

Access to dental care by young South Australian adults

KF Roberts-Thomson,* JF Stewart*

Abstract

Background: Despite reported concern over the dental care of young adults little research has been done on their use of dental services in Australia. The aim of this study was to investigate the patterns of dental utilization of young South Australian adults aged 20-24 years.

Methods: A random sample of 2300 young adults was selected from the electoral roll. Partial or complete addresses and possible phone numbers were obtained for 1921 persons. Telephone interviews were conducted for 1261 subjects to obtain information on socio-demographics, health behaviour and dental visiting (response rate 65.6 per cent).

Results: One third of young adults (34 per cent) had not made a dental visit in the previous two years and 38 per cent usually visited for a problem rather than a check-up. Making a dental visit in the last two years was significantly associated with a number of socio-demographic variables including age and gender, with holders of private dental insurance and those who have not avoided care because of cost having higher odds of making a visit and males and government concession card holders having lower odds of visiting. Usual reason for visiting a dentist for a problem was significantly associated with no private dental insurance, holding a government concession card, no tertiary education and avoiding care because of cost.

Conclusions: This study suggests that demographic and economic factors influenced use of dental services and reason for visiting of young South Australian adults.

Key words: Access, dental care, young adults.

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indications that access to dental care for young adults may be less than optimal, but detailed information on the determinants of utilization of dental care is not available.

The age range 20-24 years is a time of change when independent behaviours are being set as people move into new accommodation arrangements, relationships become established and economic independence is attained.³ Attwood *et al.*⁴ examined the dental visiting patterns of 15 year olds in Scotland and found that smoking, and irregular attendance of parents are associated with non-use of services, whereas regular exercise is associated with use of dental services. However, Schwartz and Kronborg⁵ assessed different models of dental care delivery in a population of 16-19 year olds in Denmark over a three-year period and found that the form of dental care delivery is a major factor influencing use of care by young adults.

Yu *et al.*⁶ in an examination of use of medical and dental services by adolescents aged 11 to 21 years in the USA found that male gender, black, Hispanic or mixed race/ethnicity and lack of insurance are associated with lack of an annual dental visit. Thomson⁷ reported that in a birth cohort of 26 year olds fewer than half are routine dental users and that this was particularly evident for males.

Studies on the use of dental services provide information on who is able to gain access to dental care, where, with what type of provider, reason for seeking care, frequency of visiting and treatment received. Such information then can be used to analyze determinants of access including facilitating factors and barriers to access. Tennstedt *et al.*⁸ state that better understanding of dental use patterns – i.e., the number of people using dental care over a time interval – can be used to change mechanisms of service delivery in ways that will facilitate and encourage appropriate use of dental services.

Use of dental services is one measure of access to dental services reflecting obtainability of that service. Historically, use has been investigated by measuring different variables, the most common of which is the length of time since the last visit to a dental clinic.

People who use dental services only when they have a problem are also more likely to have negative health

INTRODUCTION

People in the age group 18-24 years are the most disadvantaged in terms of access to dental care according to the National Dental Telephone Interview Survey.^{1,2} Young adults are the most dissatisfied with dental care and are least likely to have made a dental visit in the last 12 months. Thus there are many

*Australian Research Centre for Population Oral Health, Dental School, The University of Adelaide.

Table 1. Response rates

	Total number available % (n)	Non-contact % (n)	Response rate (of possible) % (n)	Response rate (of contacted) %
Matched names and addresses	72.8 (1390)	12.5 (174)	77.4 (1076)	88.5
Matched addresses	16.6 (318)	40.6 (129)	47.8 (152)	80.4
Partial address*	11.1 (213)	76.5 (163)	15.5 (33)	66.0
Total	100 (1921)	24.3 (466)	65.6 (1261)	86.7

*Multiple residences at the same address, e.g., apartment block

outcomes as they are less likely to receive preventive care and early interventions to minimize the extent of treatment. Identification of those who only use dental services for treatment of problems may be useful in targeting oral health promotion efforts.

This study provides baseline information on access to dental care of young South Australian adults, part of a longitudinal study on the determinants of oral health and access to dental care.

The aims of this study were to describe the socio-demographic and health behaviour factors associated with patterns of use of dental services of young adults in urban South Australia.

MATERIALS AND METHODS

A stratified random sample of 2300 young adults resident in Adelaide, South Australia aged between 20 and 24 years was drawn from the State Electoral Database in 1998. Registration on the database is compulsory for Australian citizens aged 18+ years (excluding those living in institutionalized care). The database includes the age, gender and residential address of each registered voter and was updated in 1997 due to a State election. Sampled people were matched by name and address with the 'electronic white pages', this produced 1921 subjects for whom complete or partial addresses were available. Where there was a complete or partial match, telephone numbers were added to the database. All individuals were notified by a primary approach letter explaining the purpose of the study and encouraging participation. Those for whom phone numbers were unavailable were mailed a letter asking them to contact the research team.

Computer assisted telephone interviews were conducted in 1998-1999 for 1261 adults aged 20-25 years (interviews completed in 1999 resulted in a change in age). Up to six attempts were made to contact individuals. These interviews provided socio-demographic data, health behaviour data such as smoking and exercise frequency and dental visiting data.

Data were weighted by gender, educational level, country of birth and health card status to reflect the South Australian population aged 20-24 years.

Time since last dental visit dichotomized into two years or less and more than two years and usual reason for visit into problem or check-up were the dependent variables used to investigate access to dental care in this study. Time since last visit of less than two years was

used in this study as the School Dental Service through which many of these young adults would have passed, used recall periods of up to two years, and thus this period would be normal for many of this group.

The dependent variables were cross-tabulated with 'gender' and 'educational level' (tertiary/non-tertiary), 'language spoken at home' (English/other), 'income level' (<\$20 000/\$20 000+), 'reported difficulty in paying a \$100 bill', 'living arrangements' (living with parents/independent) and 'government concession card status' (health card/no card); and with health behaviour variables such as 'frequency of playing sport', 'smoking, and 'use of soft drinks'. These bivariate analyses were then examined for significance using the chi-square test.

Multivariate analyses using logistic regression were undertaken to determine the factors independently associated with use of dental services in the previous two years and usual reason for dental visiting being for a problem. Analyses were conducted using SPSS version 10.7 (Statistical Package for the Social Sciences 2000, Chicago, USA).

RESULTS

Response rates

Of the 2300 persons aged 20-24 years at the time of being sampled from the electoral roll, complete or partial addresses were confirmed through the electronic white pages for 1921 persons. Computer assisted telephone interviews were conducted for 1261 adults aged 20-24 years, a response rate of 65.6 per cent of the 1921 subjects for whom complete or partial addresses were available (Table 1). Partial addresses included such problems as block of units without the unit number. Of those persons for whom contact with either the subject or someone who knew the subject was made, a response rate of 86.7 per cent was obtained.

Background characteristics of sample

The characteristics of respondents compared with results for South Australian young adults from the 1996 census⁹ are presented in Table 2. Differences were observed between respondents and the South Australian young adult population in tertiary education and in government concession card status. Table 3 shows the unweighted distribution of responses for the dependent variables. Among young adults surveyed in Adelaide 45.5 per cent had made a dental visit in the previous 12 months, and approximately 66 per cent had made a visit in the previous two years.

Table 2. Sociodemographic profile of respondents compared with population

	Sample 1998 %	Population 20-24 yrs ABS 1996 %
Male	47.6	50.8
Tertiary education*	38.0	33.9
Concession card*	18.1	16.4
Full time employment	66.7	66.8
	(of non full time students)	(of those in workforce or seeking work)
Current student	28.0	27.8
Born overseas	6.7	11.4
Speak language other than English at home	12.4	12.5

*t test p<0.05

Table 3. Characteristics of the sample

Dependent variables		Unweighted n	%
Time since last visit	<12 months	573	45.5
	12-<24 months	260	20.7
	2-<5 years	273	21.7
	5+ years	152	12.1
Usual reason for visit	Check	777	62.3
	Problem	469	37.7

Bivariate analyses

Visit in the previous two years

Results of bivariate analyses of time since last visit by independent variables are shown in Table 4. Significant associations were found between time since last visit of two years or less and sex, education, student status, dental insurance, health card status, avoiding dental care because of cost, difficulty in paying a \$100 dental bill, smoking and frequency of physical exercise.

Usual reason for dental visit

Table 4 also shows the percentage of persons whose usual reason for visiting a dental provider is for a problem by the independent variables. Significant associations were found between usually making a dental visit for a problem and age, tertiary education, living arrangements, student status, dental insurance, health card, avoiding dental care due to cost, difficulty in paying a \$100 bill, smoking and frequency of physical exercise.

Multivariate analyses using logistic regression

Logistic regression analysis of time since last dental visit

Logistic regression was used to assess the independent effects of variables significant at a bivariate level and a reduced set of non-significant variables representative of other categories of variables: age, gender, language, private dental insurance, government concession card status, tertiary education, difficulty paying a \$100 bill, student status, smoking, playing sport and usual reason for visiting, with visiting within the previous two years as the dependent variable. This approach was adopted in order to produce a parsimonious model that included control

for possible confounding effects of non-significant variables that covered a range of domains hypothesized to be important to access based on previous empirical studies and theoretical considerations.

Table 5 shows that statistically significant independent effects occurred for age, gender, government card status, insurance, and avoid visiting because of cost. The larger odds ratios for insurance and avoid visiting because of cost indicate their relative importance with the odds ratios showing that young adults with insurance have over twice the odds (2.19 times) of having visited within the previous two years compared to the reference category of no insurance and that those who do not avoid care because of the cost have almost twice the odds (1.96 times) of having visited than those who do. Significant effects also occurred for gender with males having lower odds (0.56 times) having visited within two years compared to the females and for government card status with those with a card being 0.61 times the odds of having visited than those without a card.

Logistic regression analysis of usual reason for visit

The same logistic regression approach was also applied to the dependent variable of usual reason for dental visit. Tertiary education, government card status and insurance and having avoided dental care because of the cost were the significant predictor variables (Table 6). The odds ratio showed that people with insurance had 0.65 times the odds of usually making a dental visit for a problem compared to people in the reference category of no dental insurance. Those with tertiary education were almost half as likely (odds 0.53) to usually visit for a problem as those without tertiary education. Those who have a government concession card had 1.65 times the odds of usually visiting for a problem compared to those without a card. Those who have not avoided dental care because of the cost had 0.71 times the odds of usually visiting for a problem as those who have.

DISCUSSION

Significant differences exist in the patterns of use of dental services amongst various groups of young adults in South Australia. These disparities reflect the unequal abilities of different groups to access dental services as well as values held by different groups. Attitudes to young adults and the ability of dentists to communicate with that age group may also influence use of dental care. However, these attitudes were not examined in this study.

Fewer young adults (45.5 per cent) in 1999 reported visiting a dentist in the previous 12 months than South Australian adolescents aged 12-17 years (86.2 per cent) and more report a period of more than two years since their last visit, 34 per cent of young adults compared with 1.3 per cent of adolescents. This percentage of young adults visiting in the last 12 months is also lower than the dentate South Australian adult population of

Table 4. Bivariate analyses of time since last visit and usual reason for visit

Variable		Unweighted n	Time since last visit of <2 years %	Usually visit for a problem %
<i>All</i>			66.2	38.1
Demographic				
Age	20 years	89	78.9	38.4*
	21 years	266	62.5	33.6
	22 years	251	65.0	37.5
	23 years	243	63.3	41.4
	24 years	257	69.1	36.0
	25 years	151	66.7	48.6
Gender	Male	600	61.3†	37.5
	Female	661	71.4	38.6
Language at home	English	1105	65.4	38.6
	Other	156	71.7	38.1
Country of birth	Australia	1176	65.4	38.4
	Other	87	73.2	36.2
Education	Tertiary	480	71.1†	26.4†
	Non-tertiary	781	63.7	44.2
Living arrangements	Home	808	67.7	35.9*
	Independent	447	63.3	42.1
Current student	Yes	362	71.9*	29.3†
	No	647	64.3	39.2
Employment	Full-time	675	66.6	36.2
	Not full-time	586	65.8	40.5
<i>Affordability</i>				
Private insurance	Yes	455	81.7†	27.0†
	No	760	58.1	44.9
Government card	Yes	229	57.8†	51.7†
	No	1031	68.0	35.6
Income	<\$20,000	666	66.2	40.6
	\$20,000+	595	66.3	36.0
Avoid dental care due to cost	Yes	462	53.1†	48.1†
	No	797	73.6	32.6
Difficult to pay \$100 bill	Yes	560	60.0†	44.2†
	No	698	71.0	33.5
<i>Health behaviour</i>				
Current smoker	Yes	404	61.6†	46.1†
	No	857	68.4	34.3
Physical exercise	1+ per week	1067	68.1†	36.4†
	<1 per week	194	55.9	47.4

†Chi-square; p<0.01

*Chi-square; p<0.05

18 years and older (58.8 per cent) and the percentage who have not made a visit in the previous two years is greater than dentate South Australian adults, 18+ years (25 per cent).¹

Although the majority of young adults usually visit for a check-up (62 per cent) rather than a problem, that percentage has declined from 82 per cent among South Australians aged 13-16 years in 1999.¹⁰ In recent decades significant improvements have been made in child dental health¹¹ and the decline in appropriate use of dental services amongst young people as they age raises important issues for maintenance of oral health into adulthood.

The socio-demographic factor of gender was important in relation to the time since last dental visit and education in relation to usual reason for visiting. That females are more likely to use health services has been reported in many studies¹² and education level reflects knowledge, attitudes and value placed on dental health. This result is also consistent with the findings of Yu *et al.*⁶ and Thomson.⁷ Factors such as

language and living at home did not influence visiting. However, they were either not significant at a bivariate level or were closely aligned with other factors which retained significance in the multivariate model.

This transition from adolescence to adulthood and the discontinuance evident in use of dental services for many of this age group, has been found to be unrelated to the use or non-use of School Dental Services (SDS).¹³ Schwartz and Kronborg⁵ found that among young Danish adults the continuation of a public funded system comparable to SDS produced the highest rates of use, with private care with health insurance coverage better than a combination of private and public systems. Retention rates at three years were closely related to use of services in the first year out of school, indicating the importance of the timing of that visit.

Economic indicators such as private dental insurance, possession of a government card and having avoided dental care because of cost were independently significant in relation to time since last dental visit and to usual reason for visiting. Improving the availability

Table 5. Logistic regression of visiting a dental provider within the last two years by socio-demographic and behavioural variables

Variable	Odds ratio	95% CI		Reference category
		Lower	Upper	
Age				
20 years	1.65	0.69	3.96	25 years
21 years	0.61	0.36	1.05	25 years
22 years	0.70	0.40	1.21	25 years
23 years	0.72	0.42	1.24	25 years
24 years	0.94	0.55	1.59	25 years
Male†	0.56	0.42	0.77	Female
Language at home: other	1.03	0.66	1.60	English
Tertiary education	1.07	0.77	1.47	Non tertiary
Current student	1.41	1.00	1.98	Not student
Government card*	0.61	0.39	0.95	No government card
Insurance†	2.19	1.56	3.08	No insurance
Not avoided care due to cost†	1.96	1.41	2.70	Have avoided care because of cost
Difficulty with \$100 bill	0.87	0.63	1.20	No difficulty with \$100 bill
Live with parents	1.24	0.90	1.71	Live independently
Sport 1+ per week	1.47	1.00	2.17	Sport <1 per week
Smoker	0.96	0.70	1.32	Non smoker

*P<0.05

†P<0.01

Model fit: Nagelkerke R²=0.156

Table 6. Logistic regression of usual reason for visiting is for a problem rather than a check-up by socio-demographic and behavioural variables

Variable	Odds ratio	95% CI		Reference category
		Lower	Upper	
Age				
20 years	0.53	0.25	1.12	25 years
21 years	0.69	0.41	1.15	25 years
22 years	0.72	0.43	1.21	25 years
23 years	0.62	0.37	1.04	25 years
24 years	0.67	0.41	1.11	25 years
Male	1.04	0.75	1.34	Female
Language at home: other	1.34	0.88	2.04	English
Tertiary education*	0.53	0.39	0.73	Non tertiary
Current student	0.74	0.53	1.02	Not student
Government card*	1.65	1.65	2.54	No government card
Insurance†	0.65	0.47	0.89	No insurance
Not avoided care due to cost†	0.71	0.52	0.98	Have avoided care because of cost
Difficulty with \$100 bill	1.17	0.86	1.60	No difficulty with \$100 bill
Live with parents	0.89	0.65	1.22	Live independently
Sport 1+ per week	1.01	0.68	1.49	Sport <1 per week
Smoker	1.21	0.89	1.64	Non smoker

*P<0.05

†P<0.01

Model fit: Nagelkerke R²=0.114

of affordable access to dental care for young adults particularly at a time of emerging independence and conflicting financial demands may require innovative strategies such as a stepped transition from School Dental Services with relatively low co-payments to private practice fees. In addition, targeting of eligible young adults by the public sector by selectively removing them from the long waiting lists may produce benefits in the longer term.

Health behaviour such as playing sport was also a borderline indicator of dental visiting behaviour. This suggests dental behaviour may be related to other healthy behaviour, so that including appropriate use of

dental services as part of a co-ordinated approach to health promotion amongst young adults may be an advantage.

Periods of more than two years between dental visits and usually only visiting when a problem is apparent, make early intervention in the disease process and the possibility of preventive rather than surgical interventions less likely. At a stage in life when personal preventive practices and dietary patterns may be undergoing change, the lack of timely dental care reduces the opportunities for minimal intervention in the management of oral health problems which may arise.

The results of this study are potentially limited by the requirement for a telephone. There is a possibility that those unable to be contacted because of mobility or lack of a listed telephone number may be different in their use of dental services than respondents. However, the comparisons with the population data from the 1996 census give some confidence in the representativeness of the sample.

In general those young adults with least access to dental services, the more economically disadvantaged and the less educated, are likely to correspond with those whose need for dental care is greatest, i.e., those with higher levels of untreated dental disease.^{14,15} These groups of young adults have been shown in this study to have reduced access to dental services thus compounding their disadvantage which potentially compromises their future oral health.

Creative and innovative strategies need to be trialed to address this lack of acceptable access to dental care for young adults. Such strategies could include the development of health clinics specifically for this age group with innovative financing strategies and a team approach to oral health care using dentists and professions allied to dentistry. Such an approach may ease the transition from the School Dental Service to modes of adult care. Schwarz and Kronborg³ found that young people were retained best in a continuation of public Child Dental Services and least well in a system of private service provision with public administration, with a private system with health insurance rebates falling between. The lack of access to dental care by a large proportion of young adults is unacceptable and an appropriate Australian solution must be found.

CONCLUSION

Lack of appropriate access to dental care for a substantial proportion of young South Australian adults has been shown in this study. Young adults with less education and fewer financial resources were at greater disadvantage. These differentials may place at risk the substantial gains made in child dental health in Australia. These issues should be of major concern to governments and the dental profession. Addressing them will require innovative and co-operative strategies in both the public and private sectors.

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Address for correspondence/reprints:

Kaye Roberts-Thomson
Australian Research Centre for Population Oral Health
Dental School, The University of Adelaide
Adelaide, South Australia 5005
Email: Kaye.robertsthomson@adelaide.edu.au