at home, and those without tertiary education are significantly less likely to know the purpose of water fluoridation. Every effort needs to be made to promote the importance of fluorides and, in particular, water fluoridation. In general, the lack of knowledge demonstrated raises as an issue the level at which oral health messages are pitched and the need for better targeting of oral health promotion.

Table 10.1: Summary of results and discussion

	Calcium in the diet	Eating apples and fibrous foods	Regular dental visits	Regular toothbrushing and flossing
Gender	*	*	*	
Age		*		
Education		*		

10.8 Conclusions

Little relationship existed between the Australian public's understanding of caries prevention and scientific knowledge. Methods of mythical value only were regarded as more important than efficacious methods by the Australian community.

In terms of gum diseases, knowledge of preventive measures was more accurate, although myth still rated highly.

Correct information should be particularly targeted to women, older people and those with lower educational attainment.

The persistence of myths, together with the low rating of the importance of scientifically efficacious methods for the prevention of dental caries, are a challenge for oral health promotion within the dental profession and within the wider community.

10.9 Acknowledgement

This chapter has drawn upon material previously presented in:

Roberts-Thomson KF & Spencer AJ (1999). Public knowledge of the prevention of dental decay and gum diseases. *Aust Dent J* 44(4):253-8.

10.10 References

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Acceptable Oral Health

11 Assessments on oral health outcomes by the community

11.1 Introduction

In 1981, the World Health Organization advocated the formulation of goals, targets and strategies which would lead to an improvement in the health of a population (WHO, 1981). This led to the setting of oral health goals for Australians. Most of the goals set have already been achieved; however, one of the themes and organising principles considered by the WHO to be vital in the attainment of better health for all, i.e. the need to increase consumer participation in health decision making, appears to have been of little consequence in the planning for better oral health.

The traditional measures of oral health outcomes, the DMFT (decayed, missing or filled teeth (permanent dentition)), the CPITN (Community Periodontal Index of Treatment Needs) and rates of edentulism are clinically based and do not reflect the views of the community. Furthermore they are not able to capture the psychological and social impacts of oral disease which are currently held to be of importance in the measurement of oral health.

The traditional DMFT, i.e. the sum of all decayed, missing and filled teeth, does not differentiate between a functional repaired dentition and a dysfunctional dentition with rampant caries or numerous missing teeth.

In addressing this issue, a number of researchers have advocated variants of the traditional DMFT to measure oral health, e.g. the T-health Index (Marcenes & Sheiham, 1993), which uses weights of 4 for sound teeth, 0 for missing teeth and 1 for both decayed and filled teeth. Although the T-health Index differentiates between decayed, missing and filled teeth by apportioning weights which are purported to reflect the impacts of these oral health outcomes, the weights have been arbitrary and based upon the assessments of dental professionals.

While acknowledgment has been made of the difference in assessments of dental health between dental professionals and the community, community assessments have rarely been explored. In one of the few studies where assessments have been sought from both dentists and the community, the utility values of decayed and filled posterior teeth determined by dentists and the community were significantly different (Fyffe & Kay, 1992).

The aim of this research was to investigate assessments of oral health outcomes that reflect a community perspective of oral health.

11.2 Conceptual design

Based on the work of various researchers, particularly Cushing et al. in 1986, four dimensions of health were established. These dimensions, which are shown in Figure 11.1, addressed the physical, psychological and social impacts of dental disease.

- | | |
|--------------------------------|--|
| 1. Discomfort | – pain, toothache and sensitivity to hot, cold or sweetness |
| 2. Physical functioning | – eating, drinking, speaking, working and sleeping |
| 3. Social functioning | – talking, smiling, laughing and kissing |
| 4. Well-being | – self-confidence, self-esteem, morale, happiness and a sense of good health |

Figure 11.1: Dimensions of health

The dentition was divided into three sectors, the anterior maxilla, the anterior mandible and the posterior, both maxilla and mandible.

Figure 11.2 shows the conceptual design used to investigate the effects of the various oral health outcomes on the four dimensions of health in each of the three sectors of the mouth.

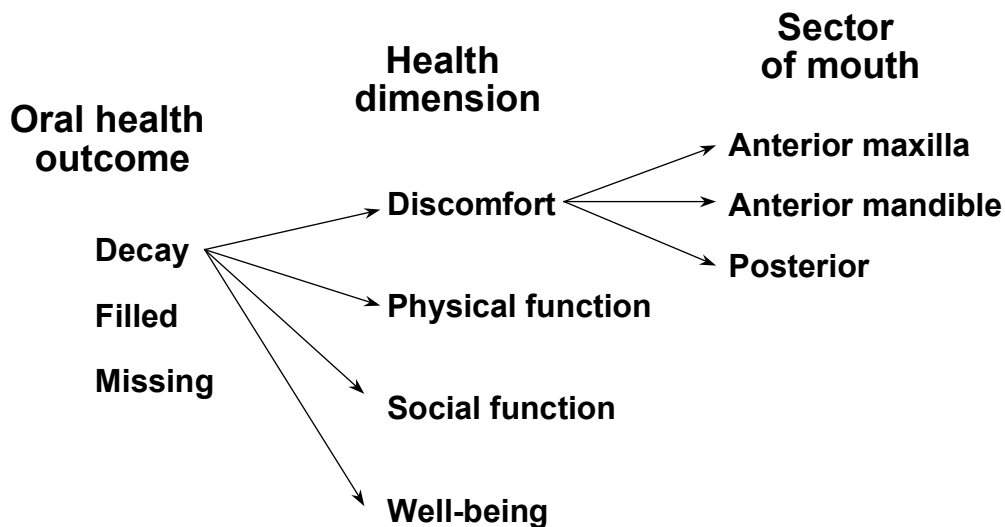
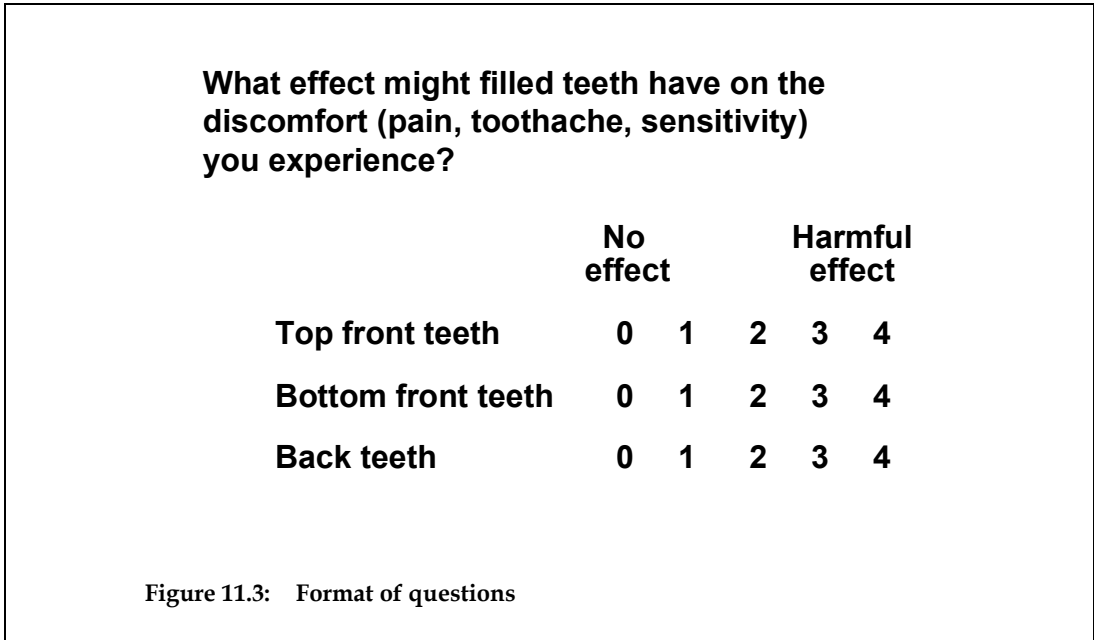


Figure 11.2: Conceptual design

Participants in this study were asked to assess the effect that they considered the oral health outcomes of decayed, filled and missing teeth would exert on each of the four dimensions of health, in each of the three sectors of the mouth. Assessments on sound teeth were excluded on the basis of their consistent rating of 'no harmful effect' in a pilot study. The pilot study also showed that there was no difference in the assessments placed on maxillary and mandibular posterior teeth.

The format of the questions asked of the community is shown in Figure 11.3.



In this instance the respondents were requested to circle a number representing the effect that filled teeth might have on the discomfort, i.e. pain, toothache and sensitivity, that they experience from their top and bottom front teeth and from their back teeth.

11.3 Methodology

Questions relating to this study were included in the 1992/93 Follow-up Survey of the 1987/88 National Oral Health Survey, South Australian component. Questionnaires and invitations to participate were mailed to the 2,448 participants of the 1987/88 survey. Two follow-up mailings were sent and electoral rolls used in an attempt to locate the addresses of those who had moved in the 5-year period.

11.4 Response

The response to the mailed questionnaire is shown in Table 11.1.

Table 11.1: Response to questionnaire

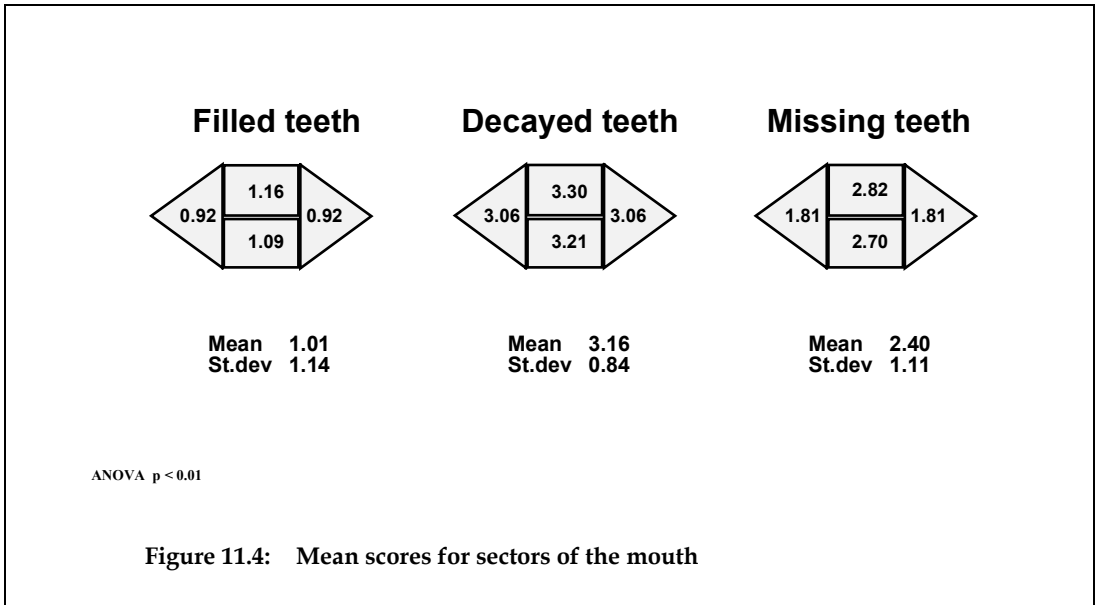
Questionnaires sent	2,448
Deceased or incapacitated	71
Refusal	110
Mail returned, incorrect address	385
Non-response	1,044
Response	838

The response rate, adjusted for non-deliverable mail and incapacity or death, was 40.2%. This is a low response rate; however, the addresses used were those current five years before, thus a considerable percentage of the 1,044 tabulated as 'non-respondents' may have changed address in the 5-year period and may not have received the questionnaire. There were 838 responses to the questionnaire and data relevant to the issues addressed in this study were available for 643 individuals. In both 1987/88 and 1992/93, dental examinations were carried out on a proportion of respondents to the questionnaire.

Mean scores and standard deviations of the effects of decayed, missing and filled teeth in the three sectors of the mouth, for the four dimensions of health and for the matrix, sector of the mouth by dimension of health, were calculated and tested for significance. Statistical significance was tested by analysis of variance (ANOVA) which was also used to determine if there were socioeconomic or oral health experience differentials in assessments.

11.5 Results

The mean scores in the range of 0, 'no effect', to 4, 'a harmful effect', from the assessments of the effects of decayed, missing and filled teeth in the three sectors of the mouth are summarised by the stylised diagrams in Figure 11.4.



The mean scores for the effect of filled teeth varied from 0.92 in the posterior sectors, to 1.16 on the anterior maxilla. These differences were significant on ANOVA with $p < 0.01$. For the whole mouth the mean score for filled teeth was 1.01 with a standard deviation of 1.14.

Mean scores for the effects of decayed teeth were considerably higher, from 3.06 to 3.30, again significantly different on ANOVA. The overall score for decayed teeth was 3.16, standard deviation 0.84.

The mean score for the effect of missing teeth in the posterior sectors was 1.81, the anterior maxilla 2.82 and the anterior mandible 2.70. These differences were statistically different. The overall mean score for missing teeth was 2.4, standard deviation 1.11.

There was a statistically significant difference on ANOVA with $p < 0.01$ in the aggregated score for all sectors of the mouth by health status, i.e. between the aggregated scores of 1.01 for filled teeth, 3.16 for decayed teeth and 2.4 for missing teeth.

Table 11.2 shows the significant variations in the aggregated scores by socioeconomic status and oral health experience. Insurance status was taken from the 1992/93 data collection, and fillings and missing teeth from the 1987/88 examination data.

Table 11.2: Variables associated with higher aggregated scores for oral health outcomes

	Decayed	Filled	Missing
Age	Older age	–	–
Sex	–	–	Female
Birthplace	–	Overseas	–
Insurance	No insurance	No insurance	–
Fillings in 1987	–	More fillings	–
Missing in 1987	–	–	More missing

ANOVA $p < 0.01$

Older adults and those without insurance were more concerned by decayed teeth than younger or insured participants. People born overseas, those without insurance and those with a greater number of filled teeth at the 1987/88 examination assessed filled teeth to be of more concern. Females were more concerned by missing teeth than were males, as were those who had a greater number of missing teeth in 1987.

The mean scores for the effects of decayed, filled and missing teeth on the four dimensions of health are shown in Table 11.3.

Table 11.3: Mean scores for dimensions of health

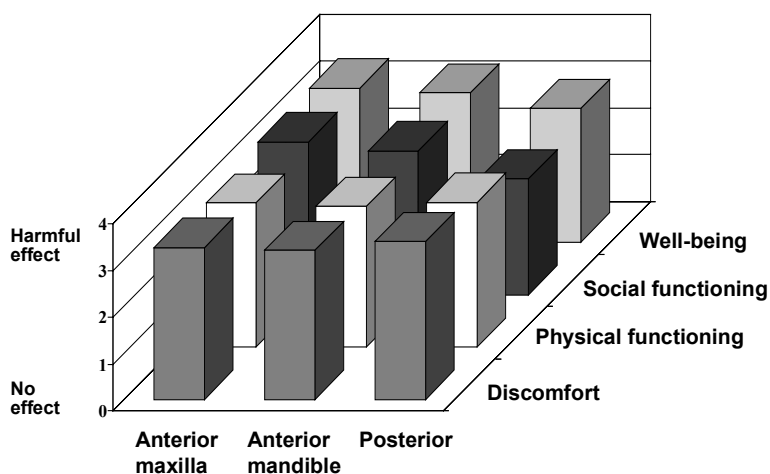
Health dimension	Oral health status		
	Decayed	Filled	Missing
Discomfort	3.28	1.13	1.71
Physical function	3.06	0.87	2.41
Social function	2.93	1.02	2.70
Well-being	3.12	1.02	2.70

ANOVA $p < 0.01$

The scores for decayed teeth were 3.28 on discomfort, 3.06 on physical functioning, 2.93 on social functioning and 3.12 on well-being. The scores for filled teeth were consistently lower, with filled teeth (with a mean score of 0.87) having the least effect on physical function. Missing teeth were assessed to have a more deleterious effect on social functioning and well-being than on discomfort or physical function.

The dimensions of health by oral health status were all statistically significant on ANOVA with $p < 0.01$.

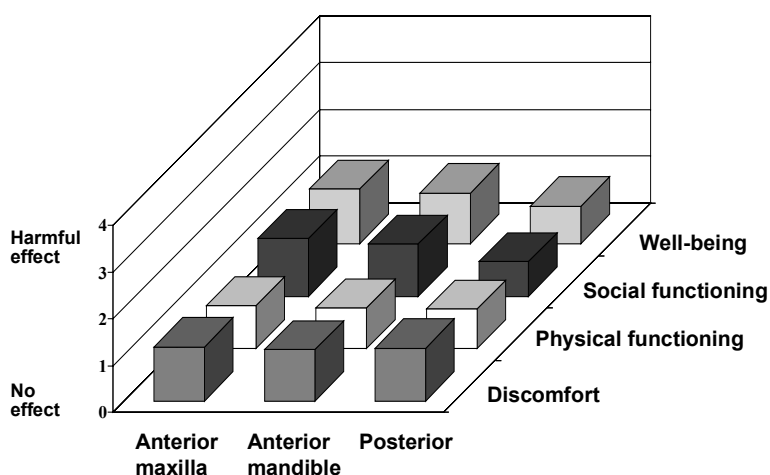
Figure 11.5 shows the effects of decayed teeth by both sector of mouth and the four dimensions of health. Decayed anterior teeth, both on the maxilla and mandible, were assessed to have a very deleterious effect on all dimensions of health. Posterior decayed teeth had a lesser, though still deleterious, effect on social functioning than on the other dimensions of health. The site of decayed teeth (anterior versus posterior) had a significant effect on the scores for social functioning and well-being. The main effects, sector of mouth by score and dimension of health by score, and the interaction of sector of mouth and dimension of health by score were all statistically significant on ANOVA with $p < 0.01$.



ANOVA $p < 0.01$

Figure 11.5: Decayed teeth by sector of mouth and dimension of oral health

The comparatively weak effects exerted on the dimensions of health by filled teeth are apparent in Figure 11.6. Filled teeth on the anterior maxilla and anterior mandible were assessed to have a lesser effect on physical functioning and discomfort than on well-being and social function. Posterior filled teeth were assessed to have more effect on discomfort than on the other dimensions of health. The variations across sectors of the mouth in terms of well-being and social functioning show that posterior filled teeth had less effect than anterior filled teeth. The main effects and the two-way interaction were again statistically significant.



ANOVA $p < 0.01$

Figure 11.6: Filled teeth by sector of mouth and dimension of oral health

The effects of missing teeth, shown in Figure 11.7, vary considerably by dimension of health and anterior/posterior position.

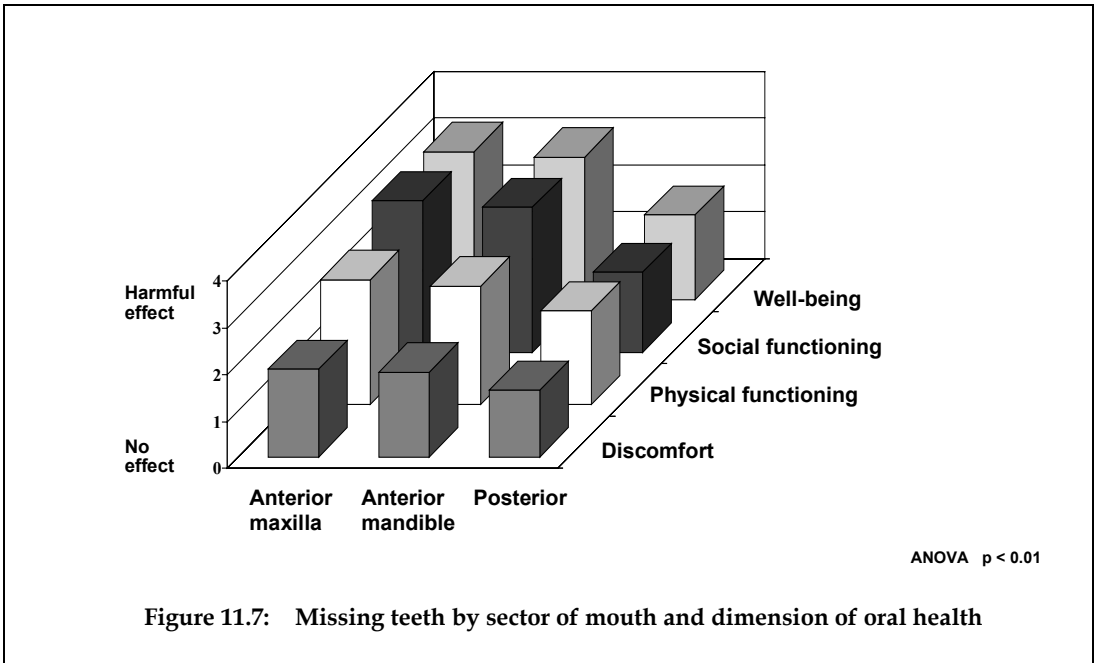


Figure 11.7: Missing teeth by sector of mouth and dimension of oral health

Missing anterior teeth, both on the maxilla and mandible, were assessed to have the most deleterious effect on social functioning and well-being. The scores here ranged from 3.03 to 3.23. Missing posterior teeth had a lesser effect on these two dimensions of health. The scores for discomfort and physical functioning were also lower for the posterior teeth than for the anterior teeth. In all sectors of the mouth, missing teeth were assessed to have a less deleterious effect on the discomfort dimension of health than on the other dimensions.

11.6 Discussion

It is apparent that assessments of oral health outcomes by the general public are not consistent with the values of oral health outcomes inherent in traditional measures of oral health status.

The community assessed missing teeth as having a less deleterious effect on health than decayed teeth. Factors which may account for this finding are that the general public sees the removal of teeth as the solution to recurring decay with its associated cost and often associated pain, and that the public accepts missing teeth as a natural progression in the ageing process. This community group also made significantly different assessments of the effects of the oral health states of posterior and anterior teeth. This was particularly evident in the case of missing teeth. Where aesthetics are involved (i.e. the anterior teeth), a greater value is placed on the health and retention of the teeth.

11.7 Summary

1. Community assessments of the effect of oral health outcomes vary across the three sectors of the mouth: posterior, anterior maxilla and anterior mandible.
2. Community assessments of the effect of oral health outcomes vary across the four dimensions of health: well-being, social function, physical function and discomfort.
3. All oral health outcomes on posterior teeth have a less deleterious effect than the oral health outcomes on anterior teeth.
4. Decayed teeth in all sectors of the mouth and missing teeth in the anterior sectors have the most deleterious effect.

11.8 Conclusion

In the light of these findings, perhaps we should consider the following issues:

1. Should the dental profession and health policy-makers be encouraged to consider the opinions of the community in determining what constitutes good oral health?
2. Should dental epidemiologists consider developing new measures of oral health which reflect both their assessment and the community's assessment of the impact of decayed, missing and filled teeth in different sectors of the mouth?

In conclusion we would like to paraphrase Fyffe and Kay (1992). If the assessments of oral health outcomes by the general public and by dental professionals differ, it may be necessary to consider whose valuation, the provider's or the consumer's, should be used as a measure of oral health in the planning and evaluation of dental programs.

11.9 References

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12 Dental neglect

There have been a small number of studies that have examined dental neglect, apathy or indifference. Todd and coworkers in the United Kingdom reported that over a third of dentate adults could be categorised as being 'apathetic' on the basis of their response to the dental question 'I can't be bothered really' (Todd et al., 1982).

Nuttall recently reported on the development of a scale to measure dental indifference (Nuttall, 1996). He defined dental indifference as an attitude which consists of a significant under-valuing of teeth and lack of interest in oral health, manifesting itself in oral neglect, poor compliance with oral care recommendations, a quick-fix attitude to dental treatment (such as preferring teeth to be extracted rather than filled) and poor dental attendance for reasons other than dental anxiety.

The dental indifference questionnaire incorporated eight questions covering oral hygiene practices, perceived need for treatment and usual dental attendance practice. He found in testing the scale that 18% showed extremely high indifference and 23% minimal or low indifference.

Nuttall's indifference scale has been proposed to offer a quick method of assessing what appears to be a significant attitude among some dental patients. The brevity of the questionnaire is seen as being necessary given the nature of the attitude which is being assessed and it is felt that the scale may be useful for defining groups who require oral health promotion.

Strauss and coworkers used data from nine questions to generate self-ratings of dental neglect along the three dimensions of 'self-care', 'professional utilisation', and 'general neglect' in a study among elderly Americans (Strauss et al., 1994). In this study approximately one in three participants manifested dental neglect. The results of that study demonstrated that dental neglect can be objectively measured and its association with dental health explored among elderly people.

12.1 Aims

The aim of the study presented in this chapter was to investigate the phenomenon of dental neglect in children, and to examine its association with key demographic and dental health indicators. This is largely based on the findings of Thomson, Spencer and Gaughwin (Thomson et al., 1996).

12.2 Methods

The methods for the Study into the Child Use of Dental Health Services (SCUDS) in South Australia in 1994 have been presented in Chapter 1. Demographic and attitudinal data were sought from parents of a stratified random sample of 2,659 children from grades 5 and 6 and grades 9 and 10, as the second stage of SCUDS.

Parents were sent a short questionnaire which sought informed consent for their participation in the study and established their sources of dental care in the previous two years so that they could be classified into users of: school dental services, private dentists, both types of service, or neither type of service.

Dental neglect was investigated by capturing parental responses to seven statements, using a Likert scale which ranged from one ('definitely no') to five ('definitely yes').

The statements were:

1. Your child maintains his or her home dental care.
2. Your child receives the dental care he or she should.
3. Your child needs dental care, but you put it off.
4. Your child needs dental care, but he or she puts it off.
5. Your child brushes as well as he or she should.
6. Your child controls between-meal snacking as well as he or she should.
7. Your child considers his or her dental health to be important.

A team of calibrated dental examiners (4 dentists and 3 dental therapists) subsequently undertook dental examinations of a further random sub-sample of 765 children in school dental clinics.

12.3 Results

The pooled response distributions for the seven statements are presented in Figure 12.1. The percentage responses are presented as a cumulative horizontal bar going from definitely no on the left through to definitely yes on the right. The mean values are presented by the star against the top scale.

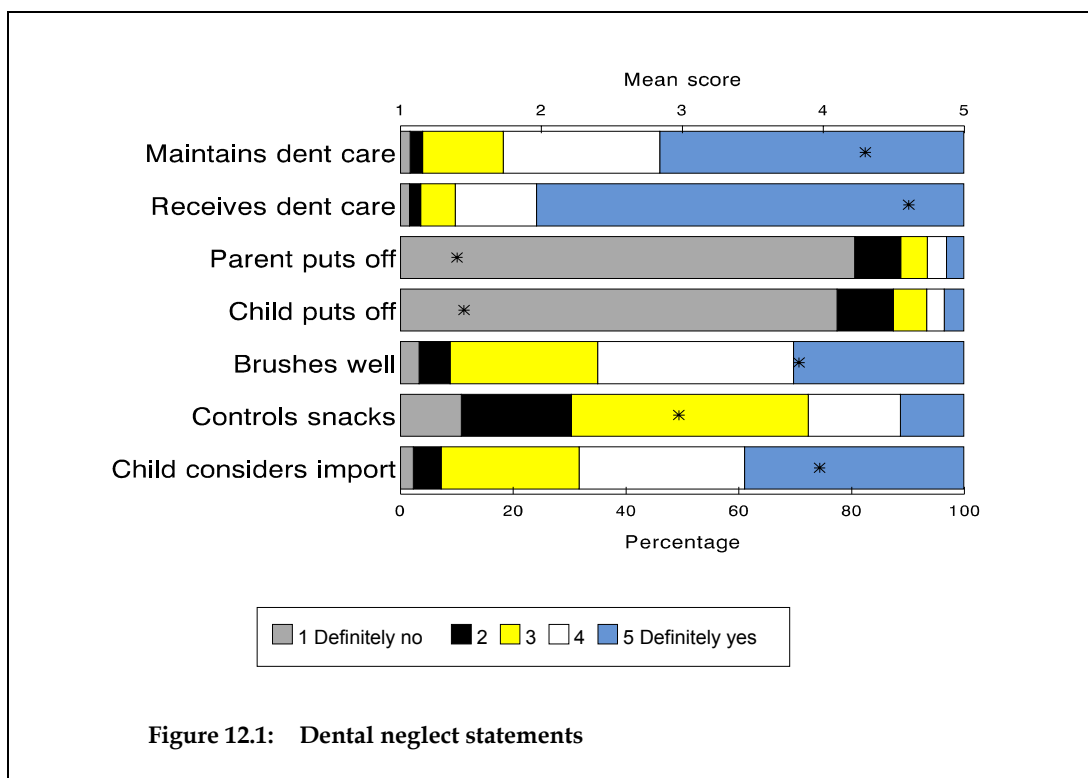


Figure 12.1: Dental neglect statements

It can be seen that the 1st and 2nd statements show a high percentage of definite agreement, with the mean well above 4. The 5th and 7th statements follow with means close to 4. The statement related to between-meal snacking shows a symmetric distribution, while the two statements related to the deferment of dental care, namely the 3rd and 4th statements, show nearly 80% reporting definitely no.

For the following analysis the coding for responses to statements 1, 2, 5, 6 and 7 were reversed so that, for all items, higher scores reflected greater neglect.

Factor analysis revealed two factors and these accounted for 58.4% of the variance in the items (see Table 12.1). The first factor indicated a general 'dental neglect' phenomenon on which all seven items loaded over the threshold of 0.4. The other revealed an 'avoidance of care' phenomenon, involving only the two items pertaining to the deferment of the child's dental care by the parent or child. Those two items loaded more strongly on avoidance than on neglect. The composite dental neglect variable was created by summing the scores of all seven variables. Dental neglect ranged from 8 to 33 out of a possible range of 7 to 35.

Table 12.1: Factor analysis

	Factor 1	Factor 2
Home care	0.68	
Gets care	0.56	
Parent defers	0.43	0.75
Child defers	0.45	0.71
Brushes well	0.74	
Controls snacks	0.56	
DH important	0.72	

Significant associations between background characteristics and mean dental neglect scores are presented in Table 12.2. Higher scores were apparent for children who: were male; were not from two-parent families; were from households with incomes of \$30,000 or less; were from households where the income was derived from benefits or pensions; had parents who did not make routine dental visits; or who had not made a dental visit in the previous two years. Exclusive users of private dental services had lower dental neglect scores.

Table 12.2: Mean dental neglect scores

	Mean dental neglect score	sd
Sex		
Male	13.65*	4.30
Female	12.45	3.59
School grade		
Grades 5 and 6	13.18	3.96
Grades 9 and 10	12.93	4.13
Family type		
Two parent	12.97*	3.94
Other	13.81	4.44
Household income		
\$30,000 or less	13.45*	4.35
>\$30,000	12.90	3.84
Source of income*		
Benefit/pension	13.98	4.34
Wages/salary	12.97	3.93
Parental visiting pattern*		
Routine	12.76	3.89
Symptom-driven	13.92	4.24
Maternal education level		
Primary only	13.68	3.86
Secondary only	12.94	4.08
Tertiary	13.17	3.79
Dental service use in last 2 years#		
SDS only	13.10	4.11
Private dentist only	12.47	3.54
Both	13.43	3.96
Neither	15.54	4.96

ANOVA: * p<0.01, # p<0.05

Those variables were used as independent variables in a linear regression analysis (see Table 12.3). The variables 'household income', 'source of household income' and 'family type' did not reach statistical significance in the final model. Male children and those in the younger age group were associated with high dental neglect scores, as were those whose mothers had had less formal education. Parental dental care-seeking behaviour was also significantly associated with neglect, with higher scores being observed for children for whom the responding parent's last dental visit was symptom-driven, rather than for routine examination. Finally, dental neglect scores were higher where a child had not received any dental care in the previous two years.

Table 12.3: Linear regression

	Standardised regression coefficient	P value
Child is male	6.58	<0.01
Child in grade 5 or 6	2.34	0.02
Parental visiting pattern	5.71	<0.01
Maternal education level	2.22	0.03
No dental care in last 2 years	7.54	<0.01

The continuous variable dental neglect was then dichotomised in order to allow examination of the relationship between dental neglect and dental caries experience. A dental neglect value of 13 and over resulted in allocation to the higher neglect group, while individuals with scores of 12 and under were assigned to the lower neglect group. Those grade 5 and 6 children who were in the higher neglect group tended to have more filled surfaces in deciduous teeth and more decayed surfaces in permanent teeth, but neither of these was statistically significant (see Table 12.4).

Table 12.4: Caries experience - (mean scores) - older children (grades 5 and 6)

	Lower dental neglect	Higher dental neglect	P value (ANOVA)
Deciduous teeth			
Decayed surfaces (ds)	0.27	0.36	0.35
Missing surfaces (ms)	0.07	0.03	0.48
Filled surfaces (fs)	0.73	1.11	0.09
dmfs	1.07	1.49	0.15
Permanent teeth			
Decayed surfaces (DS)	0.08	0.17	0.07
Missing surfaces (MS)	0.00	0.00	
Filled surfaces (FS)	0.46	0.46	1.00
DMFS	0.54	0.63	0.52

Those grade 9 and 10 children who were in the higher neglect group had greater overall caries experience (DMFS) than their peers in the lower neglect group, and they also had a higher number of decayed permanent tooth surfaces (see Table 12.5).

Table 12.5: Caries experience (mean scores) - older children (grades 9 and 10)

	Lower dental neglect	Higher dental neglect	P value (ANOVA)
Permanent teeth			
Decayed surfaces (DS)	0.29	0.78	<0.01
Missing surfaces (MS)	0.07	0.24	0.19
Filled surfaces (FS)	1.31	1.59	0.29
DMFS	1.68	2.61	0.02

12.4 Discussion

The distribution of replies to the seven items suggests a marked difference between responses to items referring to professional care and those which explore home care. Factor analysis offered confirmation of the existence of a discrete dental neglect phenomenon, together with a second avoidance factor on which there was higher loading by the two items relating to the deferment of dental care. The significant relationship of those two items with both neglect and avoidance suggests a close relationship between dental neglect and avoiding dental care which, in turn, is further substantiated by the observed relationship between dental neglect and parental dental visiting pattern. However, the stronger relationship of those two items with avoidance indicates that, while their relationship may be close, neglect and avoiding care are discrete dental health behaviours in the group under study.

The analysis of dental health status and dental neglect produced two notable findings among the older age group. The significantly higher decayed component of the permanent DMFS among the older children with high neglect scores leads to the conclusion that those children with greater dental neglect have more untreated caries. This is presumably due to a lack of recent dental care, but could also reflect differences in the way in which they are treated by the dental services. Also of interest is the substantially higher (by almost one whole tooth surface) mean DMFS score among the high neglect group, indicating a higher disease severity among individuals with greater neglect. This suggests that the concept of dental neglect is one which is worthy of consideration in caries aetiology, at least for permanent teeth in older children from families of lower socioeconomic status.

The dental neglect scale needs to be applied in other studies in order to allow the estimation of thresholds for categorising dental neglect, and to facilitate further exploration of its relationship to dental health.

12.5 Conclusions

Dental neglect in children can be quantified in such a way as to demonstrate its relationship with sociodemographic factors, and its association with caries status.

This dental neglect scale may be used to help predict and understand variation in dental health, and to assist in designing and targeting dental health promotion strategies. It offers another method of pinpointing groups and individuals on whom health promotion efforts should be focused. The consistently higher dental neglect scores for individuals from certain groups, together with the demonstrable difference in overall caries experience between groups with high and low neglect scores, confirms the pressing need for health promotion and behaviour modification strategies to be directed more intensively toward infrequent dental attendees and low-income families.

12.6 Acknowledgement

This chapter has drawn upon material previously presented in:

Thomson WM, Spencer AJ & Gaughwin A (1996). Testing a child dental neglect scale in South Australia. *Community Dent Oral Epidemiol* 24:351–6.

12.7 References

Nuttall NM (1996). Initial development of a scale to measure dental indifference. *Community Dent Oral Epidemiol* 24:112–6.

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Todd JE, Walker AM & Dodd P (1982). Adult dental health. Volume 2. United Kingdom. 1978. London: Her Majesty's Stationery Office.



Satisfaction with Dental Care

13 School Dental Service and private dentistry

13.1 Introduction

At the time of this study a universal, free, School Dental Service operated in South Australia. School dental services should minimise problems associated with knowledge of available services, and access to those services, and possible cultural differences in dental behaviour during the period spent at school (Spencer et al., 1989). Apart from government-funded school dental care, children may also attend for private dental care, paying either directly or through insurance plans. However, there has been little investigation in Australia linking children's sociodemographic characteristics and choice of provider to the dental care they receive.

The delivery of dental care can be modelled as a process as shown in Figure 13.1, whereby health status and perceived dental problems of patients are converted to a diagnosis and treatment plan, which loops back on health status. All of these processes are embedded in a society which contains both the patient and the delivery system, all of which have their own characteristics that can influence the process. The embedding of the provider in a clinic, within a sector and type of payment mechanism, can be viewed as a filter through which the service provision process passes, and one that may be expected to impact on the process.

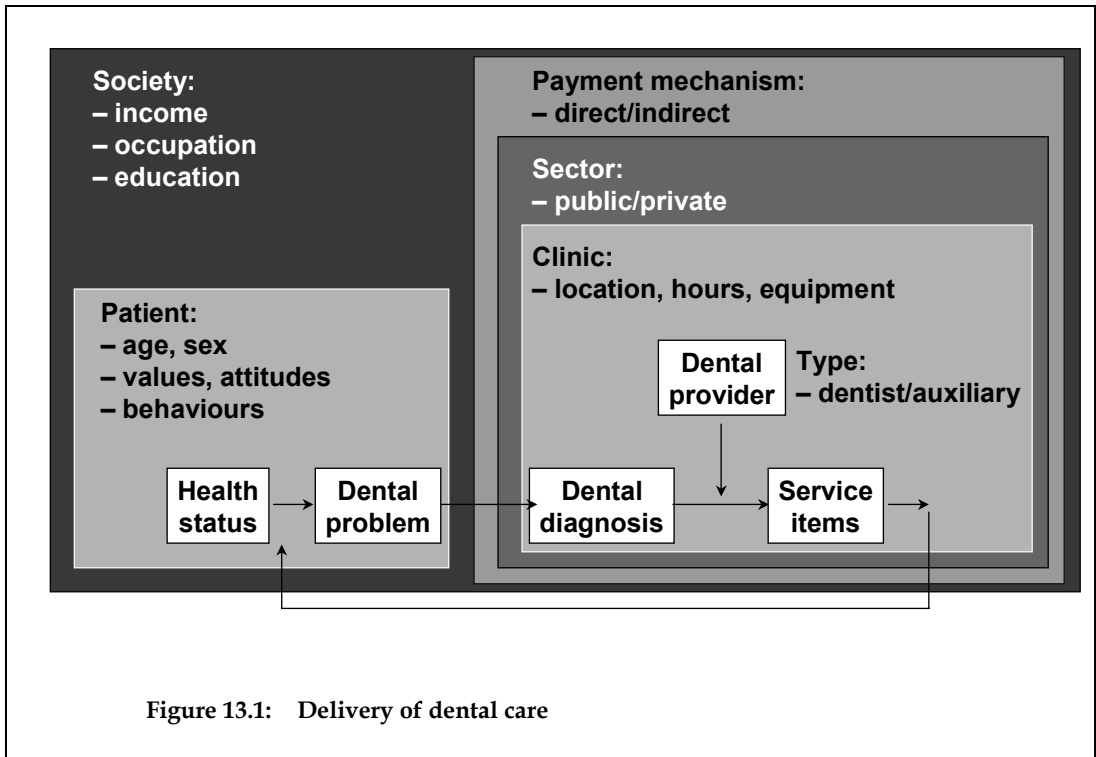


Figure 13.1: Delivery of dental care

A common way of assessing the dental care received by children from different providers is to measure oral health status. While important, such measures tend to be focused on technical aspects of care using indices and concepts which are salient to professionals. Patient satisfaction, on the other hand, looks at the care provided from the perspective of the patient. Measures of patient satisfaction have application both in understanding patient behaviour, and in the evaluation of dental providers, services, and facilities.

The aim of the study was to investigate perceptions of satisfaction with care provided to South Australian children living in metropolitan Adelaide by school dental services and private dentists using the Dental Satisfaction Index (Davies & Ware, 1981). The Dental Satisfaction Index (DSI) is a widely used instrument to measure patient satisfaction, covering dimensions of general satisfaction, cost, pain, quality, access, availability, and continuity of care. A modified version of the index is used, comprising 17 rather than the original 19 items, encompassing the seven dimensions of the original index but with some re-wording of items to accommodate the use of the instrument with children and public dental services.

13.2 Materials and methods

A three-stage cross-sectional survey was conducted over an 18-month period during 1993–94 in metropolitan Adelaide (Gaughwin et al., 1996). In Stage 1 of the study a short questionnaire was distributed to children through classrooms, and completed by parents. Selected school years were sampled at both primary and high school level. Children were classified as users of the School Dental Service (SDS), users of a private dentist, users of both the SDS and a private dentist or as not having received care in the two preceding years. This analysis reports on a comparison of dental satisfaction between School Dental Service users and those using private dentists. Stage 2 of the study involved completion of a comprehensive questionnaire which was mailed to a randomly selected sub-sample of Stage 1 respondents from each of the dental provider groups. This questionnaire, again completed by parents, collected information relating to sociodemographic characteristics, parental attitudes, dental knowledge and behaviour, and satisfaction with dental care. Stage 3 of the study involved collection of oral health data from a randomly selected sub-sample of children from Stage 2 respondents.

All primary schools were included in the sample, while high schools were stratified on the basis of whether more than 35% of children were school-card-holders. Different stratum-specific sampling rates were applied, and adjusted through weighting in the analysis.

13.3 Results

Response

Table 13.1 outlines the response to the study. During Stage 1, a total of 20,938 children received the short questionnaire, providing a response rate of 54.4%. The more detailed questionnaire used in Stage 2, sent to a random sample of Stage 1 respondents stratified by provider group, had an overall response rate of 78.0%. Of the 1,521 children invited to participate in a dental examination in Stage 3 of the study, 940 consented, and 839 attended. The analysis presented is restricted to Stage 2 participants.

Table 13.1: Response by stage of study

		Primary	High	Total	Response
Stage 1	Sampled	10,597	10,341	20,938	
	Responded	6,877	4,511	11,388	54.4% of sample
Stage 2	Sampled	2,157	1,424	3,581	
	Responded	1,671	1,121	2,792	78.0% of sample
Stage 3	Invited for exam	796	725	1,521	
	Consented for exam	515	425	940	61.8% of invited
	Attended exam	466	373	839	55.2% of invited

Table 13.2 presents characteristics of Stage 2 respondents by provider group split by school level. For both primary and high school children, there were no differences in percentages by sex of child, with the percentage of males ranging between 49.7% and 55.5%; or in time since last visit, with the percentage visiting within the last year ranging between 89.9% and 93.0% at primary school and 82.5% and 84.2% at high school level.

Table 13.2: Distribution of respondent characteristics

	Primary			High		
	SDS (%)	Private (%)		SDS (%)	Private (%)	
Sex of child						
Male	49.7	54.0	ns	51.9	55.5	ns
Time since last visit						
<1 year	89.9	93.0	ns	82.5	84.2	ns
Education of parents						
Some high school	22.9	13.0	*	32.9	23.3	*
Completed high school	33.2	31.8		35.4	37.6	
Some tertiary	43.9	55.3		31.7	39.1	
Insurance status						
Insured	54.9	90.5	*	56.2	89.0	*
Occupation of mother						
Manager/professional	14.3	23.8	*	10.2	15.3	*
Para-professional/trade	12.3	17.1		9.9	13.7	
Clerk/sales/driver/labourer	31.3	31.0		36.6	40.7	
Other	42.1	28.1		43.3	30.3	
Language spoken at home						
English	93.7	98.1	*	93.8	96.0	ns

* (Chi-square; $p < 0.05$)

However, there was significant variation by maximum education level of either parent and insurance status of family. There were lower percentages among SDS users having some tertiary education or higher (e.g. 43.9% cf. 55.3% at primary school level) and lower percentages having insurance (e.g. 54.9% cf. 90.5% at primary school level). Language mainly spoken at home varied among primary school families, with lower percentages speaking English among SDS users.

Distribution of DSI items – primary school

The next set of four figures shows the distribution of responses to individual items of the Dental Satisfaction Index split by SDS and private, among parents of primary school children. Responses were recorded on a 5-point Likert scale, ranging from one (strongly disagree) to five (strongly agree). Satisfaction with care was equated with the extent and direction of agreement with the items making up the index.

Figure 13.2 shows that parents of children using the SDS had lower levels of satisfaction with 'care could have been better', a negatively worded item, but higher levels of satisfaction with 'cost' and 'convenience of location', both positively worded items, where a higher percentage strongly agreeing indicates a greater degree of satisfaction.

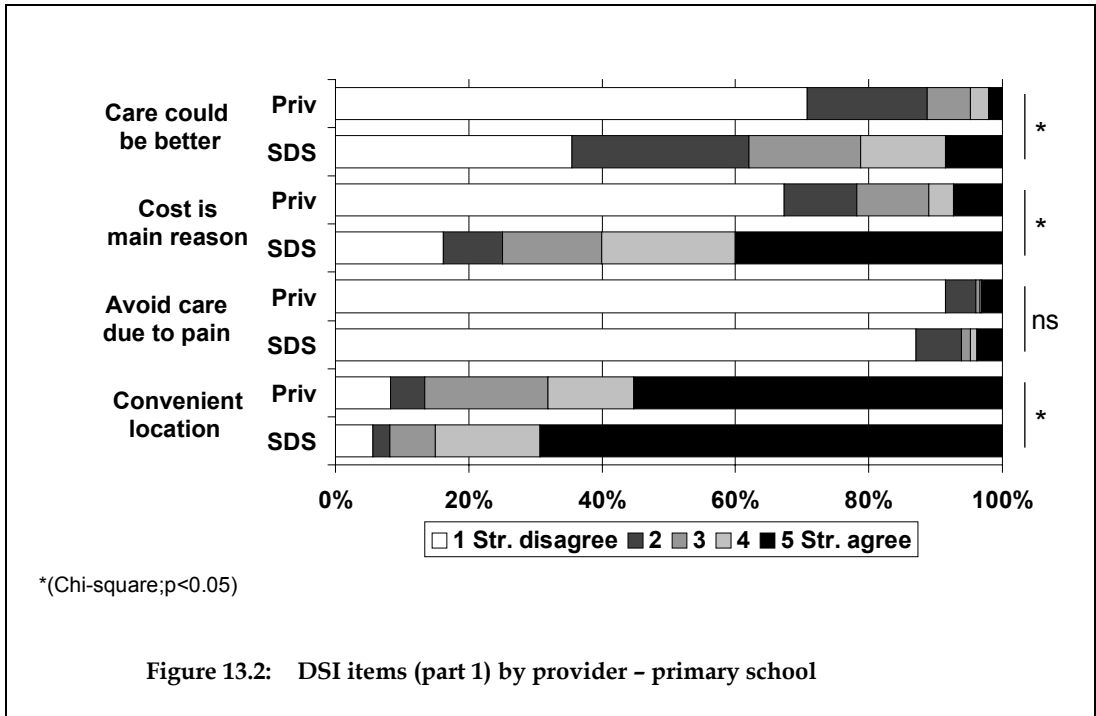


Figure 13.3 shows that parents of children using the SDS had lower satisfaction with 'hard to get an appointment', the third and final negatively worded item among the set of 17 items, 'hours are convenient' and 'same provider every time'; but higher satisfaction with the item, 'friends also attend'.

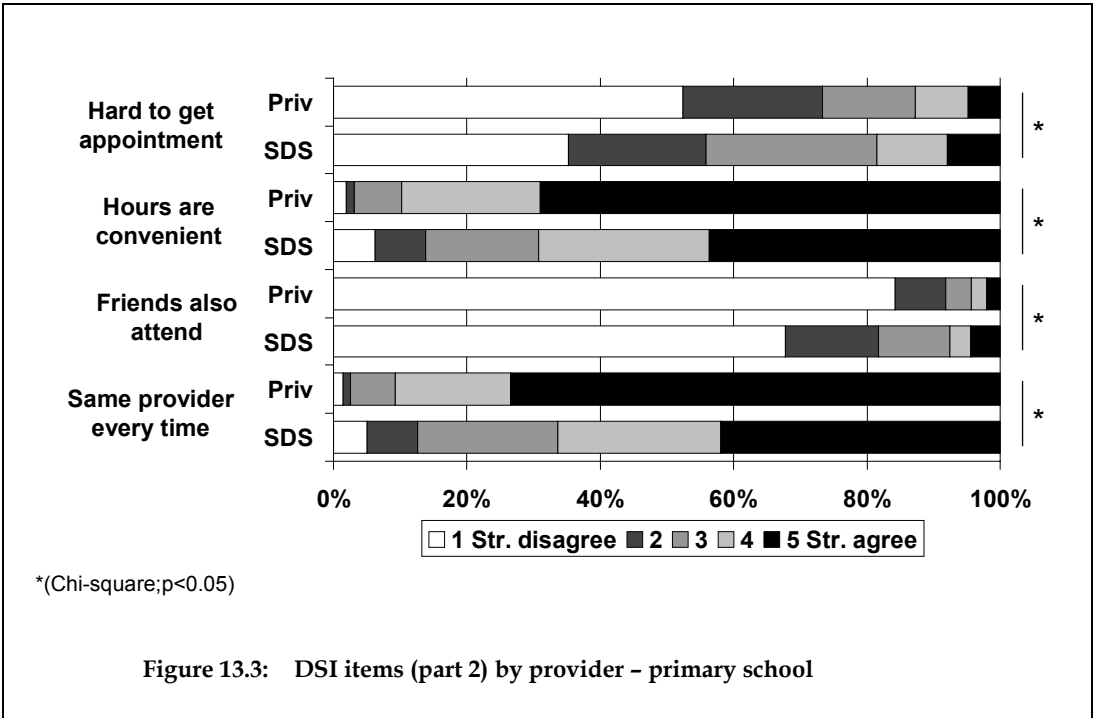


Figure 13.4 shows that parents of children using the SDS had lower satisfaction with each of these items: 'provider checks everything', 'treats with respect', 'cures most problems' and 'emphasises preventive care'. However, despite the differences by provider group, the actual levels of satisfaction were high for both groups.

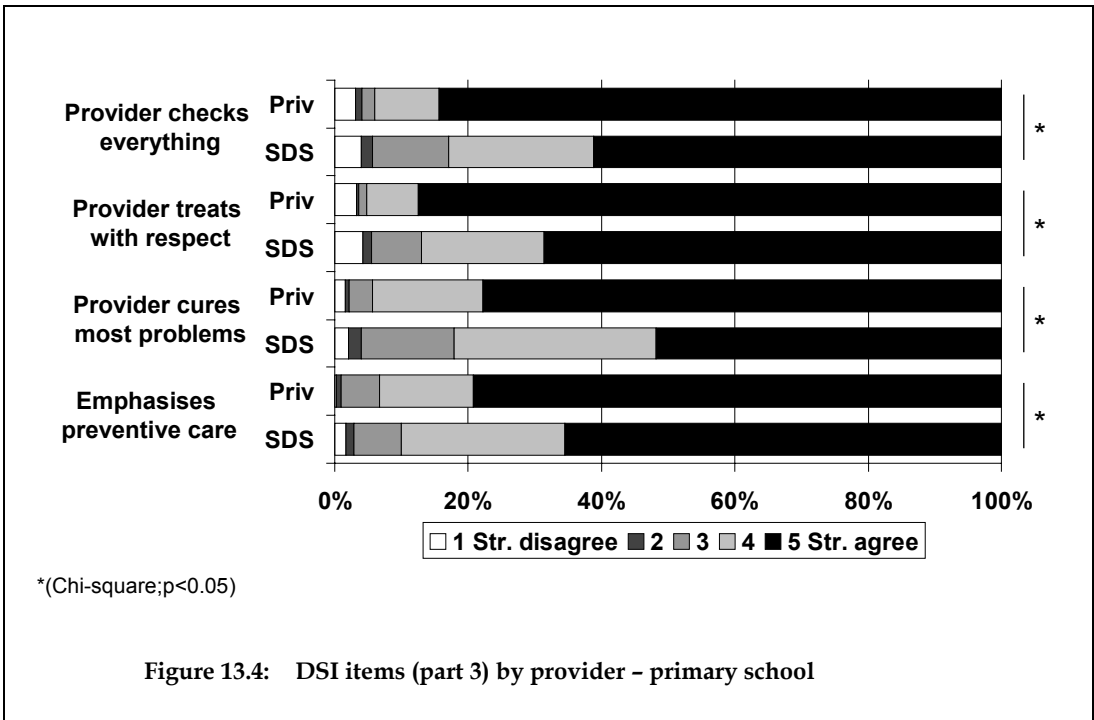
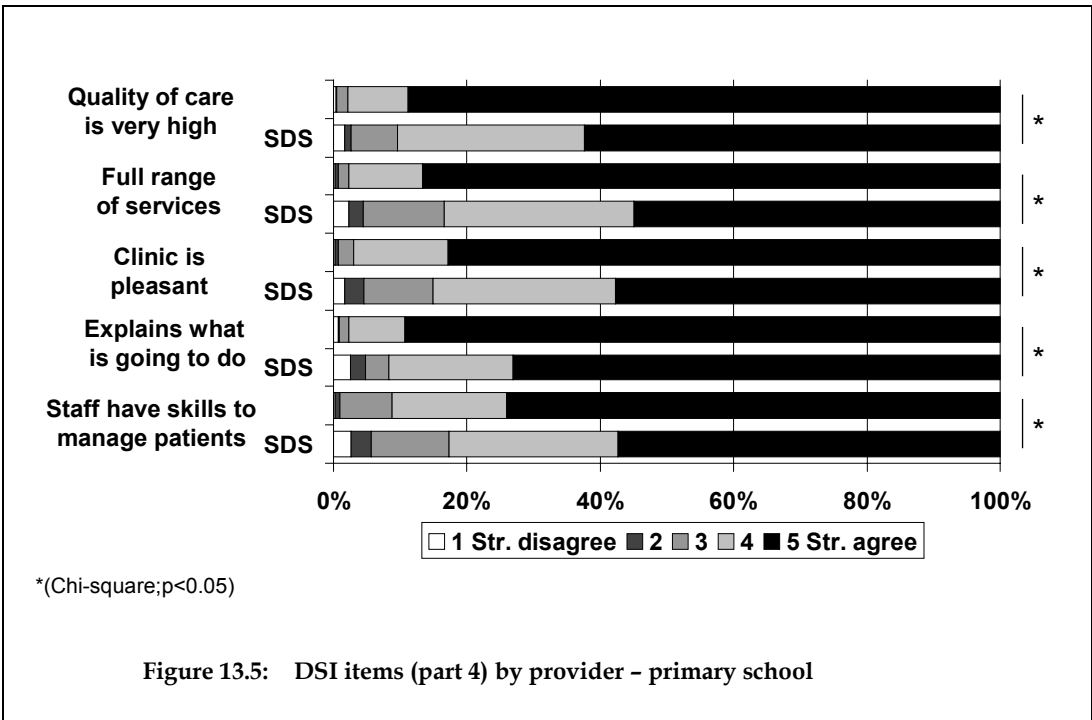


Figure 13.5 shows that parents of children using the SDS had lower satisfaction with each of these items: 'quality of care', 'range of services', 'clinic is pleasant', 'explains what is going to do', and 'staff have special skills'. However, once again the actual levels of satisfaction with these items were high for both provider groups.



Distribution of DSI items – high school

The next four figures present the individual items of the Dental Satisfaction Index for high school children. Figure 13.6 shows that parents of SDS users had lower satisfaction with 'care could have been better' and 'avoid care due to pain', both negatively worded items, but had higher satisfaction with the items of 'cost' and 'convenient location'.

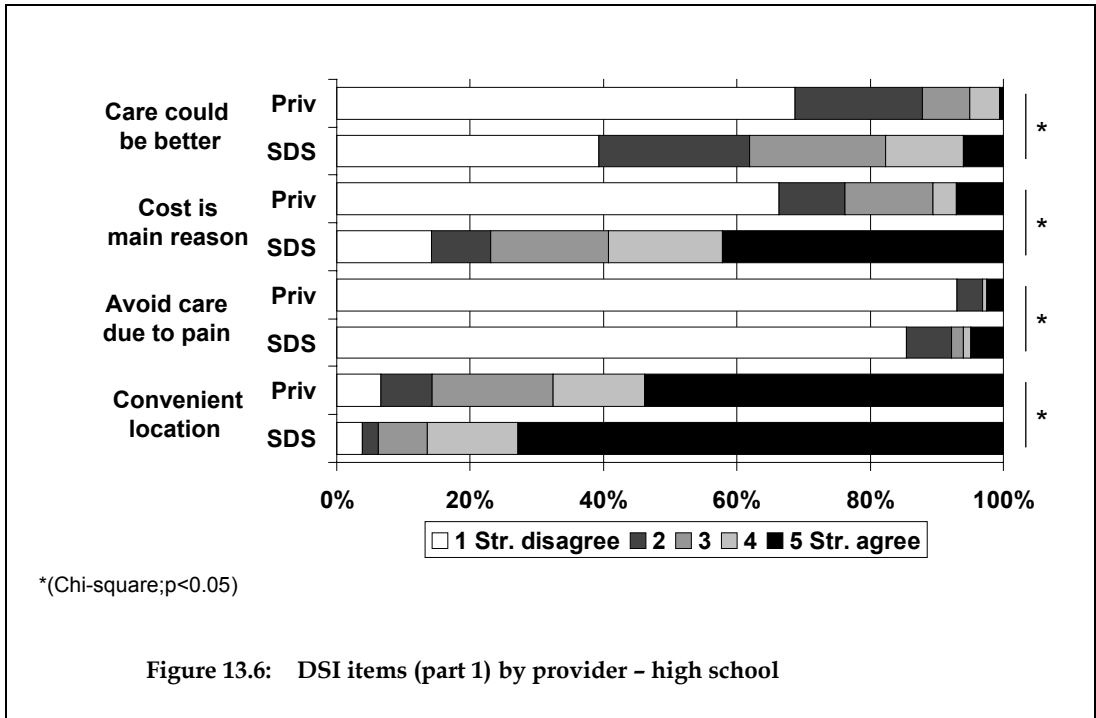
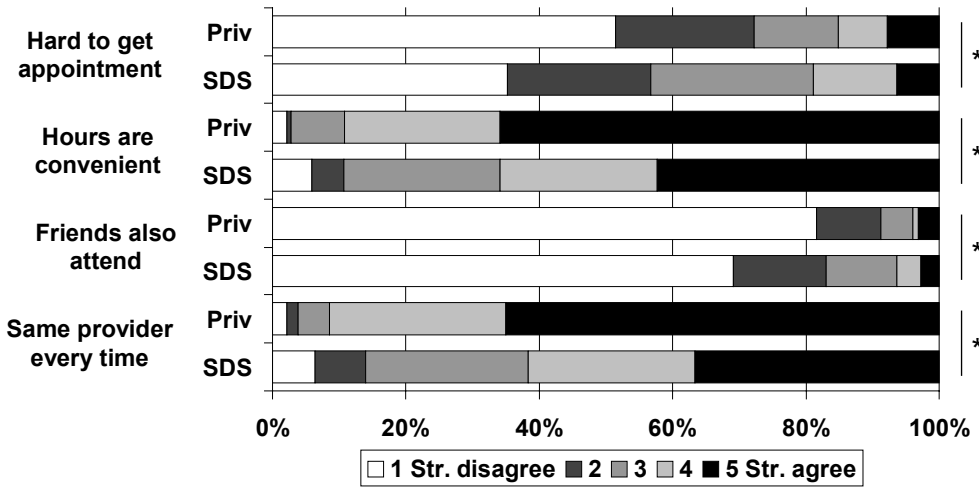


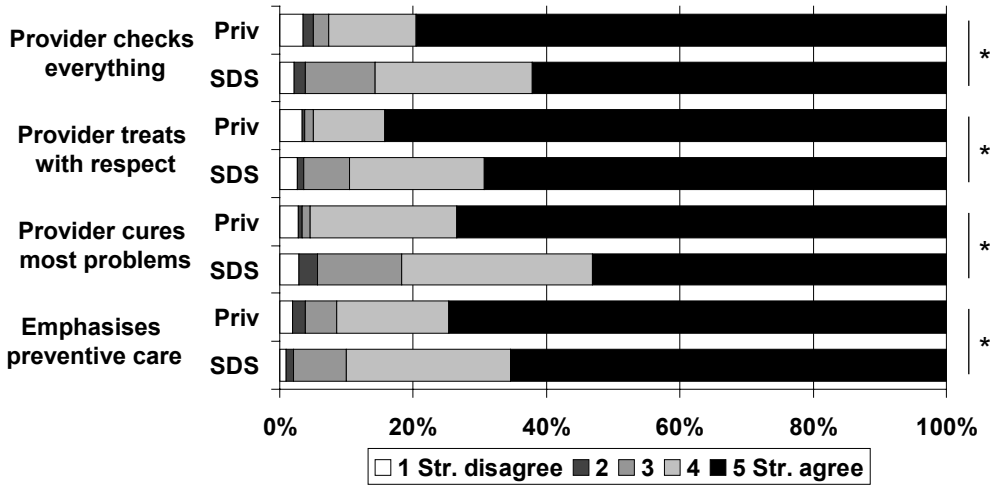
Figure 13.7 shows that parents of SDS users had lower satisfaction with 'hard to get an appointment', the third negatively worded item, and the two positively worded items 'hours are convenient' and 'same provider'. There was higher satisfaction for the item 'friends also attend', but the differences were small, especially for response codes four and five.



*(Chi-square;p<0.05)

Figure 13.7: DSI items (part 2) by provider - high school

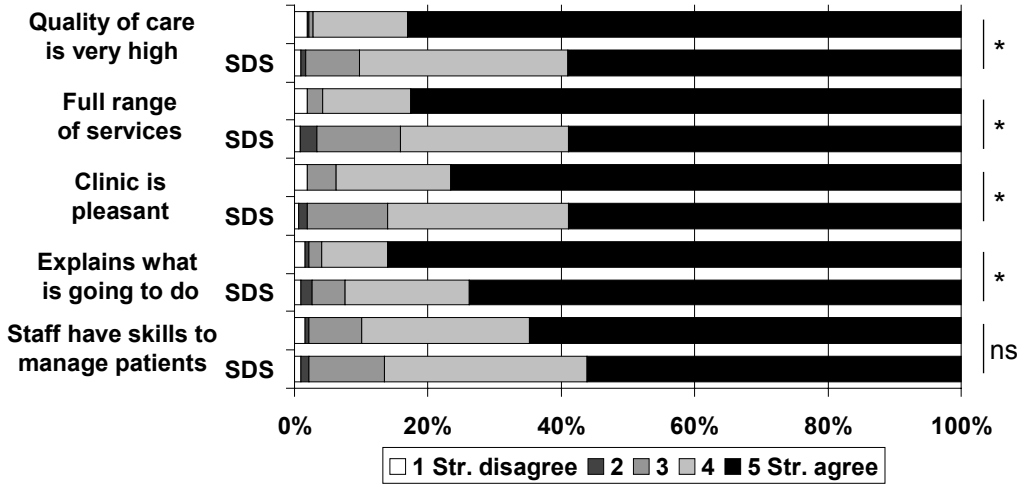
Figure 13.8 shows that parents of SDS users had lower satisfaction for all four items: 'provider checks everything', 'treats with respect', 'cures most problems', and 'emphasises preventive care'. However, the differences were generally small, and the overall levels of satisfaction were high for both provider groups.



*(Chi-square; p<0.05)

Figure 13.8: DSI items (part 3) by provider - high school

Figure 13.9 shows a similar pattern to Figure 13.8, with parents of SDS users having lower satisfaction for the items: 'quality of care', 'range of services', 'clinic is pleasant', and 'explains what is going to do'. However, despite the differences the overall levels of satisfaction were, once again, high for both provider groups.



*(Chi-square; p<0.05)

Figure 13.9: DSI items (part 4) by provider - high school

DSI: dimensions, items and subscales

Table 13.3 groups the items into conceptual dimensions, following the original Dental Satisfaction Index. The first three dimensions, 'general satisfaction', 'cost' and 'pain' are represented by single items, as are the final two, 'availability' and 'continuity'. The 'quality' subscale is composed of nine items, while the 'access' subscale has two. One item, 'friends also attend', was dropped from the 'access' subscale to improve reliability as measured by Cronbach's alpha. However, the reliability of this subscale was still below the level of 0.50 which is recommended for inter-group comparisons (Davies & Ware, 1981). This reduced the overall DSI scale to 16 items. The DSI scale had an adequate reliability measure of 0.78, which is close to the value of 0.80 for the original DSI, while the 'quality' subscale had a high reliability measure of 0.9.

Table 13.3: DSI – dimensions, items and subscales

Dimension	No. of items	Description of items	Cronbach alpha
General satisfaction	1	Care could be better	–
Cost	1	Cost is main reason	–
Pain	1	Avoid care due to pain	–
Quality	9	Provider checks everything, treats with respect, cures most problems, emphasises preventive care, high quality, range of services, pleasant clinic, explains, special skills	0.90
Access	2	Hard to get appointment, hours are convenient	0.43
Availability	1	Convenient location	–
Continuity	1	Same provider every time	–
DSI	16	All of the above items	0.78

The direction of negatively worded items was reversed, so that higher values indicated a greater degree of satisfaction for all items. Subscales were calculated by summing the values of the items and dividing by the number of items. The DSI was calculated by summing the values of the single-item dimensions and multi-item subscales, and then dividing by the number of items and subscales so that each dimension of the index was given equal weight, and the final index and all component dimensions ranged between one and five.

Table 13.4 presents means and standard errors for the DSI and component dimensions by provider group and school level. For both primary and high school levels, SDS users had lower satisfaction scores for ‘general satisfaction’, ‘quality’, ‘access’, and ‘continuity’ but had higher satisfaction scores for the dimensions of ‘cost’ and ‘availability’. Satisfaction with the dimension of ‘pain’ was slightly lower for SDS users at high school level. However, the overall measure of satisfaction using the DSI showed no significant difference between SDS users and private dental care. In general, this may be interpreted as a counter-balancing of dimensions across provider groups. SDS users showed higher satisfaction with dimensions such as ‘cost’ and ‘availability’ but lower satisfaction with dimensions such as ‘quality’ and ‘access’.

Table 13.4: Mean DSI and subscales by provider

Dimension	Primary school					High school				
	SDS		Private			SDS		Private		
	Mean	(se)	Mean	(se)		Mean	(se)	Mean	(se)	
General satisfaction	3.68	(0.06)	4.53	(0.03)	*	3.78	(0.05)	4.57	(0.05)	*
Cost	3.59	(0.07)	1.73	(0.05)	*	3.64	(0.06)	1.75	(0.07)	*
Pain	4.72	(0.04)	4.81	(0.03)	ns	4.67	(0.04)	4.84	(0.04)	*
Quality	4.41	(0.03)	4.76	(0.02)	*	4.46	(0.03)	4.68	(0.03)	*
Access	3.79	(0.04)	4.31	(0.03)	*	3.80	(0.04)	4.25	(0.04)	*
Availability	4.41	(0.05)	4.02	(0.05)	*	4.49	(0.04)	4.01	(0.07)	*
Continuity	3.91	(0.05)	4.60	(0.03)	*	3.78	(0.05)	4.51	(0.05)	*
DSI	4.08	(0.02)	4.11	(0.02)	ns	4.09	(0.02)	4.07	(0.02)	ns

* (OLS regression; $p < 0.05$)

13.4 Discussion

Parents of children using the SDS showed higher perceptions of satisfaction with cost of care and convenience of location, but had lower perceptions of satisfaction in relation to general satisfaction, quality, access and continuity. However, overall satisfaction was similar for children using SDS and private care. These patterns occurred consistently for both primary and high school children. While satisfaction was generally high regardless of provider, the differences in the component dimensions of satisfaction indicate areas of potential improvement for both the SDS and private dentists. The SDS has the advantage of better cost and convenient location, but achieves lower perceptions of satisfaction with continuity of provider, with the access issues of ease of appointment and convenience of hours, and with quality issues covering perceptions of providers, clinics, and range of services.

Perceptions of satisfaction are individual opinions and therefore valid in that sense, but the differences measured raise the question of 'do they represent actual differences in care?' That is, 'are they accurate judgements?' Or do they entail other values or preconceived beliefs regarding, for example, the status of the public sector compared with the private sector, auxiliaries compared with professionals and the individual compared with the State in providing care.

A final consideration concerns findings from the Stage 3 dental examinations (Gaughwin et al., 1999). These findings showed SDS users had comparable or better oral health outcomes. For example, high school children using the SDS had fewer filled surfaces and a lower DMFS index compared to children attending for private care. This raises questions concerning the extent to which satisfaction is influenced by structure and process, rather than outcome, or whether satisfaction is actually independent of outcome. If so, consideration may need to be given on how to balance health status outcomes and patient satisfaction with care.

13.5 Acknowledgements

The staff of the South Australian Dental Service and Department of Dentistry at The University of Adelaide are acknowledged for their contributions to the study design and collection of data.

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14 Public and private patients

14.1 Introduction

Consumer satisfaction with health care is a methodology for evaluating health care programs which has come into use since investigations of patient satisfaction were first addressed in the 1970s (Hulka et al., 1971; Ware et al., 1976). Surveys designed to obtain information on the utilisation and assessment of medical care and to identify unmet needs have shown that care which is less satisfactory to the consumer is less effective. Links have been shown to exist between satisfaction and health behaviours such as appointment keeping, delay in seeking care, poor understanding and retention of instructions, intention to comply with recommended treatment, and medication use (Wilkin et al., 1993). Each of these behaviours could be detrimental to improved health status.

The Dental Satisfaction Survey was developed in 1994 as part of an evaluation of the Commonwealth Dental Health Program (CDHP). A series of three cross-sectional satisfaction surveys of adults who had received public-funded dental care during the previous 12 months were conducted in 1994, 1995 and 1996.

The focus of the satisfaction surveys was on the appropriateness of care provided during the CDHP, and the extent to which dental care provided met the needs and expectations of patients. Public-funded care included both care provided at public clinics and care provided by private practitioners to eligible patients, funded through the CDHP.

The aim of this study was to:

- compare the levels of client satisfaction of users of public-funded and private (own-expense) dental care over the three years of the CDHP;
- identify and investigate changes over time in the satisfaction levels of health-card-holders and non-card-holders; and
- determine whether improvements in access to care during the CDHP were reflected in higher satisfaction scores.

This required monitoring of population samples, not just users of the CDHP, with data from the three surveys available for comparison.

The satisfaction surveys were carried out as nested surveys associated with the corresponding National Dental Telephone Interview Surveys, which collected data from a random sample of Australian residents in all States and Territories, and had a mean response rate of around 70%.

A sub-sample of dentate adult participants who had visited a dentist in the previous 12 months, comprising all card-holders and 1 in 4 non-card-holders, were randomly selected and sent a follow-up self-complete mailed questionnaire.

Up to three follow-ups were made at two- to three-weekly intervals. A total of 3,262 individuals were approached, with an overall response rate of 85.5%.

Table 14.1: Sociodemographic characteristics of respondents (%)

	1994 (n=1,063)	1995 (n=576)	1996 (n=1,151)
Age group			
18–24 years	9.3	7.6	7.5
25–44 years	32.3	35.3	33.2
45–64 years	31.9	30.0	34.6
65+ years	26.1	27.1	24.7
Male	36.6	35.8	42.2
Language (other)	10.5	6.4	8.8
Health-card-holder	46.5	43.8	46.6
Public-funded visit	18.3	22.3	23.6
Capital city	55.7	55.8	57.0

Table 14.1 presents the distribution of the respondents by sociodemographic characteristics supplied during the telephone interviews and matched with the responses to the mailed surveys. Over a thousand surveys were returned in 1994, the baseline survey; and in 1996. A smaller sample was available for selection in 1995, when a smaller telephone survey was administered, which resulted in only 576 satisfaction survey participants. The proportion of male respondents rose from 36.6% in 1994 to 42.2% in 1996. The percentage of respondents holding a health card ranged from 43.8% in 1995 to 46.6% in 1996, while the proportion who received public-funded dental care varied from 18.3% in 1994, to 23.6% in 1996. The selection process, which included all card-holders, resulted in an over-representation of females, the 65+ age group and health-card-holders.

The cases were then weighted by age, sex and card-holder status to reflect the estimated resident population.

The survey requested respondents to assess their last visit, and included 24 satisfaction-related statements with responses on a 5-point Likert scale from 1, 'strongly disagree' to 5, 'strongly agree'.

The items tested in the survey consisted of positive statements, such as 'I was satisfied with the dental care I received' and negative statements, such as 'There were other dental problems I had that were not treated'. This approach ensured that participants considered their response to each statement, minimising the effect of a response set.

Negative statements were corrected for the direction of response, so that high values indicated agreement or satisfaction with that aspect of care.

Satisfaction statements used in the survey addressed a wide range of topics, which were grouped into three subscales:

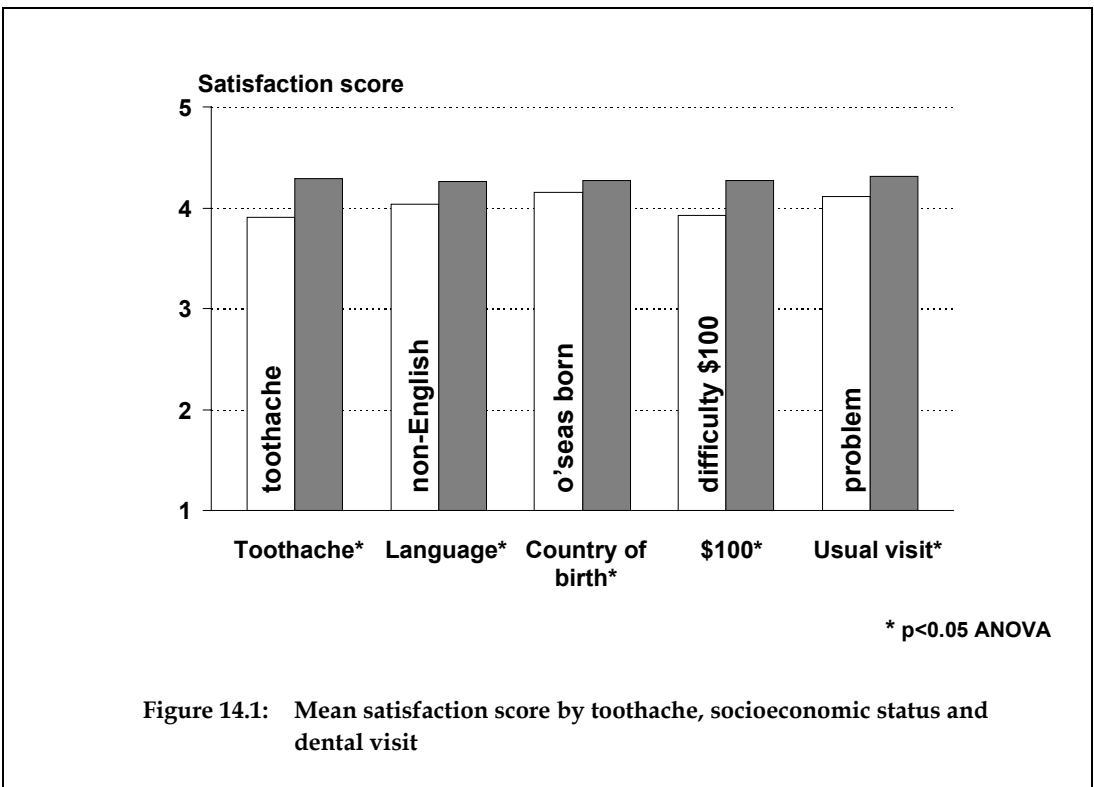
- context – which included issues such as convenience of clinic location, travel and appointments; waiting time; helpfulness of staff ; and choice of dentist seen;

- content – which included explanations and communication; the thoroughness of examination; and useful advice; and
- outcome – including concordance with services wanted; success of service and speed of results.

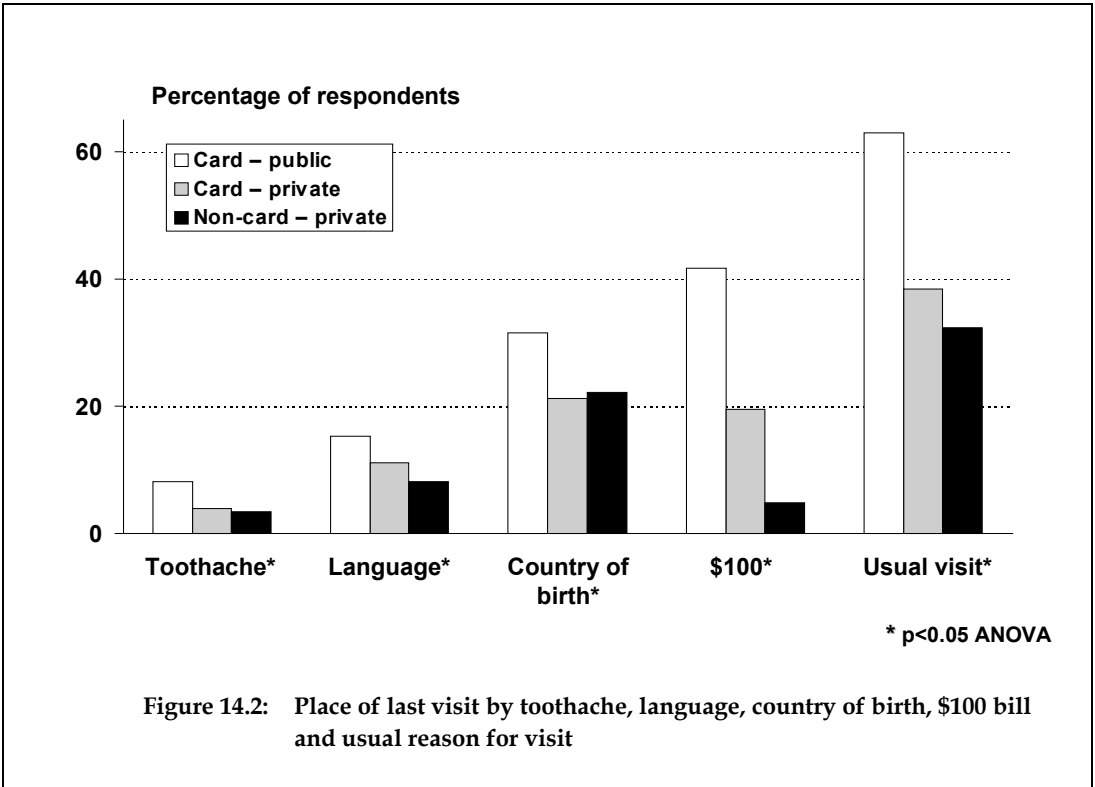
Overall satisfaction included all items from the three subscales. In addition, there were also a few items which did not fall into the three subscales, such as the friendliness of the dentist, and pain issues, which were included in overall satisfaction.

Dental satisfaction was estimated by calculating the standardised mean score for each group of items, so that the range for each subscale was one to five.

14.2 Results



Lower dental satisfaction was shown to be associated with a range of oral health, sociodemographic and economic variables. It can be seen from Figure 14.1 that the disadvantaged groups had significantly lower scores across the three surveys. Individuals who had experienced toothache in the previous 12 months, speak a language other than English at home, were born overseas, reported that they would have a lot of difficulty with a \$100 dental bill, and who usually visit for a dental problem, all had lower scores than their counterparts.



A high proportion of these persons last received care at a public clinic. Figure 14.2 presents those groups from Figure 14.1 plotted against card status and the place of last visit, showing the distribution of respondents with toothache, language other than English at home, overseas-born, difficulty paying a \$100 bill, and who usually visit for a dental problem.

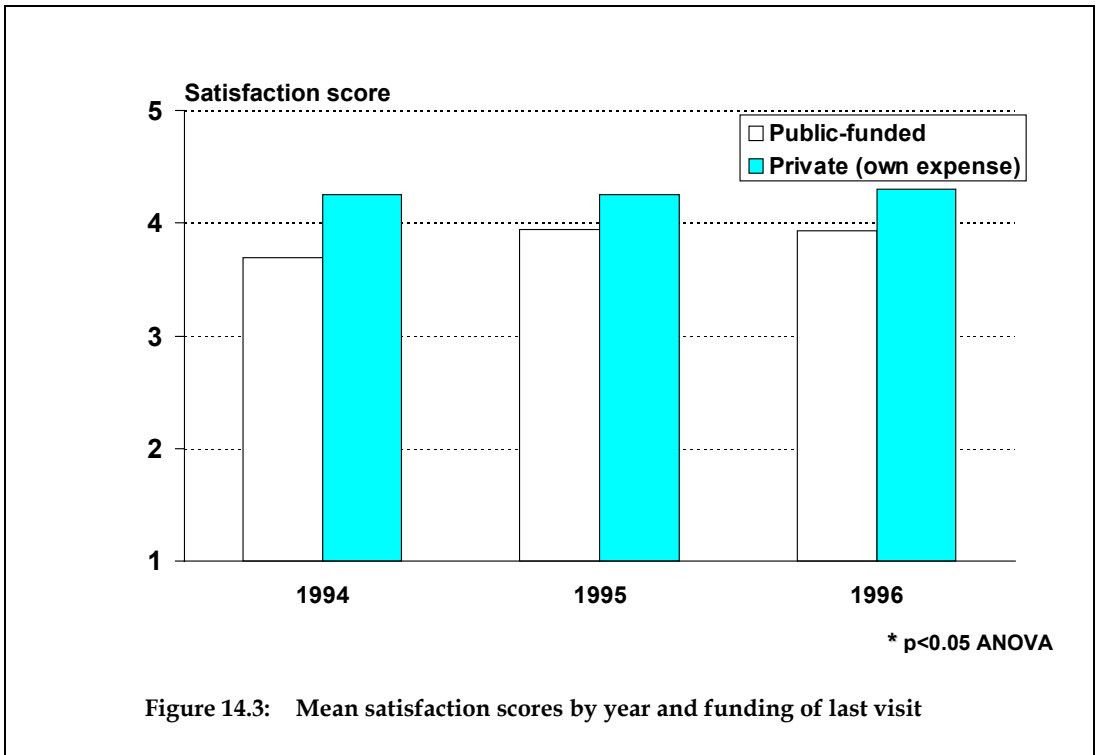


Figure 14.3 shows the mean satisfaction scores for public-funded patients and private, own-expense patients. Mean satisfaction scores were relatively high on the scale of 1 to 5. In 1994, 1995 and 1996 public-funded patients recorded mean scores of 3.69, 3.94, and 3.93. Card-holders and non-card-holders who made visits to private dentists at their own expense recorded 4.25, 4.25, and 4.30. As would be expected from the high proportions of disadvantaged groups among the public patients, in each year public-funded patients' scores were significantly lower than the private, own-expense patients' scores.

Bivariate associations between satisfaction scores and factors such as age, sex, visit type, language and year of survey were explored.

These analyses showed that a number of additional significant associations with satisfaction scales and subscales existed (analysis of variance p<0.05 ANOVA). Significantly lower levels of satisfaction were recorded by younger age groups, males, persons born overseas, those who speak a language other than English at home, those who have avoided or delayed visiting in the last 12 months due to the cost, those who last visited for a problem, and those whose last visit was public-funded.

These all had independent effects.

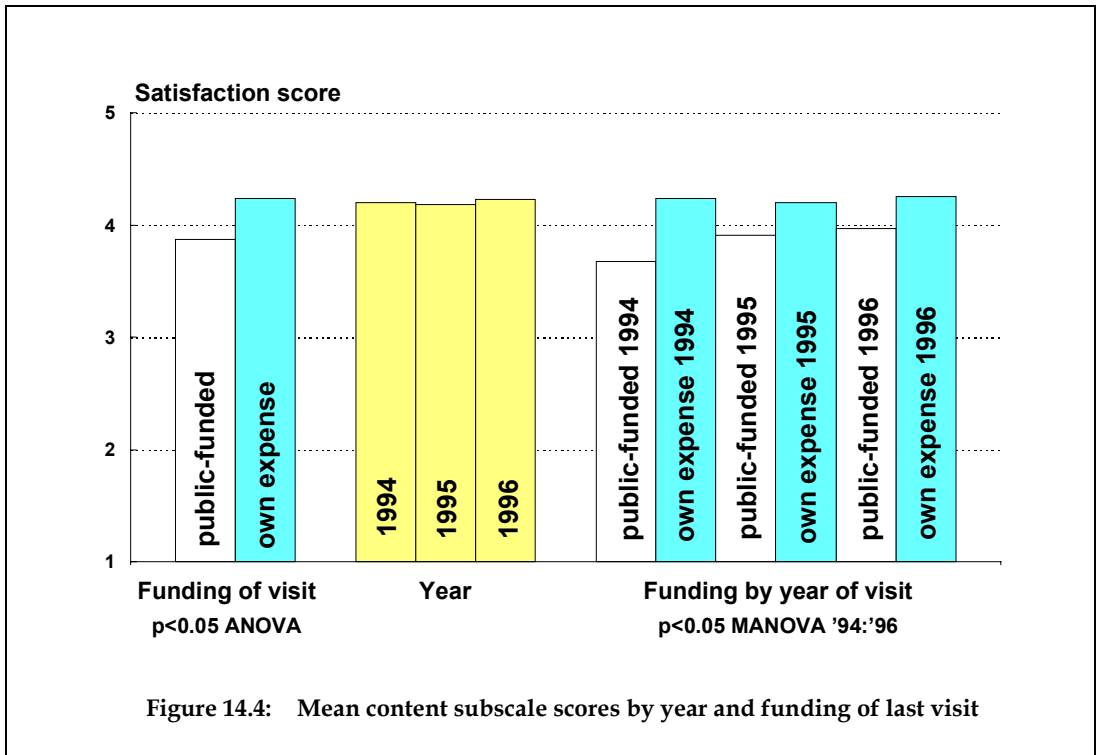


Figure 14.4 presents the content subscale scores by funding of visit and year of survey for all three surveys. The two bars on the left represent the satisfaction score on the content subscale by funding for the dental visit. It can be seen that public-funded respondents reported a significantly lower mean score than those whose visit was at their own expense.

The central three bars show the content satisfaction scores of all respondents by survey year, showing that there was no change at a population level over the three years of the survey.

The third set of bars, at the right side of Figure 14.4, present the break-down of scores by year and funding of visit. Here it can be seen that public-funded respondents reported increased levels of satisfaction from 1994 to 1996, while the content satisfaction scores of the group of patients who made private visits at their own expense remained constant.

It was expected that there may be an interaction between the funding of the visit and the year of the survey, indicating that over time the public-funded scores had changed significantly when compared to own-expense scores which had remained static.

The initial multivariate analyses of mean satisfaction scores by year, controlling for age, language, reason for visit and financial constraints showed that there was not a significant interaction between mean satisfaction score and the year of the survey. This may have been due to the low number of cases in the 1995 survey, which caused loss of statistical power.

On further investigation of the overall satisfaction scale and the three subscales, a significant interaction of the content subscale score with survey year, 1994 the baseline year, and 1996, the final year, and the source of funding, was demonstrated, while the interaction for overall satisfaction was very close to significance.

Variation in mean scores for the 24 individual items from the satisfaction survey were next investigated, to identify which, if any, aspects of satisfaction with dental care had changed significantly over the three study years.

The individual item scores were modelled using multiple analysis of variance (MANOVA), controlling for year of survey, 1994 or 1996, and those sociodemographic, dental visiting, and financial constraint variables that had significant bivariate associations, using mean item satisfaction score as the dependent variable.

There were six items which significantly changed scores across the three surveys.

- Travel to the dental clinic I visited was convenient to me (from the CONTEXT subscale)

showed a significant **decrease** for public-funded respondents, indicating perhaps that patients from a wider area were able to access public-funded care in 1996.

The following five items recorded significant **increases** in item score for public-funded respondents compared to respondents who received dental care at their own expense.

- The dental clinic staff were friendly to me (from the CONTEXT subscale).
- The dental professional I saw was impersonal or indifferent towards me.
- The dental professional I saw answered my questions (from the CONTENT subscale).
- I would like to have had more explanation of my dental treatment options (from the CONTENT subscale).
- The dental care I received fixed my dental problems (from the OUTCOME subscale).

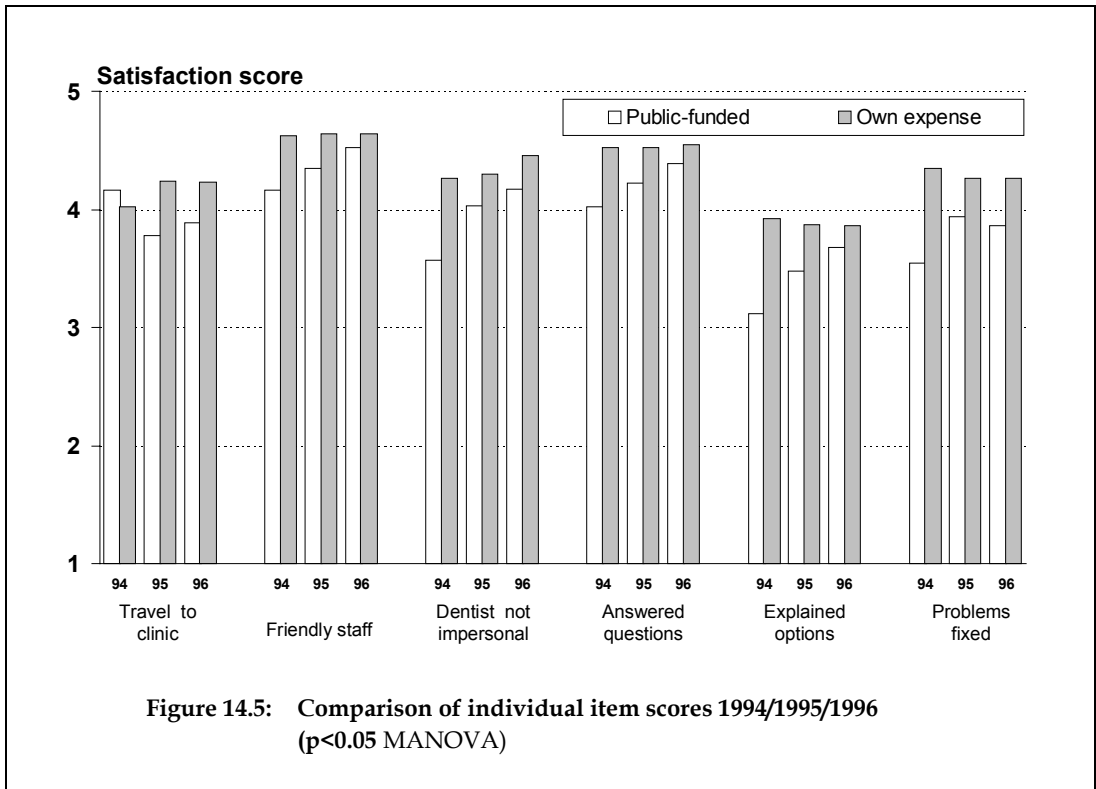


Figure 14.5: Comparison of individual item scores 1994/1995/1996
($p < 0.05$ MANOVA)

Figure 14.5 presents the mean item scores for those which showed significant interaction between funding of visit, whether public-funded or at the individual's expense, and the year of the survey. The white bars show the scores for public-funded participants, while the grey bars represent those who received care at their own expense. Apart from 'travel to the clinic' where there is a significant decrease in score, public-funded care displays a consistent increase in score across time, while the private, own-expenditure grey bars are typified by lack of change. The group of bars second to the right, the explanation of treatment options, shows the most pronounced variation across the three surveys.

The 1996 Dental Satisfaction Survey was conducted early in 1996 when the CDHP had a further 9 months to run. The data collection included a period during which the additional funding had not reached the full level. Despite this, waiting times had decreased, and a greater number of eligible people were able to receive public-funded care, although the full impact of the CDHP had not yet occurred.

Significant changes were recorded in satisfaction score on the content subscale, which consists largely of communication issues, and in a number of individual items. The CDHP had proved to be a public health initiative which not only provided disadvantaged groups of people with improved access to dental care, but also the public-funded dental care was reported by the patients as meeting, to a greater extent than previously, their needs and expectations.

However, the satisfaction scores achieved during the CDHP should be regarded as atypical; with the demise of the CDHP, waiting lists have blown out, and satisfaction scores among public patients may be expected to be similar to, or even lower than, the 1994 level.

There is evidence that satisfaction is associated with the presenting oral health of the patient, and visiting behaviour, as shown by the lower satisfaction scores recorded by patients who had experienced toothache frequently in the previous 12 months, and by those who usually visit for a problem.

Any expectation of substantial improvements in satisfaction scores of card-holders receiving public care is unrealistic, as the dimensions of satisfaction assessed by the Dental Satisfaction Survey include some aspects of dental care which seem unlikely to be achieved in a system of public care. These aspects include choice of dentist, seeing the same dentist at each visit, waiting time, and treatment options and outcomes that are compromised by the presenting oral health of the client. Individuals who have been disadvantaged by delays in receiving treatment and past experience of inappropriate treatment have little chance in the short-term of matching the scores of the general population. For these people, there are aspects of 'improved dental health', 'time taken for improvement' and 'no untreated problems' for which it will be difficult to achieve increased scores, regardless of card-holder status and whether the dental visit is public-funded or private.

However, aspects of public care in which modification is achievable include waiting time at the clinic, friendly staff, attitude and communication skills of the dentist, explanations of treatment needs, explanations of options available, and advice on teeth and gums.

Satisfaction is an important outcome of care, and also a determinant of future patterns of care. Lower levels of satisfaction create potential barriers to appropriate dental care, and to dental health, and it may be helpful for dentists in both the public sector and in private practice to be aware of these patient characteristics, particularly those which may be modified.

Patients with certain characteristics, such as male, younger age groups, should be able to be identified when they present for care, so that dental practitioners could maximise inter-personal processes, discussing treatment options as well as the treatment needs. Patients who have not visited for longer periods and may be nervous, and patients who have language difficulties may require special techniques in communication, to ensure that they feel they have some control over what is about to happen. Dental satisfaction should be viewed as a mutable factor in the dental care process, and targeting key aspects of dissatisfaction may improve future patterns of dental service, as well as improving the overall quality of dental care.

The conclusions found by this study were as follows:

1. Comparison of dental satisfaction scores across the three surveys showed:
 - public patients had significantly lower satisfaction scores than private (own-expense) patients;
 - satisfaction scores of card-holders who received public-funded dental care increased; and
 - private (own-expense) scores remained static.
2. Improvements in access to care during the Commonwealth Dental Health Program resulted in higher satisfaction scores among public-funded patients. The study found:
 - a significant increase in content subscale score; and
 - significant increases in some satisfaction items.

14.3 References

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- Ware JE, Snyder MK & Wright WR (1976). Development and validation of scales to measure patient satisfaction with medical services. Part A: review of literature, overview of methods and results regarding constructions of scale. Springfield, Virginia: National Technical Information Service, 1A:288-329.
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15 Response to patient copayments in public dental services in Victoria

15.1 Introduction

Following the cessation of the Commonwealth Dental Health Program, service charges have been introduced into the Community Dental Program in Victoria. These charges are expected to raise revenue to allow for the extension of public-funded dental care and to depress demand for some discretionary services.

The copayment for general restorative care is set at a minimum charge of \$20 and a maximum of \$80 per course of care. Some groups are still eligible for free care. Apart from studies on capitation fees which were introduced in the school dental service in South Australia in 1995, the effect of copayments on the demand for public dental care is largely unexplored in Australia. It was found that the introduction of capitation fees reduced participation and left a sizeable group of students outside of the school dental service without any visit over a two-year period (Allister et al., 1998).

The Victorian Department of Human Services has initiated an extensive and ongoing evaluation of the impact of patient copayments at current levels to inform policy development. This study reports on the baseline data collected from the Victorian dental telephone interview survey carried out during October to December 1997.

The aims of this study were:

- to identify community awareness of and response to patient copayments for public-funded dental care in Victoria; and
- to determine whether some groups of card-holders perceive that they may be disadvantaged in gaining access to future dental care.

The methods used in this telephone survey for Victoria adhered to the strict protocols used by the Dental Statistics and Research Unit (DSRU) in the National Dental Telephone Interview Surveys. The overall response rate achieved for this survey was 62.1%.

Data was collected from 5,690 participating households which had been selected at random from the most recent version of the Electronic White Pages. The survey was conducted in two streams: in the first adults were chosen completely at random; and in the second screening techniques were used to capture a greater number of card-holder minority groups. Individuals from more prevalent population groups were interviewed using a shorter version of the questionnaire.

The data used in this analysis included only the 2,032 adults who completed a full-length interview. Computer-assisted telephone interviewing methods were used. Proxy interviews were conducted when the target person was unable to speak on the phone – such as in the case of illness, or a non-English-speaking person. There were a number of interviews which were carried out in Greek, Italian, Vietnamese, or Polish. The survey included a range of questions on self-reported dental health, sociodemographics, dental visiting, and awareness of, and response to the introduction of copayments.

Table 15.1 presents the profile of respondents by age, sex, language, household income, and place of last visit combined with card-holder status. These data are unweighted, and show the high proportion of older persons and females in the sample. This is primarily a result of the deliberate over-sampling of card-holders through screening.

Persons aged 65 years or more made up 31.7% of the respondents, and nearly 60% of respondents were female. Just over 15% of respondents spoke a language other than English at home. The income distribution is skewed towards the low income categories, with more than half of the respondents below \$20,000, again a result of sampling higher proportions of card-holders. Card-holders who had last visited a public clinic constituted 17.9% of the respondents, and 29.6% were card-holders whose last dental visit was to a private practice. Non-card-holders who last visited a private practice were the largest group and comprised 39.8% of this sample, which is an under-representation compared to population estimates.

The data were then weighted by age, sex and card-holder status to adjust for the sampling methodology and to allow population estimates to be generated.

Table 15.1: Age, sex, language, income, and place of last visit by card status of respondents

	n	%
Age group		
18–24 years	222	10.0
25–44 years	687	31.0
45–64 years	603	27.2
65+ years	702	31.7
Sex		
Male	891	40.2
Female	1,328	59.8
Language		
English	1,884	84.9
Other	335	15.1
Household income		
<\$12,000	605	29.8
\$12–<20,000	511	25.2
\$20–<30,000	308	15.2
\$30–<40,000	182	9.0
\$40,000+	425	20.8
Place of last visit by card status		
Public (card-holder)	398	17.9
Private (card-holder)	657	29.6
Private (non-card-holder)	883	39.8
Other	281	12.7

Four questions used in the survey addressed awareness of, and support for the patient copayment scheme. After a brief introduction which explained that ‘a policy had been introduced in March 1997 so that card-holders would make a contribution towards the cost of their treatment at Public dental services’, all respondents were then asked:

- Are you aware of this contribution scheme?; and
- How strongly do you support the concept of patients making a contribution towards the cost of treatment at public dental services?

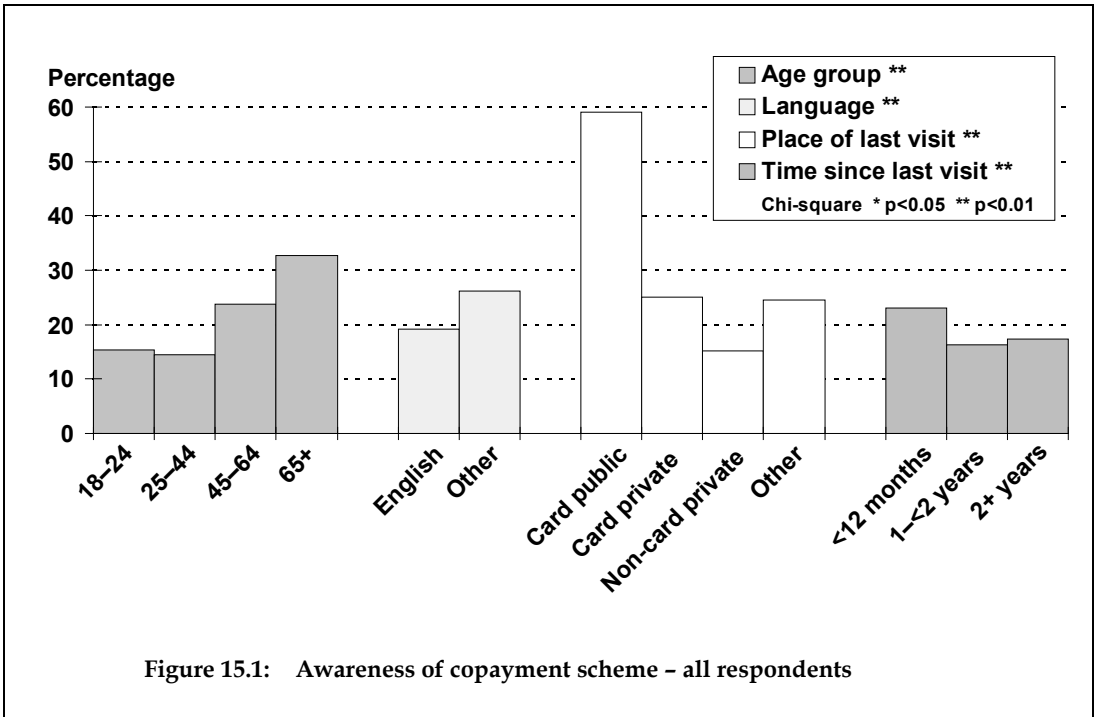
Card-holders were asked a further two questions intended to determine what perceived impact patient copayments may have on their future dental care. These questions were:

- How much influence would the contribution towards the cost of dental care at public dental services have on how frequently you go in future for dental care?; and
- Do you expect that the cost of the contribution towards dental care at public dental services will prevent you from having any dental treatment which has been recommended or which you want?

15.2 Results

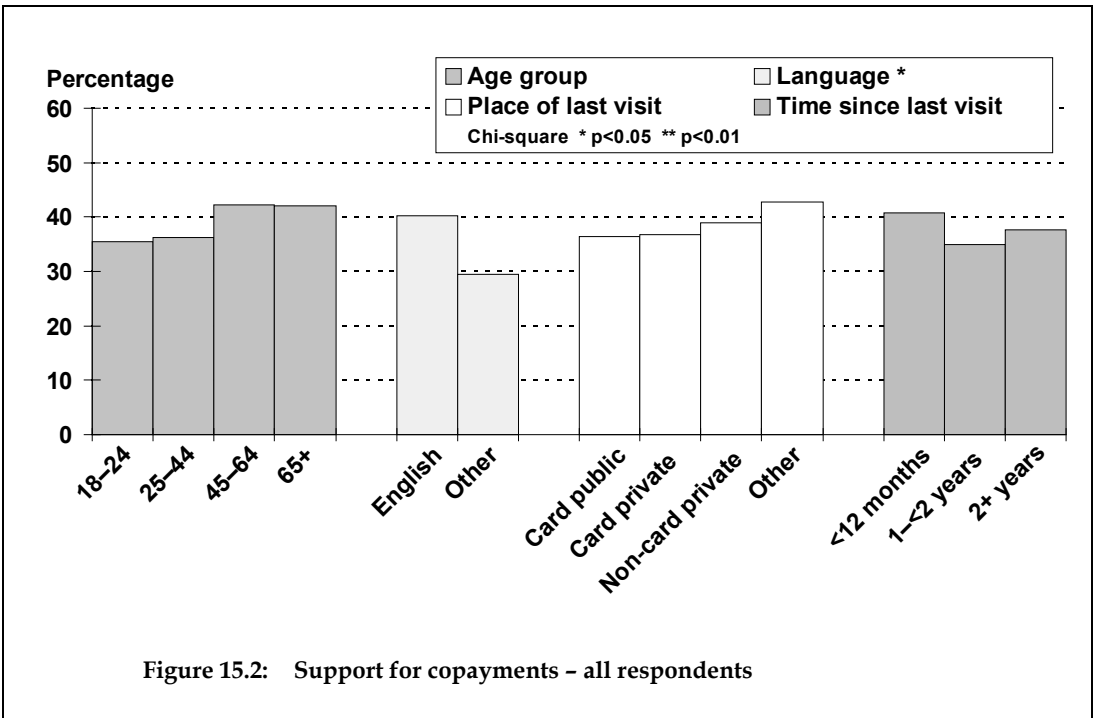
Each of these four questions were significantly associated with a number of sociodemographic and visiting characteristics. Figure 15.1 shows the percentage of respondents who reported that they were aware of the copayment scheme, by age group, language spoken at home (English or other), place of last dental visit combined with card-holder status, and time since last dental visit. Significance of differences was assessed using Chi-square tests.

Overall community awareness of the patient copayment scheme was relatively low at 20.1%. Awareness was greater among the older age groups, rising from around 15% for 18–44-year-olds to about a quarter of 45–64-year-olds and just under a third of persons aged 65 years or more. Persons who spoke a language other than English at home were more likely to report awareness of the scheme, 21.9%, compared with 14.3% among persons who spoke English only. The group with the highest awareness was card-holders whose last dental visit was to a public clinic, of which 59.1% were aware, while only a quarter of card-holders whose last dental visit was private were aware. Those who had made a dental visit within the previous 12 months had a higher level of awareness than those whose last visit was more than a year ago.



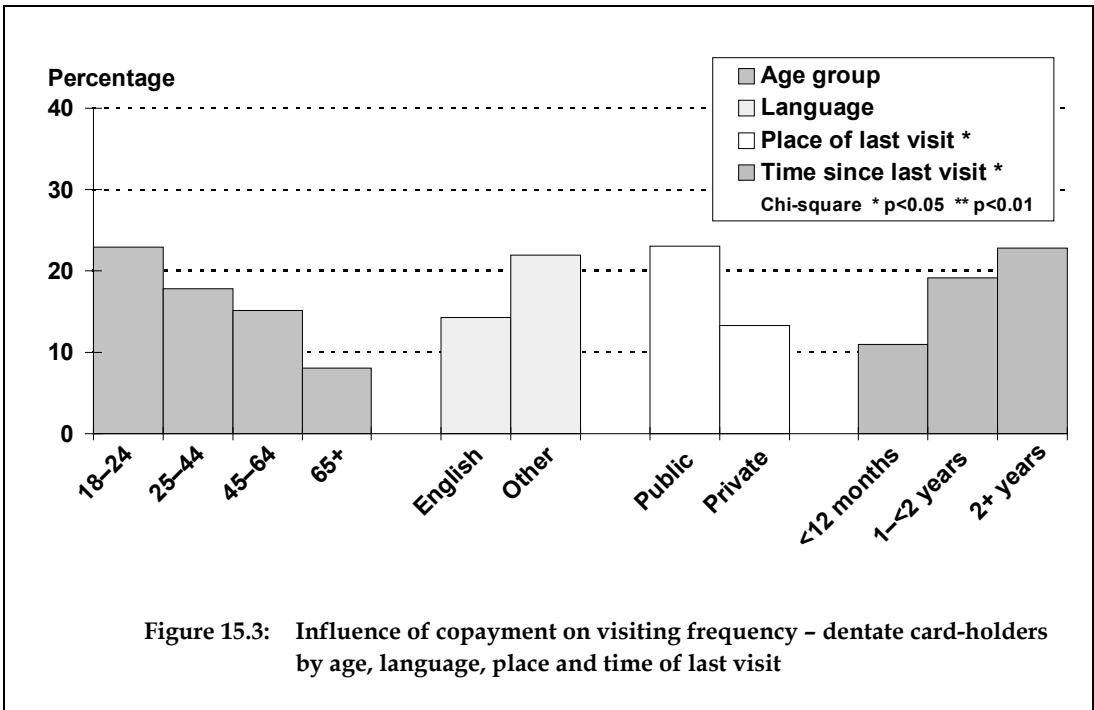
Over a third, 35%, of respondents reported that they supported the concept of copayments either 'not at all'; or 'hardly at all'; 26.3% reported 'a little support'; and 38.7% reported either 'support' or 'support strongly'. Some level of support was therefore recorded by 65% of respondents; however Figure 15.2 presents support only at the levels of 'support' and 'support strongly' by age group, language, place of last visit combined with card-holder status, and time since last visit.

Support for patient copayments did not show wide variation between groups; only one variable recorded a statistically significant difference. Those who spoke a language other than English at home recorded significantly lower support, 29.4%, than those who spoke English only, 40.3%.

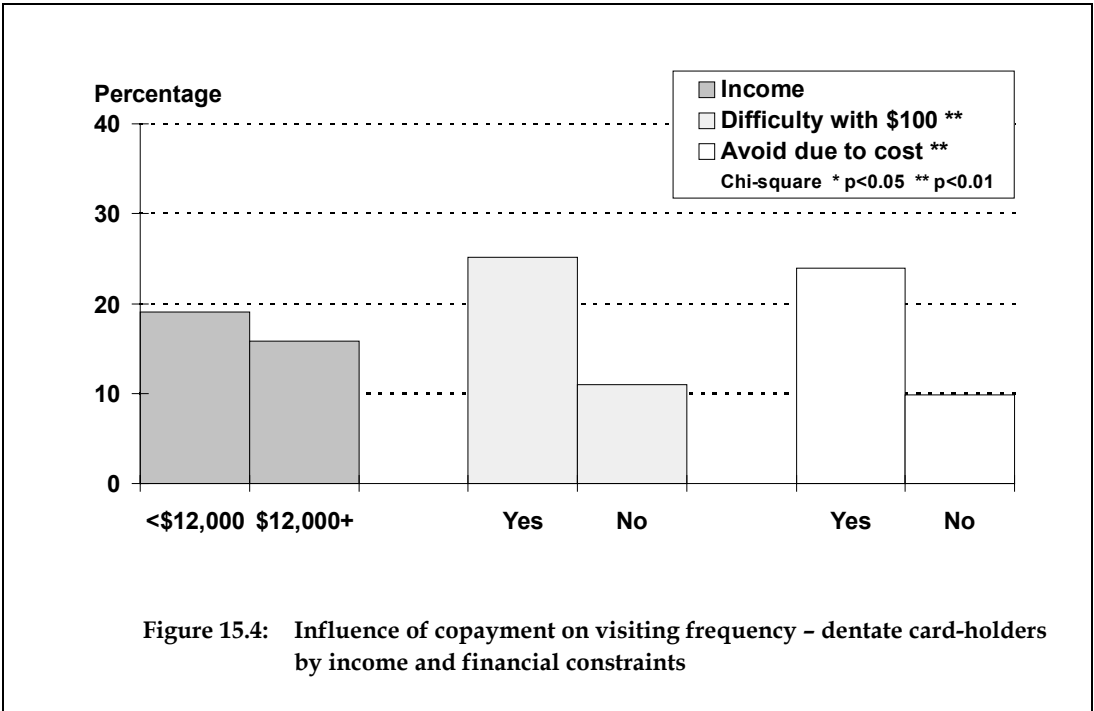


Perception of the influence of the copayment scheme on visiting frequency was only asked of card-holders. Among dentate card-holders, 15.8% perceived that copayments would have 'a large influence on visiting frequency' in the future.

Despite the trend by age group and the difference by language seen in Figure 15.3, these differences were not statistically significant. However, there were statistically significant differences by place of last visit and time since last visit. Nearly a quarter of card-holders who made their last dental visit to a public clinic perceived that the copayment would have 'a large influence on visiting frequency' compared with 13.3% of those whose last visit was to a private practice. Persons who had not made a recent dental visit were also more likely to perceive a large influence on visiting frequency.



A range of economic factors and financial constraints also showed differences in expected influence on visiting frequency, although there was no significant difference between those whose annual household income was less than \$12,000 and those whose income was greater than \$12,000. Just over a quarter of card-holders who reported that they would have a lot of difficulty in paying a \$100 dental bill perceived that copayments would have a large influence on visiting frequency, compared to 11% among those who would not have a lot of difficulty paying a \$100 bill. Similarly, there was more than a two-fold difference between those who had avoided a dental visit in the last 12 months because of the cost and those who had not: 23.9% compared with 9.9%.



The perception that patient copayments would influence visit frequency was modelled using logistic regression against sociodemographic, dental visiting, and financial constraint variables. Unless otherwise indicated, all odds ratios shown were significant at the 0.05 level.

The odds presented in Table 15.2 are the odds of perceiving that copayments would have a large influence on visit frequency. Compared to card-holders aged 65 years or more, 18–24-year-olds had 3.45 times the odds of perceiving influence, and 45–64-year-olds had 2.04 times the odds. There was no significant difference between the 25–44-year-old age group and the reference group. Card-holders whose last visit was to a public clinic had 1.92 times the odds of perceiving a large influence on visiting frequency compared to those who last visited a private practice. As time since last visit increased, so did the odds of influence: persons who hadn't visited for 2 or more years had 2.35 times the odds of perceiving a large influence compared to those whose last visit was in the previous 12 months. Persons who had avoided or delayed visiting a dentist in the previous 12 months due to cost had 2.05 times the odds compared to those who hadn't avoided or delayed visiting. Card-holders who would have a lot of difficulty in paying a \$100 dental bill had twice the odds of those who would not have a lot of difficulty.

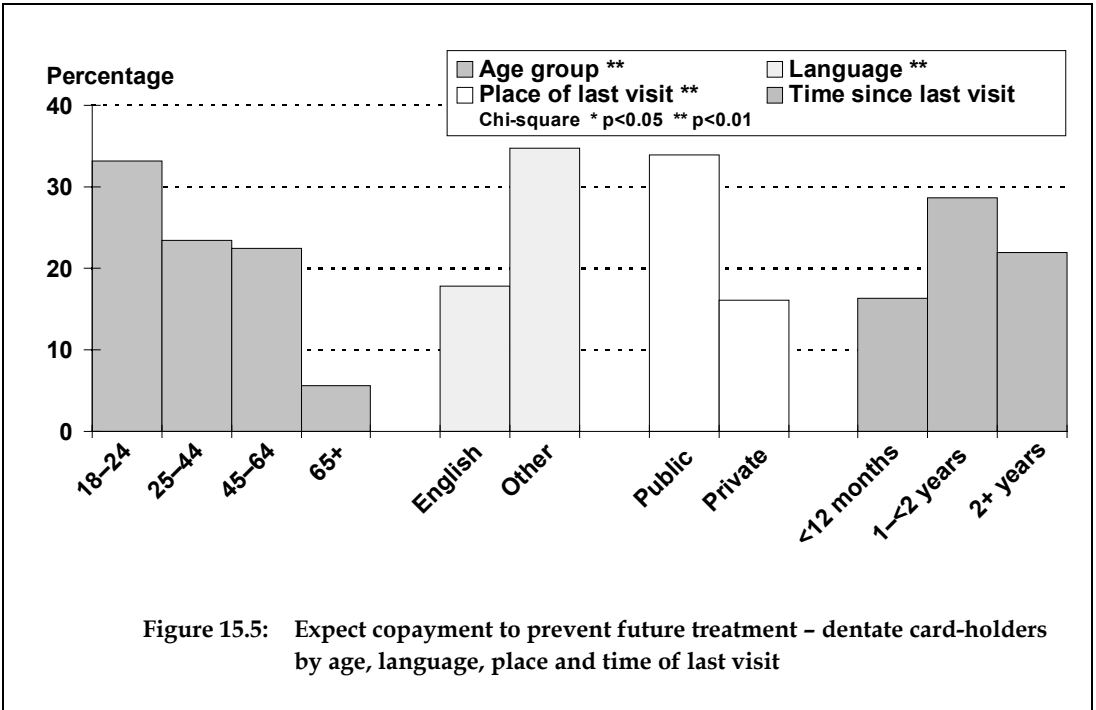
Table 15.2: Logistic regression: odds of perceiving that copayments would have a large influence on visit frequency – dentate card-holders

Variable	Odds ratio
Age group	
18–24 years	3.45
25–44 years	(ns) 1.87
45–64 years	2.04
65+ years	Reference
Last site	
Card – public	1.92
Card – private	Reference
Last visit	
<12 months	Reference
1–<2 years ago	1.75
2+ years ago	2.35
Avoided visiting due to cost	
Yes	2.05
No	Reference
Difficulty paying a \$100 bill	
Yes	2.01
No	Reference

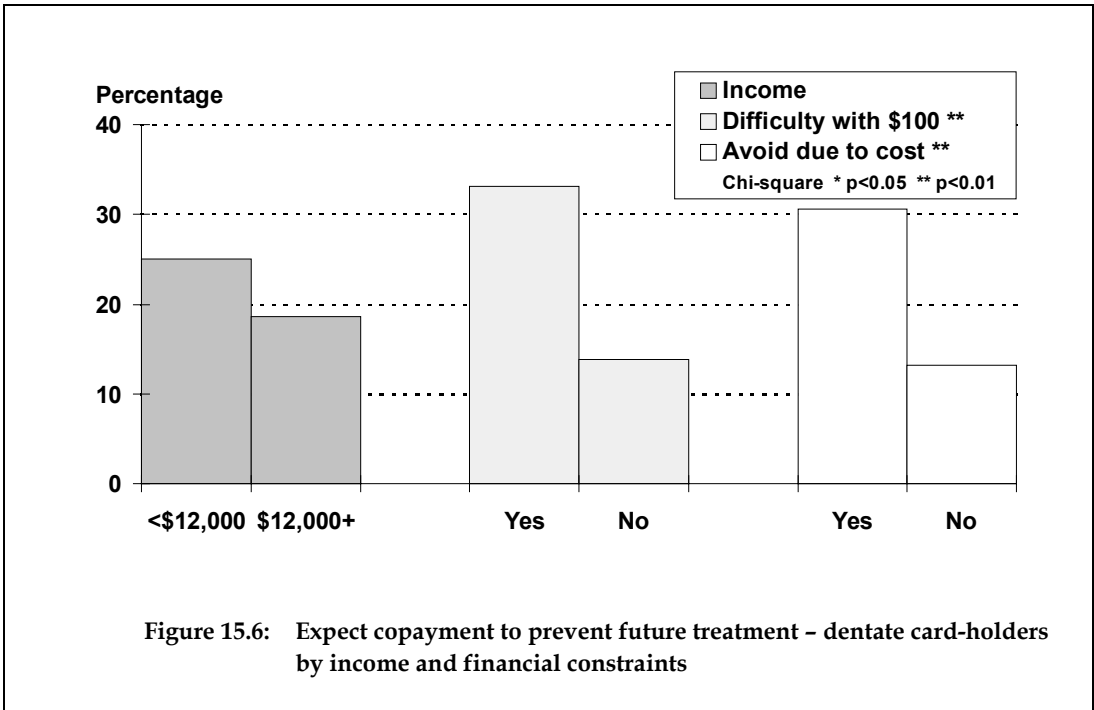
p<0.05

ns not significant

The extent to which dentate card-holders expected copayments to ‘prevent recommended or wanted dental treatment’ was 20.6% overall. There were statistically significant differences by age group, language, and place of last visit (Figure 15.5). Just over a third of 18–24-years-olds, persons who spoke a language other than English, and card-holders whose last dental visit was to a public clinic perceived that the introduction of a copayment system would prevent them from receiving future dental care which was recommended or wanted.



As was the situation for influence on visiting frequency, the effect of financial constraints again resulted in more than a two-fold difference between those who would have difficulty in paying a \$100 dental bill, 33.1%, and those who would not have a lot of difficulty, 13.9% (Figure 15.6). Of those who had avoided or delayed visiting a dentist in the previous 12 months, 30.6% perceived that copayments would prevent future treatment, compared to 13.2% of card-holders who had not avoided or delayed visiting due to cost.



A logistic regression was also performed for the perception that patient copayments would prevent wanted or recommended dental treatment (Table 15.3). Compared to the reference group of 65+-year-olds, 18–24-year-olds had 8.66 times the odds of reporting that they expected copayments to prevent treatment, while 25–44- and 45–64-year-olds had over four times the odds. Card-holders who spoke a language other than English had 2.29 times the odds of persons who spoke English only. Other groups more likely to report that they expected copayments to prevent treatment were: persons from households with less than \$12,000 annual income, card-holders who last went to a public clinic, persons whose last dental visit was 1 to 2 years ago, those who had avoided or delayed visiting a dentist due to cost, and card-holders who reported that they would have a lot of difficulty in paying a \$100 bill.

Table 15.3: Logistic regression: odds of perceiving that copayments would prevent recommended or wanted treatment – dentate card-holders

Variable	Odds ratio
Age group	
18–24 years	8.66
25–44 years	4.09
45–64 years	4.31
65+ years	Reference
Language	
English	Reference
Other	2.29
Income	
<\$12,000	1.75
\$12,000+	Reference
Last site	
Card – public	2.15
Card – private	Reference
Last visit	
<12 months	Reference
1–<2 years ago	1.71
2+ years ago	(ns) 1.61
Avoided visiting due to cost	
Yes	2.21
No	Reference
Difficulty paying a \$100 bill	
Yes	1.91
No	Reference

p<0.05

ns not significant

15.3 Discussion

This study is reporting on data from the first year of a 3-year study initiated by Victoria to refine and modify the copayment scheme. One in five card-holders reported that they perceived that patient copayments would prevent them from having treatment that was recommended or that they wanted, and almost one in six perceived that their visiting frequency would be affected. Since the demise of the Commonwealth Dental Health Program, health authorities have been forced to make decisions on how to ration dental care and who to treat as priority. Schemes which are based on a patient copayment at first sight seem to offer answers, but the reality may be that those persons who are squeezed out of the system are in fact the most disadvantaged, and least likely to be capable of gaining access to even the most basic of care. Close monitoring of copayment schemes, and modifications of the amount payable by different groups may be necessary to ensure that access to public dental services is not denied to disadvantaged groups.

Awareness of patient copayments was relatively low, although it was higher among card-holders. Community support for patient copayments was found to be 65%, of which 26% was recorded as 'a little support'. Card-holders who perceived that their access to future care may be restricted by patient copayments include: younger age groups, non-English-speaking persons, and those who reported financial barriers to dental care.

This study was conducted under contract with the Victorian Department of Human Services.

15.4 Reference

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