

Table 14. Distribution of dental service utilisation in the previous 12 months

<u>Dental service utilisation</u> <u>in previous 12 months</u>	<u>% students</u>
Yes	70.7
No	26.5
Do not know	2.6
Not stated	0.2
Total (N=603)	100.0

5.4.12 Number of dental visits in previous 12 months

For those who had made a dental visit in the previous 12 months, 47% had visited once. Of those who indicated number of times they had visited, the average number of visits was 1.8. Distribution of number of dental visits in the previous 12 months is shown in Table 15.

Female students visited significantly more frequently than male students (2.0:1.6) in the previous 12 months. Students in Catholic schools visited more frequently than those from government schools (1.9:1.8) in the previous 12 months, although the difference was not significant. Students with private dental insurance visited significantly more frequently ($p < 0.01$) than those without private dental insurance in the previous 12 months (1.9:1.4). There was no significant difference by occupation, by country of birth of student, by country of birth of father, by country of birth of mother, or by language spoken at home, in the average number of visits in the previous 12 months.

Table 15. Number of dental visits in previous 12 months
- for those whose period since last dental visits is 12
months or less

<u>Visits</u>	<u>% students</u>
Once	46.7
Twice	28.9
Three times	8.2
Four times	5.6
Five times or more	6.1
Do not know	4.5
Total (N=426)	100.0

5.4.13 Main reason for not making dental visit in previous 12 months

For those who did not visit in the previous 12 months, 61% of students indicated no problem with their teeth as the main reason. Distribution of main reasons for not visiting in the previous 12 months is shown in Table 16.

There was no significant difference by sex, by type of school, by private dental insurance, by country of birth of student, by country of birth of father, by country of birth of mother, by language spoken at home, or by occupation in the main reason for not making dental visit in the previous 12 months.

Table 16. Main reason for not making dental visit in the previous 12 months

<u>Main reason</u>	<u>% students</u>
No problem with teeth	60.6
Too young	0.6
Too expensive	6.3
Other reason	11.3
Do not know	20.0
Not given	1.2
Total (N=160)	100.0

5.4.14 Period since last dental visit

Fifty percent of all students indicated they had last visited six months ago or less. Eighteen percent had visited more than six to twelve months ago. About 4% had never made a dental visit. Distribution of the period since last dental visit is shown in Table 17.

Students born in Australia, had fathers born in Australia ($p < 0.01$), had mothers born in Australia ($p < 0.01$), spoke only English at home ($p < 0.01$), and with private dental insurance were variables associated with significantly higher proportion of students whose period since last dental visit was 12 months or less. There was no significant difference by sex, by type of school, or by occupation in period since last dental visit was 12 months or less.

Table 17. Period since last dental visit

<u>Period</u>	<u>% students</u>
Six months ago or less	50.1
More than six to twelve months ago	17.7
More than twelve to eighteen months ago	10.6
More than eighteen months to three years ago	5.1
More than three to five years ago	1.8
More than five years ago	0.5
Never	3.7
Do not know	9.8
Not given	0.7
Total (N=603)	100.0

5.4.15 Perceived availability of School Dental Service at school

Forty five percent of students perceived the School Dental Service to be available at school. Thirty nine percent perceived it to be not available. Distribution of perceived availability of School Dental Service at school by the students is shown in Table 18.

Students whose parents were in the white collar occupations, and spoke only English at home ($p < 0.01$), were variables associated with significantly higher proportion of students who perceived the School Dental Service to be available at school. There was no significant difference by sex, by type of school, by private dental insurance, by country of birth of student, by country of birth of father, or by country of birth of mother in perceived availability of School Dental Service at school.

Table 18. Perceived availability of School Dental Service
at school

<u>Perceived availability of</u> <u>School Dental Service at school</u>	<u>% students</u>
Yes	45.1
No	38.5
Do not know	15.9
Not stated	0.5
Total (N=603)	100.0

5.4.16 Utilisation of the School Dental Service

Forty seven percent of students indicated they ever had a checkup or treatment from the School Dental Service. Forty eight percent indicated they had never used the School Dental Service. Distribution of utilisation of the School Dental Service is shown in Table 19.

Significantly higher proportion of government school students had used the School Dental Service than those from Catholic schools. There was no significant difference by sex, by occupation, by private dental insurance, by country of birth of student, by country of birth of father, by country of birth of mother, or by language spoken at home in ever using the School Dental Service.

Table 19. Utilisation of the School Dental Service

<u>Ever use the School Dental Service</u>	<u>% students</u>
Yes	46.6
No	47.5
Do not know	5.6
Not stated	0.3
Total (N=603)	100.0

5.4.17 Reason for not using the School Dental Service

For those who indicated they had never used the School Dental Service, 48% of students indicated the reason was they used a private/family dentist. Distribution of reason for not using the School Dental Service is shown in Table 20.

Male students, and students with mothers born in Australia ($p < 0.01$) were variables associated with significantly higher proportion of students who answered using a private/family dentist and other reasons and significantly lower proportion who answered no problem with their teeth as reason for not using the School Dental Service. Students born in Australia ($p < 0.01$), had fathers born in Australia ($p < 0.01$), with private dental insurance, had parents from the white collar occupations, and spoke only English at home ($p < 0.01$), were variables associated with significantly higher proportion of students who answered they used a private/family dentist and significantly lower proportion who answered no problem with their teeth and other reasons for not using the School Dental Service. There was no significant difference by type of school in the reason for not using the School Dental Service.

Table 20. Reason for not using the School Dental service

<u>Reason</u>	<u>% students</u>
No problem with teeth	17.1
Use a private/family dentist	47.6
Other reasons	13.6
Do not know	16.8
Not given	4.9
Total (N=286)	100.0

5.4.18 Period since last used the School Dental Service

For those who indicated they had ever used the School Dental Service, 58% of students indicated they last used the service within the previous 12 months. Distribution of period since the School Dental Service was last used is shown in Table 21.

Students from government schools, had fathers born in Australia, had mothers born in Australia, and spoke only English at home, were variables associated with significantly higher proportion of students whose period since last used the School Dental Service was 12 months or less. There was no significant difference by sex, by occupation, by private dental insurance, or by country of birth of student in the period since last used the School Dental Service.

Table 21. Period since School Dental Service last used -
for those who had used the School Dental Service

<u>Period</u>	<u>% students</u>
2 weeks ago or less	4.6
More than 2 weeks to 6 months ago	33.5
More than 6 to 12 months ago	21.4
More than 12 to 18 months ago	13.9
More than 18 months ago	13.9
Do not know	12.4
Not given	0.3
Total (N = 281)	100.0

5.4.19 Current availability of dental appointment

For those whose period since last dental visit was 12 months or less, 36% of students indicated they currently had a dental appointment. This was more than the overall group (36:29%). Fifty three percent indicated they currently did not have a dental appointment. This was less than the overall group (53:60%). Comparison on distribution of current availability of dental appointment between those whose period since last dental visit was 12 months or less and the overall group is shown in Table 22.

Students with private dental insurance ($p < 0.01$), and had mothers born in Australia, were variables associated with significantly higher proportion of students who currently had dental appointments. There was no significant difference by sex, by occupation, by type of school, by country of birth of student, by country of birth of father, or by language spoken at home in current availability of dental appointments.

Table 22. Current availability of dental appointment - Comparison of data between those whose period since last dental visit is 12 months or less and the overall group

<u>Dental appointment</u> <u>currently available</u>	<u>% students</u> (period since last visit 12 months or less)	<u>% students</u> (Overall)
Sample base	426	603
Yes	35.7	29.4
No	52.6	59.5
Do not know	11.3	10.8
Not stated	0.4	0.3
Total	100.0	100.0

5.4.20 Details of next dental appointment

For those who had made a dental visit in the previous 12 months, 12% indicated the next appointment was for a special dental problem. This was more than the overall group (12:9%). Twenty three percent of students indicated the next appointment was for a check-up. This was more than the overall group (23:19%). Comparison on distribution of details of next dental appointment between those whose period since last dental visit was 12 months or less and the overall group is shown in Table 23.

There was no significant difference by sex, by type of school, by private dental insurance, by occupation, by country of birth of student, by country of birth of father, by country of birth of mother, or by language spoken at home in details of next dental appointment.

Table 23. Details of next dental appointment - Comparison of data between those whose period since last dental visit is 12 months or less and the overall group

<u>Details of next dental appointment</u>	<u>% students</u>	<u>% students</u>
	(period since last visit	(Overall)
	12 months or less)	
Sample base	426	603
Have an appointment-		
For a special dental problem	12.0	9.3
For a checkup	22.8	19.1
Do not know	0.2	0.5
Not stated	0.7	0.5
Total with appointment	35.7	29.4
Does not have an appointment	52.6	59.5
Do not know if have appointment or not	11.3	10.8
Not stated if have appointment or not	0.4	0.3
Total	100.0	100.0

5.4.21 Usual number of check-ups per year

For those whose period since last dental visit was 12 months or less, 36% usually had check-ups twice a year. This was more than the overall group who had had a dental consultation (36:29%). Fifteen percent usually had check-ups three or more times a year. This was more than the overall group (15:12%). Thirty two percent usually had check-ups once a year. This was less than the overall group (32:33%). Seventeen percent usually had check-ups less than once a year. This was less than the overall group (17:26%). The average usual number of check-ups was 1.5 visits per person per year. This was more than the overall group (1.5:1.3). Comparison on distribution of usual number of check-ups per year between those whose period since last dental visit was 12 months or less and the overall group who had had a dental consultation is shown in Table 24.

Students whose parents were in the white collar occupations had significantly more ($p < 0.01$) usual number of check-ups per years than those whose parents were in the blue collar or nil occupations (1.4:1.2). Students with private dental insurance had significantly more ($p < 0.01$) usual number of check-ups per year than those without private dental insurance (1.5:1.2). Students born in Australia reported significantly more usual number of check-ups per year than those born overseas (1.3:1.1). There was no significant difference by sex, by type of

school, by country of birth of father, by country of birth of mother, or by language spoken at home in usual number of check-ups per year.

Table 24. Usual number of check-ups per year - Comparison of data between those whose period since last dental visit is 12 months or less and the overall group who have had a dental consultation

<u>Usual number of check-ups per year</u>	<u>% students</u> (Period since last visit 12 months or less)	<u>% students</u> (Who have had a dental consultation)
Sample base	426	581
Less than once a year	16.9	25.7
Once a year	32.2	33.1
Twice a year	35.9	28.6
Three or more times a year	15.0	12.4
Do not know	-	0.3
Total	100.0	100.0
Average usual number of check-ups/person/yr	1.5	1.3

5.4.22 Purpose of the most recent dental visit

For those whose period since last dental visit was 12 months or less, 64% of students indicated the purpose of the most recent dental visit was for a check-up. This was more than the overall group who had had a dental consultation (64:63%). Thirty four percent indicated other reason. This was more than the overall group (34:32%). Comparison on distribution of purpose of the most recent dental visit between those whose period since last dental visit was 12 months or less and the overall group who had had a dental consultation is shown in Table 25.

Significantly higher proportion of students with private dental insurance reported the purpose of the most recent dental visit was for a check-up than for other reason. There was no significant difference by sex, by type of school, by occupation, by country of birth of student, by country of birth of father, by country of birth of mother, or by language spoken at home in purpose of the most recent dental visit.

Table 25. Purpose of the most recent dental visit - Comparison of data between those whose period since last dental visit is 12 months or less and the overall group who have had a dental consultation

<u>Purpose</u>	<u>% students</u> (Period since last visit 12 months or less)	<u>% students</u> (Who have had a dental consultation)
Sample base	426	581
Check-up	64.1	62.5
Other reason	33.8	32.4
Do not know	1.6	4.7
Not stated	0.5	0.5
Total	100.0	100.0

5.4.23 Place of last dental visit

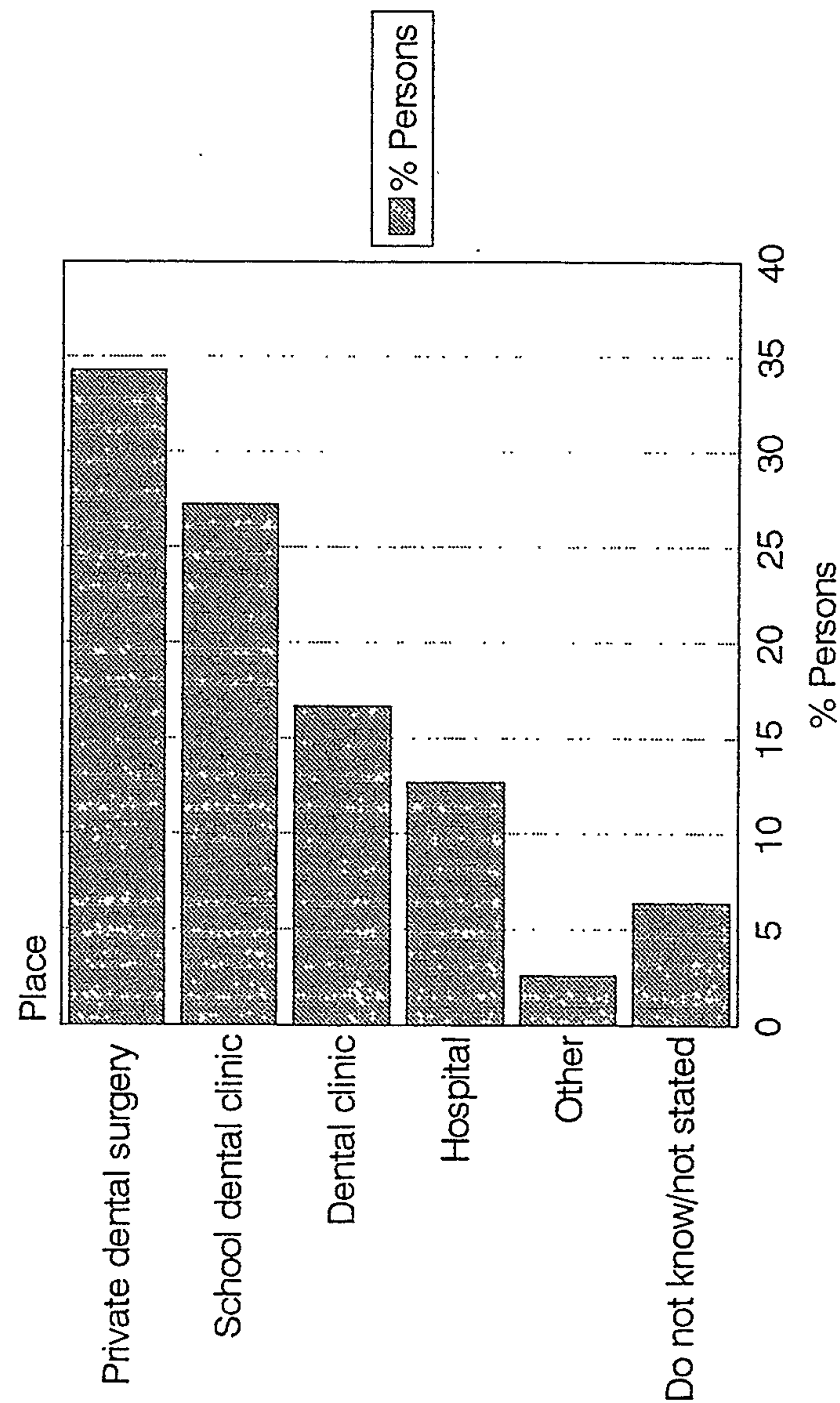
For those whose period since last dental visit was 12 months or less, 34% of students had visited private dental practices in the last dental visit. This was more than the overall group who had had a dental consultation (34:30%). Twenty seven percent visited school dental clinics. This was more than the overall group (27:25%). Thirteen percent visited hospitals. This was less than the overall group (13:14%). Seventeen percent visited dental clinics. This was less than the overall group (17:20%). Comparison on distribution of place of last dental visit between those whose period since last dental visit was 12 months or less and the overall group who had had a dental consultation is shown in Table 26. Distribution of place of last dental visit is shown in Figure 7.

Students from Catholic schools, with private dental insurance, had parents from the white collar occupations ($p<0.01$), born in Australia ($p<0.01$), had fathers born in Australia ($p<0.01$), had mothers born in Australia ($p<0.01$), and spoke only English at home ($p<0.01$) were variables associated with significantly higher proportion of students who had visited private dental practices in the last dental visit. There was no significant difference by sex in using private dental practices or government dental services for place of last dental visit.

Table 26. Place of last dental visit - Comparison of data between those whose period since last dental visit is 12 months or less and the overall group who have had a dental consultation

<u>Place</u>	<u>% students</u> (Period since last visit 12 months or less)	<u>% students</u> (Who have had a dental consultation)
Sample base	426	581
Private dental surgery	34.3	29.8
School Dental Clinic	27.3	25.3
Hospital	12.7	14.1
Dental Clinic	16.7	20.1
Other	2.6	2.9
Do not know	5.9	7.2
Not stated	0.5	0.5
Total	100.0	100.0

Figure 7. Place of last dental visit
Children with visit in previous 12 months



Year six students in Western Sydney area 1993 survey

5.4.24 Treatment received at last dental visit

For those whose period since last dental visit was 12 months or less, treatments received at last dental visit were: teeth cleaned or polished (32.%), this was more than the overall group who had had a dental consultation (32:30%); check-ups/no treatment (31%), this was less than the overall group (31:33%); fluoride treatment (23%), this was more than the overall group (23:20%); dental fillings (22%), this was less than the overall group (22:23%); dental x-ray (18%), this was more than the overall group (18:15%). Teeth extracted (14%), this was less than the overall group (14:15%); orthodontic treatment (4%), this was approximately equal to the overall group (4:4%); and other treatment (4%), this was more than the overall group (4:3%). Mean treatments per person per visit was 1.47. This was more than the overall group (1.47:1.43). Comparison on distribution of % treatments received at last dental visit between those whose period since last dental visit was 12 months or less and the overall group who had had a dental consultation is shown in Table 27. Comparison on distribution of mean treatment per person received at the last dental visit is shown in Table 28. Distribution of % treatments received at last dental visit is shown in Figure 8.

At the last dental visit, students with private dental insurance were significantly more likely ($p < 0.01$) to have

teeth cleaned or polished, and significantly more likely ($p < 0.01$) to have fluoride treatments than those without private dental insurance. All other types of treatment showed no significant difference by private dental insurance.

Students from government schools were significantly more likely to have dental x-rays than those from Catholic schools. All other types of treatment showed no significant difference by type of school.

Students born in Australia were significantly less likely to have teeth extracted ($p < 0.01$), significantly more likely to have dental x-ray, and significantly more likely to have fluoride treatments ($p < 0.01$) than those born overseas. All other types of treatments showed no significant difference by country of birth of student.

Students with fathers born in Australia were significantly less likely to have teeth extracted; significantly more likely to have fluoride treatments ($p < 0.01$) than those with fathers born overseas. All other types of treatment showed no significant difference by country of birth of father.

Students with mothers born in Australia were significantly less likely to have teeth extracted ($p < 0.01$) and significantly more likely to have fluoride

treatments ($p < 0.01$) than those with mothers born overseas. All other types of treatment showed no significant difference by country of birth of mother.

Students who spoke only English at home were significantly less like to have teeth extracted ($p < 0.01$), and significantly more likely to have fluoride treatments ($p < 0.01$) than those who spoke another language at home. All other types of treatment showed no significant difference by language spoken at home.

For students whose parents were in the white collar occupations, significantly higher proportion of students had received fluoride treatments ($p < 0.01$), and significantly higher proportion had received another treatment than those whose parents were in the low blue collar or nil occupations. All other types of treatment showed no significant difference by occupation.

There was no significant difference by sex in all types of dental treatment received at the last dental visit.

Table 27. Percent treatment received at last dental visit - Comparison of data between those whose period since last dental visit is 12 months or less and the overall group who have had a dental consultation

<u>Treatment</u>	<u>% treatments</u> (Period since last visit 12 months or less)	<u>% treatments</u> (Who have had a dental consultation)
Sample base	420*	569#
Tooth extracted	9.4	10.5
Dental x-ray	12.0	10.5
Teeth cleaned or polished	21.9	21.0
Fluoride treatment	15.8	14.0
Dental filling	15.2	16.1
Orthodontic treatment	2.4	2.8
Check-up/no treatment	21.0	23.1
Other treatment	2.4	2.1
Total treatments	100.0	100.0

* 6 responses answered 'Don't know' excluded; #12 responses answered 'Don't know' excluded

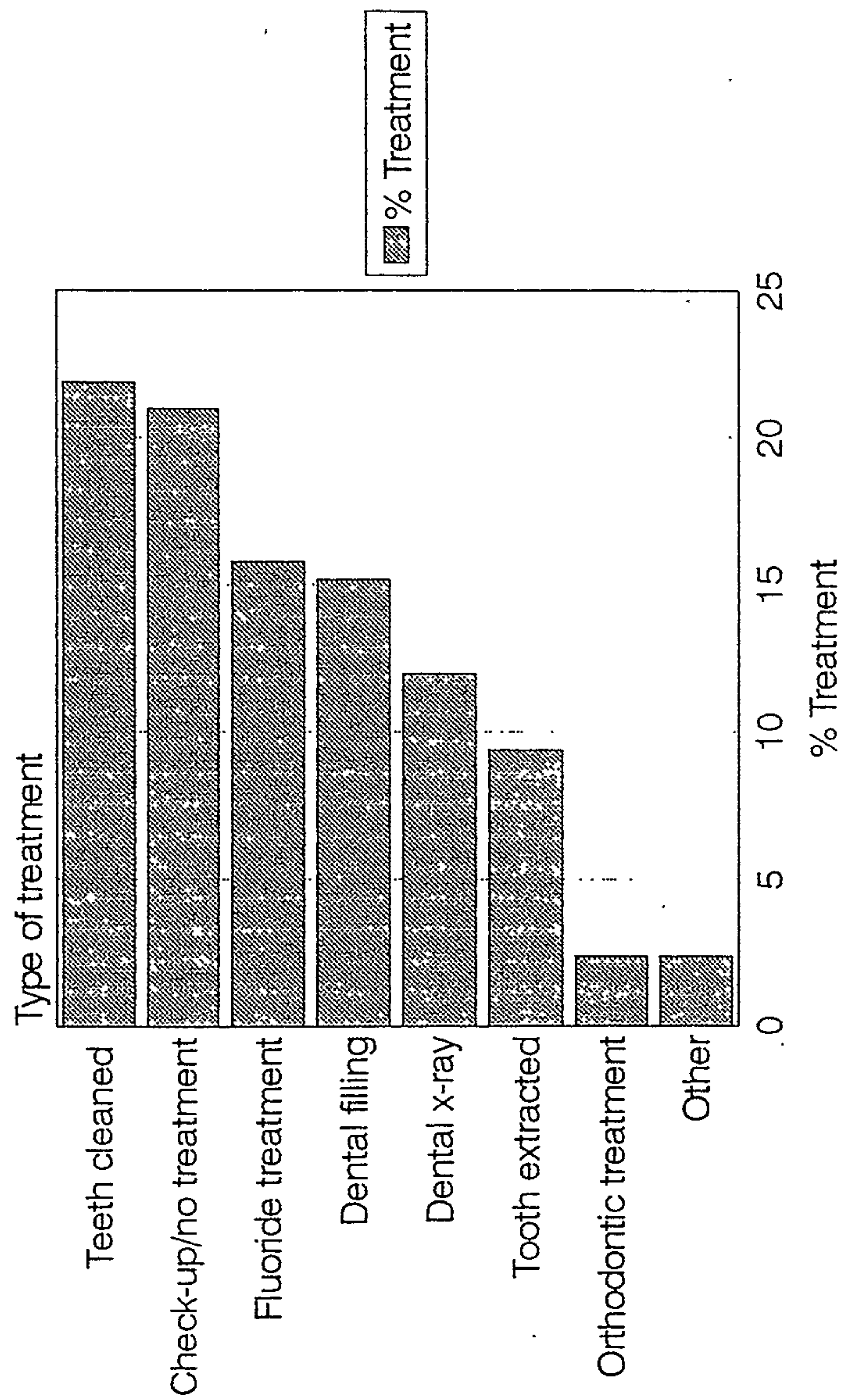
Table 28. Mean treatment received at last dental visit - Comparison of data between those whose period since last dental visit is 12 months or less and the overall group who have had a dental consultation

<u>Treatment</u>	<u>Mean treatment per person</u> (Period since last visit 12 months or less)	<u>Mean treatment per person</u> (Who have had a dental consultation)
Sample base	420*	569#
Tooth extracted	.14	.15
Dental x-ray	.18	.15
Teeth cleaned or polished	.32	.30
Fluoride treatment	.23	.20
Dental filling	.22	.23
Orthodontic treatment	.04	.04
Check-up/no treatment	.31	.33
Other treatment	.04	.03
Mean treatments per person per visit	1.47	1.43

* 6 responses answered 'Don't know' excluded; #12 responses answered 'Don't know' excluded

Figure 8. Treatment at last dental visit

Children with visit in previous 12 months



Year six students in Western Sydney area 1993 survey

5.4.25 Orthodontic treatment

For those who had had a dental consultation, 2.4% of students indicated they currently wore braces/bands. Some 4.7% used to wear braces/bands but not now. Distribution of use of orthodontic treatment service is shown in Table 29.

Students with private dental insurance, and students whose parents were in the high white collar occupations, were variables associated with significantly higher proportion of students currently wore or used to wear braces/bands. There was no significant difference by sex, by type of school, by country of birth of student, by country of birth of father, by country of birth of mother, or by language spoken at home in use of orthodontic treatment service.

Table 29. Use of orthodontic treatment service - for those who have had a dental consultation

<u>Orthodontic treatment</u>	<u>% students</u>
Currently wear braces/bands	2.4
Used to wear braces/bands but not now	4.7
Have not ever worn braces/bands	90.4
Do not know	1.5
Not stated	1.0
Total (N=581)	100.0

6 DISCUSSION

6.1 RELIABILITY AND LIMITATIONS OF DATA

Certain problems are inherent in any large scale survey, this survey is of no exception. Since the estimates in this report were based on a sample of the population rather than on the entire population, they were subject to sampling error. Sampling errors for most of the estimates were of relatively low magnitude. However, where an estimated number or the numerator or the denominator of a rate or percentage was small, the sampling error could be high.

The results were also subject to non-sampling errors - inaccuracies that could occur because of imperfections in reporting by respondents because some answers were based on memory, or because of misunderstanding or unwillingness of respondents to reveal all details. It was possible that some groups were better able to recall accurately that they had a dental visit, or that visits for certain types of care (e.g. periodontal care, other treatment) were more likely to be under-reported. The questionnaire used in this survey was completed by the survey respondents themselves and was not given as a person-to-person interview. This method could have introduced misconceptions, misinterpretations, and other difficulties for the respondents which would have influenced their responses to some extent. To get around

these problems, the questions were carefully designed in simple language to suit the intellectual ability of Year six students so that they were more likely to be able to answer the questionnaires correctly. Also, the writer went to every participating school to briefly introduce the questionnaires, and to supervise the completion of the questionnaires. The respondents were encouraged to ask the writer's assistance in the event of there being any problem in understanding. The procedures followed in this survey proved to be practical, easy to administer and inexpensive. Given that only a very small number of questionnaires were incomplete, it would appear that this potential limitation was not a major problem. The results could be regarded as reliable.

Errors could also arise during processing (e.g. coding data recording). Such errors may occur in any statistical collection, whether it is a full census count or sampling survey. Every effort was made to reduce non-sampling errors of this nature in the survey to a minimum by careful and efficient operation procedures.

The overall response rate was 51.1%. This fell within the expected range of 40-60%. The writer considers this a good response for a survey that required written parental permission before the child could participate. In the writer's opinion, a lot of factors could have been involved that would easily decrease the response rate.

Some of these factors could be: parents were too busy and did not bother about completing the permission slip; parents did not like to provide personal information such as occupation, country of birth for child, father and mother, and language spoken at home. They might think these questions were not relevant to their children's teeth. They might worry about the confidentiality of the information provided, although the writer tried his best to keep all the information strictly confidential. Some children actually got their parents' written permission, but were away from class on the survey day being sick or engaged in some other school activities.

The final sample size for the study was 603. This was found to be sufficient to achieve the purposes of the study. The sampling method chosen for this survey proved to be satisfactory both from the theoretical and practical points of view.

One of the shortcomings of the present survey was that the survey population was limited to Year six students in the Western Sydney area due to financial and time constraints. Though the survey data and information could not be taken as strictly representative for the whole population of primary schoolchildren in the area, it was felt that they could serve as a reliable data base for planning purposes and as a valid but incomplete picture of the existing situation of utilisation of dental

service by primary schoolchildren in the Western Sydney area.

The original sample was designed to constitute a representative population of Year six students in Western Sydney area. However, the response rate from individual schools varied widely. Responses in some schools were very good. Responses in some schools were poor. The final sample could not be regarded as truly representative of the whole population of Year six students in the area because of the wide differences in response rates between individual schools.

After the survey had been conducted, the writer showed a video on oral health education to the schoolchildren. The video contained simple, clear and correct messages on oral health education appealing to the interest of the children. The children appeared to enjoy the video very much. This could be reflected by their attention and interest when the video was played, and the questions they asked afterwards on oral health education. In the writer's opinion, showing them a well designed video could be an effective way for oral health education.

6.2. THE COMMUNITY

There are many factors responsible for the rapid decline of dental caries in the Australian community. One of the factors is fluoridation of many communal water supplies of Australian cities (1964-Hobart, Canberra, 1968-Perth, Sydney, 1971-Adelaide, 1977-Melbourne) (Barnard 1993).

The overall coverage of water fluoridation in Australia was 3.9% in 1966 and increased to 27% in 1968. In 1975 the figure became 47.5%. The coverage peaked at 67% in 1978 and slightly declined to 65.6% and has remained constant since then (Wang 1990).

During the 1970s, there was more emphasis on prevention through private practice, the introduction of topical fluoride prevention through school dental services, and the widespread marketing of therapeutic fluoride toothpastes. During the 1980s, preventive fissure sealants were introduced (Barnard 1993).

In 1960, sugar consumption was 51.3 kg/person/year. In 1986, sugar consumption was still keeping at a high level of 49.9 kg/person/year. Most sugars now consumed are in manufactured foods rather than as refined sugar. Also, almost 1/2 of the sugars in manufactured foods today are in liquid form (Sivaneswaran, Barnard 1990). For many years, it was accepted that a clear direct correlation existed between total sugar consumption and dental

caries. Today the relationship between total sugar consumed and dental caries in Australian community does not appear to be significant.

The School Dental Scheme implemented in 1973 saw its rapid expansion in the period 1976 to 1980 resulted in an increased coverage of primary schoolchildren in the States and Territories during those years.

Dental therapists are the key persons in relation to the dramatic positive changes in children's attitudes to oral health care, and also in improving attitudes of children to other aspects of health and health behaviour, especially in the areas of nutrition and hygiene (Wang 1990).

There was an undersupply of dentists in the early 1970s. By the end of the 1970s dentists were in oversupply following increases in the numbers of graduates from Australian dental schools, dentists from overseas, school dental therapists, and denturists, and was combined with some decline in dental caries treatment needs. From the mid 1980s there has been a balance, or a slight undersupply of dentists following restrictions on numbers of overseas dentists and Australian dentists graduates in the early 1980s (Barnard 1993).

There has been a general trend for the pattern of dental services to change towards more diagnostic and preventive procedures with less restorations and extractions being carried out in both private and government sectors. This trend reflects the effectiveness of both prevention and treatment and must influence the provision of dental services and dental workforce needs.

6.3 COMPARISON WITH PREVIOUS STUDIES

The results of this survey were compared with those found in the ABS 1979 and 1983 studies, and also with the NOHSA 1987-88. The following reports the findings from the comparisons.

6.3.1 Private dental insurance

Thirty two percent students reported they had private dental insurance. This was less than the 10-14 year old Australian children in 1987-88 (52%), and those 2-14 year old Australian children in 1983 who had had a dental consultation (53%). Comparison with the 1987-88 survey is made in Table 30.

Table 30. Private dental insurance held: Comparison of 10-14 year old Australian children in the 1987-88 survey and Year six students in Western Sydney area 1993 survey

<u>Insurance</u>		<u>1987-88</u>	<u>1993</u>
Age		10-14 years (Australia)	12 years (Western Sydney)
Sample base - persons		1,581	603
Estimates - % persons			
Yes		52.2	32.3
No		46.9	39.7
Do not know		0.8	27.7
Not stated		0.1	0.3
Total		100.0	100.0

6.3.2 Frequency of toothbrushing

The average number of times that Year six students brushed their teeth on the previous day per student was more than in 1987-88 (1.7:1.6) for the 10-14 year old Australian children. The average number of times that students brushed their teeth on the previous day per student brushing was more than 1987-88 (1.8:1.7). More children in this survey did not brush on the previous day than in 1987-88 (7:5%). Comparison with the 1987-88 survey is made in Table 31.

Table 31. Number of times teeth brushed on previous day: Comparison of 10-14 year old Australian children in the 1987-88 survey and Year six students in Western Sydney area 1993 survey

<u>Frequency</u>	<u>1987-88</u>	<u>1993</u>
Age	10-14 years (Australia)	12 years (Western Sydney)
Sample base - persons	1,581	603
	Estimates - % persons	
Did not brush	4.8	6.6
One	32.6	24.9
Two	57.3	60.2
Three	3.5	7.3
More than three	0.2	1.0
Do not know	1.6	-
Not stated	0.1	-
Total	100.0	100.0
	Mean number of times teeth brushed	
- per person	1.61	1.71
- per person brushing	1.69	1.83

6.3.3 Number of dental visits in previous 12 months

The average number of dental visits for those who had visited in the previous 12 months was 1.8. This was less than the 10-14 year old Australian children in the 1979, 1983 and 1987-88 surveys (1.8:2.1:2.1:2.1). Comparison with the 1979, 1983, and 1987-88 surveys is made in Table 32.

Table 32. Number of dental visits in previous 12 months - for those whose period since last dental visit is 12 months or less: Comparison of 10-14 year old Australian children in the 1979, 1983, 1987-88 surveys and Year six students in Western Sydney area 1993 survey

<u>Visits</u>	<u>1979</u>	<u>1983</u>	<u>1987-88</u>	<u>1993</u>
Age	10-14 years	10-14 years	10-14 years	12 years
	(Australia)	(Australia)	(Australia)	(Western Sydney)
Sample base - persons	919,300	1,105,700	1,314	426
Estimates - % persons				
One	33.9	33.1	32.9	46.7
Two	37.2	37.1	42.4	28.9
Three	10.2	10.2	8.4	8.2
Four or more	18.7	16.7	15.6	11.7
Not known	-	2.9	0.7	4.5
Total	100.0	100.0	100.0	100.0
Average number of visits				
- per person visiting	2.1	2.1	2.1	1.8

6.3.4 Period since last dental visit

For those who had made a dental visit, 74% students had a dental consultation in the previous 12 months. This was less than the 10-14 year old Australian children in the 1979 and 1987-88 surveys (74:78:83%). This was also less than the 2-14 year old Australian children in 1983 (74:86%).

Seventy one percent of all children had made a dental consultation in the last 12 months. This was less than the 5-14 year old Australian children in the 1979, 1983, and 1987-88 surveys (71:73:79:80%) (Barnard 1986; Barnard 1993).

About 96% of all children had made a dental consultation at some stage of their lives. This was more than 1979 but less than 1983 and 1987-88 (96:95:98:99%) for the 10-14 year old Australian children (Barnard 1986; Barnard 1993).

Comparison on period since last dental visit for those who had had a dental consultation with the 10-14 year old Australian children in the 1979 and 1987-88 surveys, and the 2-14 year old Australian children in the 1983 survey is made in Table 33.

Table 33. Period since last dental visit - for those who have had a dental consultation.
 Comparison of 10-14 year old Australian children in 1979 and 1987-88, 2-14 year old
 Australian children in 1983, and Year six students in Western Sydney area 1993 survey

<u>Period</u>	<u>1979</u>	<u>1983</u>	<u>1987-88</u>	<u>1993</u>
Age group	10-14 yrs	2-14 yrs	10-14 yrs	12 years
	(Australia)	(Australia)	(Australia)	(Western Sydney)
sample base - persons	1,171,600	2,616,900	1,557	581
Estimates - % persons				
6 months ago or less	56.8	64.4	57.1	58.4
more than 6 months to 12 months ago	21.7	21.7	25.1	20.6
more than 12 to 18 months ago	5.9	7.2	subtotal of	12.4
more than 18 months to 3 years ago	9.2	4.7	17.2 for more	5.9
more than 3 years to 5 years ago	3.9	1.1	than 1 year	2.1
more than 5 years ago	2.5	0.5		0.6
Not known/not stated	-	0.4	0.6	10.5
Total	100.0	100.0	100.0	100.0

6.3.5 Details of next dental appointment

For those who had made a dental visit in the previous 12 months, when compared with the 10-14 year old Australian children in 1979, more children in this survey had future dental appointments (36:28%); had appointments for check-ups (23:18%); and had appointments for a specific reason (12:10%).

When compared with the 2-14 year old Australian children in 1983, more children in this survey had future dental appointments (36:21%); had appointments for a checkup (23:13%); and had appointments for a specific reason (12% compared to 8% for a specific or other reason in 1983).

Comparison with the 1979 and 1983 surveys is made in Table 34.

Table 34. Details of next dental appointment - for those whose period since last dental visit is 12 months or less: Comparison of 10-14 year old Australian children in the 1979 survey, 2-14 year old Australian children in the 1983 survey and Year six students in Western Sydney area 1993 survey

<u>Details of next dental appointment 1979</u>		<u>1983</u>	<u>1987-88</u>	<u>1993</u>
Age group	10-14 yrs (Australia)	2-14 yrs (Australia)	12 yrs (Western Sydney)	12 years
Sample base - persons	919,300	2,252,800	not asked	426
Have an appointment-				177
for a check-up	17.7	13.0		22.8
for a specific reason	9.7	6.9		12.0
for other rason	-	0.8		-
Do not know/not stated	-	-		0.9
Sub-total:have an appointment	27.4	20.8		35.7
Do not have an appointment	72.6	78.9		52.6
Do not know/not stated	-	0.3		11.7
Total	100.0	100.0		100.0

6.3.6 Usual number of check-ups per year

For those who had visited in the previous 12 months, 51% students reported usually had a check-up twice or more a year. This was less than 1979 and 1983 (51:62:63%) for the 10-14 year old Australian children. Thirty two percent students reported usually had a check-up once a year. This was more than 1979 and 1983 (32:21:20%). Seventeen percent students reported usually had a check-up less than once a year. This was similar to the subtotal of children who usually visited less than once a year and those who did not usually have a check-up in 1979 and 1983 (17:17:16%). Comparison with the 1979 and 1983 surveys is made in Table 35.

Table 35. Usual number of check-ups per year - for those whose period since last dental visit is 12 months or less: Comparison of 10-14 year old Australian children in the 1979 and 1983 surveys, and Year six students in Western Sydney area 1993 survey

<u>Usual number of check-ups</u>	<u>1979</u>	<u>1983</u>	<u>1987-88</u>	<u>1993</u>
Age				
	10-14 years	10-14 years	12 years	
	(Australia)	(Australia)	(Western Sydney)	
Sample base - persons	919,300	1,105,700		426
Estimates - % persons				
Usually have a check-up				
twice or more a year	62.2	63.4	not asked	50.9
once a year	21.3	20.4		32.2
less than once a year	1.3	2.6		16.9
Sub-total: Usually have checkup	84.8	86.4		-
Do not usually have a check-up	15.2	13.6		-
Total	100.0	100.0		100.0

6.3.7 Purpose of the most recent dental consultation

For those who had visited in the previous 12 months, 64% of students indicated the purpose of the most recent dental consultation was for check-ups. This was less than the 10-14 year old Australian children in 1983 (64:71%). Thirty four percent students reported other reason. This was more than 1983 (34:30%). Comparison with the 1983 survey is made in Table 36.

Table 36. Purpose of the most recent consultation - for those whose period since last dental visit is 12 months or less: Comparison of 10-14 year old Australian children in the 1983 survey and Year six students in Western Sydney area 1993 survey

<u>Purpose</u>	<u>1979</u>	<u>1983</u>	<u>1987-88</u>	<u>1993</u>
Age		10-14 years		12 years
		(Australia)		(Western Sydney)
Sample base - persons		1,105,700		426
Estimates - % persons				
Check-up		70.5		64.1
Other reason	not asked	29.6	not asked	33.8
Do not know/not stated		-		2.1
Total		100.0		100.0

6.3.8 Place of last dental visit

For those who had made a dental visit in the previous 12 months, when compared with the 10-14 year old Australian children in the 1987-88 survey, it was found: less children in this survey had visited private dental practices (34:50%); less children had visited school dental clinics (27:44%); more children had visited dental hospitals or hospital services (13:4%) and other places (3:2%).

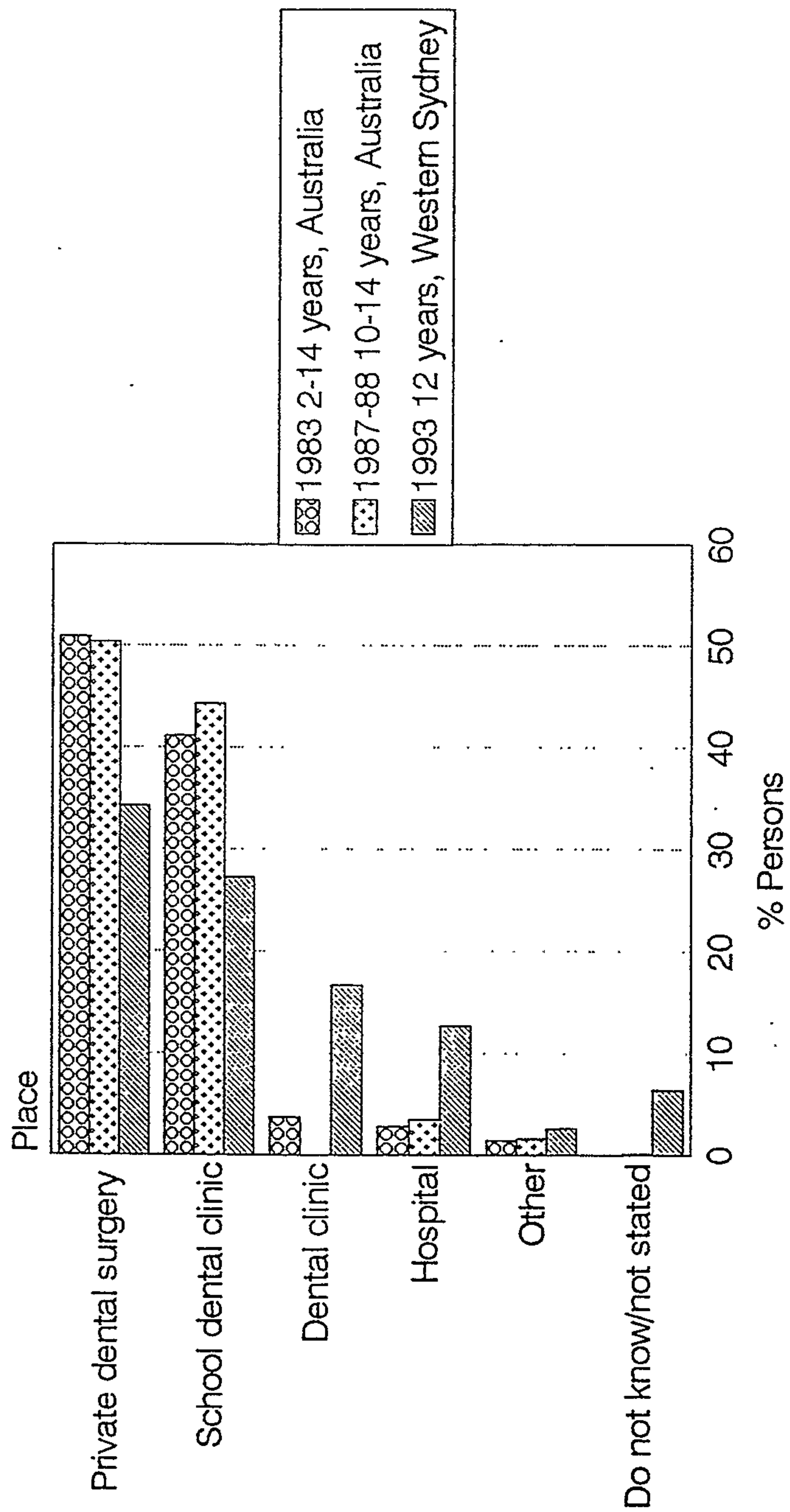
When compared with the 2-14 year old Australian children in 1983, it was found: less children had visited private dental practices (34:51%); less children had visited school dental clinics (27:41%); more children had visited dental hospitals or hospital services (13:3%); more children had visited dental clinics (17:4%) and other places (3:1%).

Comparison with the 1983 and 1987-88 surveys is made in Table 37 and Figure 9.

Table 37. Place of last dental visit - for those whose period since last dental visit is 12 months or less. Comparison of 10-14 year old Australian children in the 1987-88 survey, 2-14 year old Australian children in the 1983 survey, and Year six students in Western Sydney area 1993 survey

<u>Place</u>	<u>1983</u>	<u>1987-88</u>	<u>1993</u>
Age	2-14 yrs	10-14 yrs	12 yrs
	(Australia)	(Australia)	(Western Sydney)
Sample base - persons	2,252,800	1,342	426
	Estimates - % persons		
Private dental surgery	50.9	50.4	34.3
Dental hospital/hospital service	2.8	3.5	12.7
School dental clinic	41.2	44.3	27.3
Dental clinic	3.7	-	16.7
Do not know/not stated	-	0.1	6.4
Other	1.4	1.6	2.6
Total	100.0	100.0	100.0

Figure 9. Place of last dental visit
Children with visit in previous 12 months



Comparison: 2-14 year old Australian children in the 1983 survey, 10-14 year old Australian children in the 1987-88 survey, and Year six students in Western Sydney area 1993 survey

6.3.9 Treatment received at last dental visit

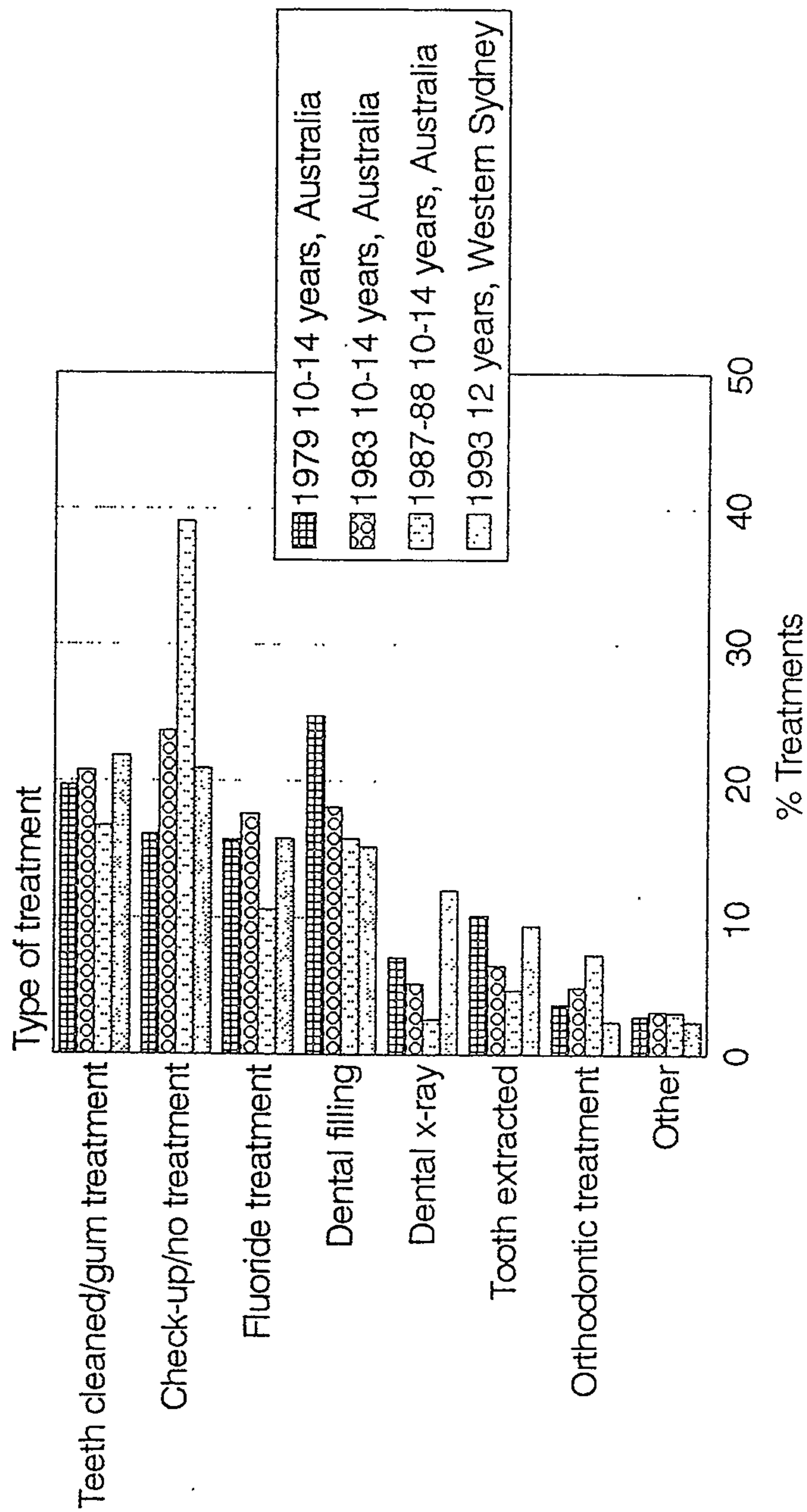
For those who had visited in the previous 12 months, the mean number of treatments per visit per person was 1.47. This was less than 1979 (1.53) and 1987-88 (1.49), but more than 1983 (1.40) for the 10-14 year old Australian children.

At the last dental visit, children in this survey had more teeth extracted than 1983 and 1987-88 (14:9:7%), but less than 1979 (14:16%). Dental x-ray treatments were more than 1979, 1983 and 1987-88 (18:11:7:4%). Dental filling treatments were less than 1979, 1983 and 1987-88 (22:38:25:24%). Orthodontic treatments were less than 1979, 1983 and 1987-88 (4:6:7:11%). Check-ups/no treatment were less than 1983 and 1987-88 (31:33:58%), but more than 1979 (31:25%). Combining check-ups, cleaning or polishing, and fluoride treatments as preventive procedures, 86% of students received these treatments in the last dental visit. This was more than 1979 (79%), slightly less than 1983 (87%) and less than 1987-88 (99%). Comparison with the 1979, 1983, and 1987-88 surveys on % treatments received at last dental visit is made in Table 38 and Figure 10. Comparison on mean treatment received per person is shown in Table 39.

Table 38. Percent treatment received at last dental visit - for those whose period since last dental visit is 12 months or less: Comparison of 10-14 year old Australian children in the 1979, 1983 and 1987-88 surveys and Year six students in Western Sydney area 1993 survey

<u>Treatment</u>	<u>1979</u>	<u>1983</u>	<u>1987-88</u>	<u>1993</u>
Age	10-14 years	10-14 years	10-14 years	12 years
	(Australia)	(Australia)	(Australia)	(Western Sydney)
Sample base - persons	919,300	1,105,700	1,910	420
Estimates - % treatments				
Tooth extracted	10.2	6.5	4.7	9.4
Dental x-ray	7.1	5.2	2.6	12.0
Teeth cleaned or polished	19.7	20.8	16.4	21.9
Fluoride treatment	15.7	17.6	10.6	15.8
Dental filling or crown	24.8	18.1	15.8	15.2
Orthodontic treatment	3.7	4.9	7.3	2.4
Other treatment	2.8	3.2	3.1	2.4
No treatment/check-up	16.1	23.7	39.1	21.0
Gum treatment	-	-	0.3	-
Total treatments	100.0	100.0	100.0	100.0

Figure 10. Treatment at last dental visit
Children with visit in previous 12 months



Comparison: 10-14 year old Australian children in the 1979, 1983 and 1987-88 surveys, and Year six students in Western Sydney area 1993 survey

Table 39. Mean treatment received at last dental visit - for those whose period since last dental visit is 12 months or less: Comparison of 10-14 year old Australian children in the 1979, 1983, and 1987-88 surveys, and Year six students in Western Sydney area 1993 survey

<u>Treatment</u>	<u>1979</u>	<u>1983</u>	<u>1987-88</u>	<u>1993</u>
Age	10-14 years	10-14 years	10-14 years	12 years
	(Australia)	(Australia)	(Australia)	(Western Sydney)
Sample base - persons	919,300	1,105,700	1,910	420
Estimates - mean treatment per person				
Tooth extracted	.16	.09	.07	.14
Dental x-ray	.11	.07	.04	.18
Teeth cleaned or polished	.30	.29	.25	.32
Fluoride treatment	.24	.25	.16	.23
Dental filling or crown	.38	.25	.24	.22
Orthodontic treatment	.06	.07	.11	.04
Other treatment	.04	.05	.05	.04
No treatment/check-up	.25	.33	.58	.31
Gum treatment	-	-	-	-
Treatments/person/visit	1.53	1.40	1.49	1.47

6.3.10 Use of orthodontic treatment service

For those who had had a dental consultation, 2.4% of students indicated they currently wore braces/bands. This was less than the 6 to 14 year old Australian children in 1983 (2.4:3.7%). For Year six students, 4.7% used to wear braces/bands but not now. This was more than the 6 to 14 year old Australian children in 1983 (4.7:3.3%). The total proportion of children who currently wore braces/bands or used to wear braces/bands approximated that of the 6 to 14 year old children in 1983 (7.1:7.0%). Comparison with the 6 to 14 year old children in 1983 is shown in Table 40.

Table 40. Use of orthodontic treatment service - for those who had a dental consultation: Comparison of 6-14 year old Australian children in the 1983 survey, and Year six students in Western Sydney area 1993 survey

<u>Orthodontic treatment</u>	<u>1983</u>	<u>1993</u>
Age	6 - 14 years (Australia)	12 years (Western Sydney)
Sample base - persons	2,250,700	581
		190
	Estimates - % persons	
Currently wear braces/bands	3.7	2.4
Used to wear braces/bands but not now	3.3	4.7
Never worn braces/bands	92.6	90.4
Do not know	0.5	1.5
Not stated	-	1.0
Total	100.0	100.0

6.4 THE FINDINGS

It was unfortunate that some 28% of students answered 'don't know' relating to the question on private dental insurance. When compared with the 2-14 year old Australian children in 1983 and the 10-14 year old Australian children in the 1987-88 survey, less students in this survey reported they had private dental insurance (32:53:52%); less students had visited private dental practices in the last dental visit (34:51:50%); students in this sample appeared to be more dependent on government services. The financial barrier could be one possible reason responsible for these observations.

When compared with Australian children in the 1979, 1983, and 1987-88 surveys, the students appeared to utilise dental services less: in the previous 12 months, less students in this survey had made a dental visit than the 5-14 year old Australian children in the 1979, 1983 and 1987-88 surveys (71:73:79:80%); and they had made less frequent dental visits than the 10-14 year old Australian children in the 1979, 1983 and 1987-88 surveys (1.8:2.1:2.1:2.1). The majority of students answered no problem with their teeth as the main reason for not making dental visit in the previous 12 months. More students had never made a dental visit than the 10-14 year old Australian children in the 1987-88 survey (4:1%). Also, less students indicated check-ups as purpose of the most recent dental consultation than the

10-14 year old Australian children in 1983 (64:71%). Lack of perceived need for treatment and the perceived need for making preventive visits was not as strong in this group as previous studies could be the reasons responsible for these observations.

When compared with the 10-14 year old Australian children in the 1979, 1983, and 1987-88 surveys, there had been less orthodontic treatment received in the last dental visit. One possible reason could be the financial inaccessibility to orthodontic treatment by this group of students. Also, the students were from a wide diversity of cultural backgrounds. The problem of malocclusion could be culturally more acceptable to some ethnic groups, or the psychological barrier to orthodontic treatment could be greater in this group of students, thus avoiding the seeking for orthodontic treatment.

In agreement with many studies, female students brushed their teeth significantly more frequently than male students. When compared with the 10-14 year old Australian children in the 1987-88 survey, the students brushed more frequently. However, more students in this survey did not brush than in 1987-88. Students with overseas ethnic backgrounds brushed their teeth significantly more frequently than those with Australian background in this sample of students. This was in contrast to the finding that students with overseas

ethnic backgrounds were significantly more like to have teeth extracted at their last dental visit. Possible explanations for these observations could be the fear of the more traumatic dental extraction from past experience could help to motivate the students to brush more frequently to prevent dental disease. The higher rate of dental extraction from the overseas group could be related to students originally from countries without water fluoridation. They could be having a more cariogenic diet. Their parents could be more inclined to have carious deciduous teeth extracted than filled. As students in the Western Sydney area are from a wide diversity of cultural and ethnic background, it is important that the design and implementation of oral health education programmes should take cultural factors into consideration to maximise its effectiveness.

For dental treatment pattern at the last dental visit, it was found: there had been less fillings received than the 10-14 year old Australian children in the 1979, 1983 and 1987-88 surveys (22:38:25:24%); there had been less check-ups/no treatment received than in 1983 and 1987-88 (31:33:58%), but more than in 1979 (31:25%); there had been less preventive procedures received than in 1983 and 1987-88 (86:87:99%), but more than in 1979 (86:79%); there had been more teeth extracted than in 1983 and 1987-88 (14:9:7%), but less teeth extracted than in 1979 (14:16%). As the sample was taken from a group considered

to be financially disadvantaged and with a wide diversity of ethnic and cultural backgrounds, some variations of the dental disease and treatment pattern from the more representative national samples of previous studies should not be a surprise. Nevertheless, the findings of this survey tend to follow the general trend for the pattern of dental services to change towards more diagnostic and preventive procedures with less restorations and extractions being carried out, and give some indications of what may be expected in future for the Western Sydney area.

Students from Catholic schools, whose parents were in the white collar occupations ($p < 0.01$), born in Australia, had fathers born in Australia, had mothers born in Australia, or spoke only English at home ($p < 0.01$), were significantly more likely to have private dental insurance. Private dental insurance could be financially more accessible to students from these backgrounds. Also, the idea and perceived need for having private insurance for dental care could be culturally more acceptable by those with Australian background than those with overseas ethnic backgrounds.

In this study, there was not much association between dental service utilisation pattern and sex. The dental treatment pattern was not associated with sex. The only association of sex with utilisation was that female

students visited significantly more in the previous 12 months.

Students with private dental insurance were: significantly more likely to have visited more recently (period since last dental visit 12 months or less); significantly more likely to have visited more frequently ($p < 0.01$); significantly more likely ($p < 0.01$) to have dental appointments currently; significantly more likely ($p < 0.01$) to have teeth cleaned or polished; significantly more likely to be receiving/used to receive orthodontic treatment; significantly more likely ($p < 0.01$) to have fluoride treatments; and significantly more likely to have visited private dental practices in the last dental visit. They had significantly more ($p < 0.01$) usual number of check-ups per year. The purpose of the most recent dental visit was significantly more likely for a check-up. Private dental insurance appeared to have positive impact on the utilisation pattern. These findings agree with most studies in the literature. Orthodontic treatment and visiting private dental practices could be financially more accessible to these students as insurance reduced out-of-pocket expenses. Also, students with private dental insurance could be from financially more advantageous families. There could be a stronger perceived need for making preventive dental visits and receiving preventive treatments in this higher social group. The malocclusion problem could be socially less

acceptable to this group. Receiving orthodontic treatment could help to seek social status among peer groups. Orthodontic treatment and visiting private dental practices could be financially more accessible to this group of students.

Compared to those with parents in the blue collar or nil occupations, students with parents in the white collar occupations were: significantly more likely to have made more recent dental visits (period since last dental visit 12 months or less); significantly more likely ($p < 0.01$) to have received fluoride treatments in the last visit; significantly more likely to be receiving/used to receive orthodontic treatment; significantly more likely to have visited private dental practices in the last dental visit. They had significantly more ($p < 0.01$) usual number of check-ups per year. The impact of occupation on utilisation pattern tended to follow most studies in the literature.

Students with Australian background were: significantly more likely to have visited in the previous 12 months; significantly more likely to have more recent dental visit (period since last visit 12 months or less); significantly more likely to have used the School Dental Service more recently (period since last used the school Dental Service 12 months or less); significantly more likely to have visited private dental practices in the

last dental visit; and significantly more likely to have received fluoride treatments. The perceived need for making regular dental visit and receiving preventive treatments such as fluoride treatments could be culturally more acceptable to students with Australian background than those with overseas ethnic backgrounds. The association of this group of students with private dental insurance probably could explain why they visited private dental practices more in the last dental visit.

7 CONCLUSIONS AND RECOMMENDATIONS

7.1 CONCLUSIONS

On the basis of the data from this survey and comparison of such data with the previous 1979 and 1983 ABS studies, and the 1987-88 NOHSA, it can be concluded that for this sample of Year six students from the Western Sydney area:

(1) Some 32% of students indicated they had private dental insurance. This was less than for the 2-14 year old Australian children in 1983 (53%) for those who had had a dental consultation, or for the 10-14 year old Australian children in the 1987-88 survey (52%). Students from Catholic schools, born in Australia, had fathers born in Australia, had mothers born in Australia, spoke only English at home ($p < 0.01$), or whose parents were in the white collar occupations ($p < 0.01$), were variables associated with significantly higher proportion of students who held private dental insurance.

(2) Seven percent of students in this survey did not brush their teeth on the previous day. This was more than that for the 10-14 year old Australian children in the 1987-88 survey (7.5%).

(3) The mean number of times teeth brushed per person each day was 1.7. The students brushed their teeth more frequently than the 10-14 year old Australian children in

the 1987-88 survey (1.7:1.6 per person). Female students brushed their teeth significantly more frequently ($p<0.01$) than male students (1.8:1.6). Students born overseas ($p<0.01$), had fathers born overseas, had mothers born overseas ($p<0.01$), or spoke another language at home other than English ($p<0.01$), were variables associated with significantly more frequent toothbrushing. Students in Catholic schools brushed their teeth more frequently than those from government schools (1.8:1.7).

(4) Seventy one percent of students had made a dental visit in the previous 12 months.

(5) Less students had made a dental visit in the previous 12 months than the 5-14 year old Australian children in the 1979, 1983, and 1987-88 surveys (71:73:79:80%). Students born in Australia ($p<0.01$), had fathers born in Australia ($p<0.01$), had mothers born in Australia ($p<0.01$), spoke only English at home ($p<0.01$), had private dental insurance, or whose parents were in the white collar occupations, were variables associated with significantly higher proportion of students who had visited in the previous 12 months.

(6) The average number of dental visits per person visiting was 1.8 in the previous 12 months. The students had made less frequent dental visits in the previous 12 months than the 10-14 year old Australian children in the

1979, 1983 and 1987-88 surveys (1.8:2.1:2.1:2.1). Female students visited significantly more frequently than male students (2.0:1.6) in the previous 12 months. Students in Catholic schools visited more frequently than those from government schools (1.9:1.8) in the previous 12 months. Students with private dental insurance visited significantly more frequently ($p < 0.01$) than those without private dental insurance in the previous 12 months.

(7) More students had never made a dental visit than the 10-14 year old Australian children in the 1987-88 survey (4:1%).

(8) Sixty one percent of students who did not make a dental visit in the previous 12 months reported no problem with their teeth as the main reason. Six percent of students reported it was too expensive.

(9) Forty five percent of students perceived the School Dental Service to be available at school. Thirty nine percent of students perceived it to be not available at school. Students whose parents were in the white collar occupations, or spoke only English at home ($p < 0.01$), were variables associated with significantly higher proportion of students who perceived the School Dental Service to be available at school.

(10) Forty seven percent of students indicated they had used the School Dental Service. Forty eight percent indicated they had never used the School Dental Service. Significantly higher proportion of government school students had used the School Dental Service than those from Catholic schools.

(11) For those who had never used the School Dental Service, 48% indicated the reason was they used a private/family dentist. Seventeen percent reported no problem with their teeth for not using the School Dental Service. Male students, or students with mothers born in Australia ($p < 0.01$), were variables associated with significantly higher proportion of students who answered using a private/family dentist and other reason and a significantly lower proportion who answered no problem with their teeth as reason for not using the School Dental Service. Students born in Australia ($p < 0.01$), had fathers born in Australia ($p < 0.01$), with private dental insurance, had parents from the white collar occupations, or spoke only English at home ($p < 0.01$), were variables associated with significantly higher proportion of students who answered they used a private/family dentist and significantly lower proportion who answered no problem with their teeth and other reason for not using the School Dental Service.

(12) For those who had used the School Dental Service, 60% indicated they last used the service within the previous 12 months. Students from government schools, had fathers born in Australia, had mothers born in Australia, or spoke only English at home, were variables associated with significantly higher proportion of students whose period since last used the School Dental Service was 12 months or less.

(13) Thirty six percent of students had future dental appointments: twenty three percent had appointments for check-ups; twelve percent for a specific reason. Fifty three percent students did not have future dental appointments. Students with private dental insurance ($p < 0.01$), or had mothers born in Australia, were variables associated with significantly higher proportion of students who currently had dental appointments.

(14) Fifty one percent of students reported they usually had a checkup twice or more a year. Thirty two percent reported usually had a checkup once a year. Seventeen percent had a check-up less than once a year. Students whose parents were in the white collar occupations ($p < 0.01$), with private dental insurance ($p < 0.01$), or born in Australia, were variables associated with significantly more usual number of check-ups per year.

(15) Less students indicated check-ups as purpose of the most recent dental consultation than the 10-14 year old Australian children in the 1983 survey (64:71%). This could reflect the perceived need of students for making preventive visits was not as strong in this survey as in the 1983 survey. Significantly higher proportion of students with private dental insurance reported the purpose of the most recent dental visit was for a check-up than other reason.

(16) In the last dental visit, less students had visited private dental practices than the 2-14 year old Australian children in 1983 and the 10-14 year old Australian children in the 1987-88 survey (34:51:50%). Students from Catholic schools, with private dental insurance, had parents from the white collar occupations ($p<0.01$), born in Australia ($p<0.01$), had fathers born in Australia ($p<0.01$), had mothers born in Australia ($p<0.01$), or spoke only English at home ($p<0.01$), were variables associated with significantly higher proportion of students who had visited private dental practices in the last dental visit.

(17) In the last dental visit, there had been more teeth extracted than for the 10-14 year old Australian children in the 1983 and 1987-88 surveys (14:9:7%), but less teeth extracted than for the 10-14 year old Australian children in the 1979 survey (14:16%). Students born in Australia

($p < 0.01$), had fathers born in Australia, had mothers born in Australia ($p < 0.01$), or spoke only English at home ($p < 0.01$), were variables associated with significantly less likely to have teeth extracted in the last visit.

(18) There had been less fillings received than for the 10-14 year old Australian children in the 1979, 1983 and 1987-88 surveys (22:38:25:24%).

(19) There had been less orthodontic treatment received than for the 10-14 year old Australian children in the 1979, 1983, and 1987-88 surveys (4:6:7:11%).

(20) There had been less check-ups/no treatment received than for the 10-14 year old Australian children in the 1983 and 1987-88 surveys (31:33:58), but more than for the 10-14 year old Australian children in the 1979 survey (31:25%).

(21) There had been less preventive procedures received than for the 10-14 year Australian children in the 1983 and 1987-88 surveys (86:87:99%), but more than for the 10-14 years Australian children in the 1979 survey (86:79%). Students with private dental insurance was associated with significantly ($p < 0.01$) higher proportion of students who had received teeth cleaned or polished, and significantly ($p < 0.01$) higher proportion with fluoride treatments at the last visit. Students born in

Australia ($p < 0.01$), had fathers born in Australia ($p < 0.01$), had mothers born in Australia ($p < 0.01$), spoke only English at home ($p < 0.01$), or with parents from the white collar occupations ($p < 0.01$), were variables associated with significantly higher proportion of students who had received fluoride treatments in the last visit.

(22) For those who had had a dental consultation, 2.4% of students indicated they currently wore braces/bands. This was less than the 6 to 14 year old Australian children in 1983 (2.4:3.7%). For Year six students, 4.7% used to wear braces/bands but not now. This was more than the 6 to 14 year old Australian children in 1983 (4.7:3.3%). The proportion of children who currently wore braces/bands or used to wear braces/bands approximated that of the 6 to 14 year old Australian children in 1983 (7.1:7.0%). Students with private dental insurance, or students whose parents were in the white collar occupations, were variables associated with significantly higher proportion of students currently wore or used to wear braces/bands.

7.2 RECOMMENDATIONS

Taking into consideration the data collected in this survey and the previous studies, the following general recommendations are made:

(1) The findings of this survey could be used as a data base to evaluate current dental service, to plan for future dental services for the Western Sydney area, and to serve as baseline data upon which future surveys in the area can be compared.

(2) A similar survey should be carried out at regular intervals in the Western Sydney area, e.g. at five years intervals, to track the changes in dental service utilisation pattern with time, and for evaluating and planning dental services for the area.

(3) If finance and time factors allow, a more representative sample of the whole primary schoolchildren population should be drawn to include students from all years of primary schooling. This would give a more complete picture of the situation in primary schoolchildren in the area.

(4) When students of junior years are surveyed, a modified methodology from this study will become necessary e.g. parents or adults in the families will have to be involved to answer the questionnaires for

junior students.

(5) As students from the Western Sydney area are much more dependent on government dental services than those in the previous studies, it is recommended that more funding should be allocated to the dental services in the Western Sydney area to cope with the big demand.

(6) Industrialised countries have shown that the preventive approach succeeds and that the curative/rehabilitative approach does not. They have also shown that the latter approach is too expensive even for the richest of economies. Therefore the dental services should continue the present emphasis on preventive approach and oral health education.

(7) Dental health education programmes should be based on modern health education principles and methods to motivate behaviour change. It should be designed and delivered in a form culturally acceptable by the recipients.

(8) Intensive dental health education programmes should focus on special target groups such as schoolchildren, pre-natal and nursing mothers, and groups with special needs such as the medically compromised and handicapped.

(9) More students in this survey did not brush their teeth on the previous day than the 10-14 year old Australian children in the 1987-88 survey (7:5%). It is important that evaluation of outcomes of dental health education programmes should be carried out at regular intervals to monitor the effectiveness of the programmes in achieving the set goals and objectives.

(10) Schools should also be a place where dental health education messages are transmitted to students. Activities on oral health education should be carried out at regular intervals in schools to reinforce the oral health messages. Such activities should be able to stimulate the interest of the children, focus their attention on prevention, and appeal to their desire to be socially acceptable by peer groups. Some of these activities could include showing a video tape with correct, simple and clear oral health messages with stories appealing to the interest of the children.

(11) Utilisation of dental services should be encouraged through initiatives such as private dental insurance schemes. Such insurance schemes should encourage prevention and motivate individuals to assume responsibility for their own oral health. The schemes should be closely monitored to ensure cost-effectiveness and quality.

8 REFERENCES

- Aday LA, Andersen RM (1984).
The national profile of access to medical care: where do we stand?
Am J Public Health 74:1331-1339.
- Alvesalo I, Uusi-Heikkilä Y (1984).
Use of services, care-seeking behaviour and satisfaction among University dental clinic patients in Finland.
Comm Dent Oral Epidemiol 12:297-302.
- Antoft P (1983).
Utilisation of the Danish Youth Dental Care Scheme among 1655 16-22 year-old males and females.
Comm Dent Oral Epidemiol 11:18-24.
- Ashford JR (1978).
Regional variations in dental care in England and Wales.
Br Dent J 145:275-283.
- Australian Bureau of Statistics (1980).
Sight, hearing and dental health (persons aged 2 to 14 years). February - May 1979.
Canberra: ABS Catalogue No. 4337.0
- Australian Bureau of Statistics (1985).
Children's dental survey, Australia. November 1983.
Canberra: ABS Catalogue No. 4350.0.
- Australian Bureau of Statistics (1988).
Yearbook Australia 1988.
Canberra: ABS Catalogue No. 1300.0.
- Australian Bureau of Statistics (1990).
Information paper - Australian standard classification of occupations.
Canberra: ABS Catalogue No. 1221.0.
- Australian Bureau of Statistics (1991).
1991 Census of population and housing. How Australia takes a census.
Canberra: ABS Catalogue No. 2903.0.
- Australian Bureau of Statistics (1992).
Australian standard classification of occupations - Keyword index to occupation definitions.
1st edn.
Canberra: ABS Catalogue No. 1229.0.
- Australian Bureau of Statistics (1992).
Yearbook Australia 1992.
Canberra: ABS Catalogue No. 1301.0.
- Australian Bureau of Statistics.
Australian Demographic Statistics (3101.0).
Cited in: Australian Bureau of Statistics (1992). Yearbook Australia 1992.
Canberra: ABS Catalogue No. 1301.0.

Avery KT, Moore JE, Berry BL (1980).

On centre vs off-centre dental care for Job Corp members: cost and utilisation.

Am J Public Health 70:1294-1296.

Avery KT, Moore JE, Hamby CL (1982).

An analysis of on site versus off-site dental care for an institutionalised population .

J Public Health Dent 42:337-344.

Baerum P, Arnljot H (1976).

Oral health care in Norway.

Int Dent J 26:340-345.

Baillit H, Newhouse J, Brook R, Duan N, Goldberg G, Hanley J, Kamberg C, Spolsky V, Black A, Lohr K (1985).

Does more generous dental insurance coverage improve oral health?

J Am Dent Assoc 110:701-707.

Barenthin I (1976).

Dental insurance and equity of access to dental services.

Comm Dent Oral Epidemiol 4:215-220.

Baric L, Blinkhorn AS, MacArthur C (1974).

A health education approach to nutrition and dental health education. J Health Educ 33:79-90.

Cited in: Blinkhorn AS (1981). Dental preventive advice for pregnant and nursing mothers - sociological implications.

Int Dent J 31:14-22.

Barnard PD (1956).

Dental survey of State schoolchildren in New South Wales. Special reports series No.8.

Canberra: National Health and Medical Research Council.

Barnard PD (1976).

Dental conditions in high school students, Sydney 1972.

Aust Dent J 21:513-516.

Barnard PD (1981).

Utilisation of dental services by first-year students, the University of Sydney, 1978.

Aust Dent J 26:82-85.

Barnard PD (1981).

Utilisation of dental services by first-year students, the University of Sydney, 1978.

Aust Dent J 26:82-85.

Barnard PD (1986).

Children's dental health surveys 1979 & 1983.

ADA News Bulletin: May 1986: 26-28.

Barnard PD (1989).

Facts and figures, Australian dentistry 1988.

Sydney: Australian Dental Association.

Barnard PD (1993).

National Oral Health Survey of Australia 1987-1988. A report of the first national oral health survey of Australia.

Canberra: Australian Government Publishing Service.

- Barnard PD, Boyles JR (1976).
Dental services for Australian University Students.
Aust Dent J 21:352-354.
- Barnard PD, Clements FW (1976).
Oral health care in Australia.
Int Dent J 26:320-326.
- Beck JD, Cons N, Ettinger R et al (1981).
Iowa survey of dental health: utilisation behaviour.
J Dent Res 60 (special issue A) Abstract no. 1231 (paper presented at the 59th IADR general meeting March 1981, Chicago, Illinois).
- Bedi R, Sutcliffe P, Donnan PT, Barrett N, McConnachie J (1992).
Dental caries experience and prevalence of children afraid of dental treatment.
Comm Dent Oral Epidemiol 20:368-371.
- Biro PA, Hewson ND (1976).
A survey of patients' attitudes to their dentist.
Aust Dent J 21:388-394.
- Bordeur J, Demers M, Simard P, Kandelman D (1988).
Need perception as a major determinant of dental health care utilisation among the elderly.
Gerodontology 4:259-264.
- Burt BA, Eklund SA (1992).
Dentistry, Dental Practice and the Community. 4th edn.
Philadelphia: WB Saunders. p.15-18.
- Carr LM (1988).
Dental health of children in Australia, 1977-1985.
Aust Dent J 33:205-211.
- Cohen LK (1978).
Dental care delivery in seven nations: The International Collaborative Study of Dental Manpower Systems in relation to oral health status.
In: Ingle JJ, Blair P eds. International dental care delivery systems, issues in dental health policies.
Cambridge, Massachusetts: Ballinger Publishing Co. p.201-214.
- Commonwealth Department of Health (1981).
School Dental Scheme: Evaluation and statistical data 1977-80.
Canberra: Australian Government Publishing Service.
- Damiano PC, Shugars DA, Johnson JD (1992).
Expanding health insurance coverage and the implications for dentistry.
J Public Health Dent 52:52-58.
- Davies AR, Ware JE (1981).
Measuring patient satisfaction with dental care.
Soc Sci Med 15:751-760.
- Dewdney JCH (1972).
Australian health services.
Sydney: Wiley and Sons. p.11-51 & p.83.

Domoto PK, Weinstein P, Melnick S, Ohmura M, Uchida H, Ohmachi K, Hori M, Okazaki Y, Shimamoto T, Matsumura S, Shimono T (1988).
Results of a dental fear survey in Japan: implications for dental public health in Asia.
Comm Dent Oral Epidemiol 16:199-201.

Donabedian A (1972).
Models for organising the delivery of personal health services and criteria for evaluating them.
Milbank Mem Fund Q 50:103-154 part 2.

Douglass CW (1971).
A social-psychological view of health behaviour for health services research. Health Serv Res 6:6-14.
Cited in: Douglass CW, Cole KO (1979). Utilisation of dental services in the United States.
J Dent Educ 43:223-238.

Douglass CW, Cole KO (1979).
Utilisation of dental services in the United States.
J Dent Educ 43:223-238.

Durward CS, Wright FAC (1989).
Dental knowledge, attitudes and behaviours of Indo-Chinese and Australian-born adolescents.
Comm Dent Oral Epidemiol 17:14-18.

Eriksen TE, Hakansson J (1982).
Frequency of dental visits in Sweden during 1974-77.
Comm Dent Oral Epidemiol 10:242-248.

Evashwick C, Conrad D, Lee F (1982).
Factors related to utilisation of dental services by the elderly.
Am J Public Health 72:1129-1135.

FDI (1977).
FDI technical report no. 5.1977 - Recommended outline for a research protocol.
London: Federation Dentaire Internationale.

FDI (1986).
Improving access to oral health care.
Int Dent J 36:113-114.

Frazier PJ, Jenny J, Bagramian RA, Robinson E (1977).
Provider expectations and consumer perceptions of the importance and value of dental care.
Am J Public Health 67:37-43.

Gift HC (1984).
Utilisation of professional dental services.
In: Cohen LK, Bryant PS, eds. Social sciences and dentistry, a critical bibliography. Vol II.
London: Quintessence Publishing Co. Ltd. on behalf of FDI. pp. 202-266.

Grant C, Lapsley HM (1992).
The Australian health care system 1991 - Australian studies in health service administration.
Sydney: School of Health Services Management, University of New South Wales.

Grembowski D, Conrad D, Milgrom P (1985).
Utilisation of dental services in the United States and an insured population.
Am J Public Health 75:87-89.

- Hakeberg M, Berggren U, Carlsson SG (1992).
Prevalence of dental anxiety in an adult population in a major urban area in Sweden.
Comm Dent Oral Epidemiol 20:97-101.
- Handelman SL, Fan-Hsu J, Proskin HM (1990).
Patient satisfaction in four types of dental practice.
J Am Dent Assoc 121:624-630.
- Hayward RA, Meetz HK, Shapiro MF, Freeman HE (1989).
Utilisation of dental services: 1986 patterns and trends.
J Public Health Dent 49:147-152.
- Heifetz SB, Horowitz HS, Korts DC (1976).
Prevalence of dental caries in white and black children in Nelson county, Virginia, a rural southern community.
J Public Health Dent 36:79-87.
- Holoe LA, Tronstad L (1975).
The use of dental services among Norwegian adults in 1973.
Comm Dent Oral Epidemiol 3:120-125.
- Infante PF, Owen GM (1975).
Dental caries and levels of treatment for school children by geographical region, socioeconomic status, race and size of community.
J Public Health Dent 35:19-27.
- Jaafar H, Razak IA (1988).
Reasons for seeking dental care in a Malaysian urban adult population. An analysis by sex and ethnic group.
Comm Dent Oral Epidemiol 16:75-78.
- Jenny J (1975).
A social perspective on need and demand for orthodontic treatment.
Int Dent J 25:248-256.
- Jenny J (1979).
Basic social values, structural elements in oral health systems and oral health status.
Int Dent J 30:276-285.
- Jenny J & Frazier PJ (1974).
Parents' attitudes about school dental services for children. J Sch Health 44:86-91.
Cited in: Gift HC (1984). Utilisation of professional dental services.
In: Cohen LK, Bryant PS, eds. Social sciences and dentistry, A critical bibliography. Vol II.
London: Quintessence Publishing Co. Ltd. on behalf of FDI. p.202-266.
- Jenny J, Frazier PJ, Bagramian AA, Proshek JM (1973).
Parents' satisfaction and dissatisfaction with their children's dentist.
J Public Health Dent 33:211-221.
- Jensen K (1974).
Dental care practices and socio-economic status in Denmark.
Comm Dent Oral Epidemiol 2:273-281.
- Kegeles SS, Arbor A (1963).
Some motives for seeking preventive dental care.
J Am Dent Assoc 67:90-98.

- Kent G (1984).
Satisfaction with dental care. Its relationship to utilisation and allegiance.
Medical care 22:583-585.
- Kiyak HA (1981).
Dental beliefs, behaviours and health status among Pacific Asians and Caucasians.
Comm Dent Oral Epidemiol 9:10-14.
- Kiyak HA (1986).
Explaining patterns of dental service utilisation among the elderly.
J Dent Educ 50:679-687.
- Kiyak HA (1989).
Reducing barriers to older persons' use of dental services.
Int Dent J 39:95-102.
- Kriesberg L, Treiman BR (1960).
Socioeconomic status and the utilisation of dentists' services.
J Am Coll Dent 27:147-165.
- Kriesberg L, Treiman BR (1962).
Preventive utilisation of dentists' services among teenagers. J Am Coll Dent 29:28-45.
Cited in: Gift HC (1984). Utilisation of professional dental services.
In: Cohen LK, Bryant PS, eds. Social sciences and dentistry, a critical bibliography. Vol II.
London: Quintessence Publishing Co. Ltd. on behalf of FDI. pp. 202-206.
- Kronenfeld J (1979).
Access to dental care: a comparison of medicine/dentistry and the role of a regular source.
Medical Care 17:1000-1011.
- Lahti S, Tuutti H, Hausen H, Kaariainen R (1992).
Dentist and patient opinions about the ideal dentist and patient - developing a compact questionnaire.
Comm Dent Oral Epidemiol 20:229-234.
- Legler DW, Hughes ML, Bradley EL (1979).
Utilisation of prepaid dental health care by students in health professional schools.
Am J Public Health 69:1017-1020.
- Leverett DH, Hooper SD, Russell WN (1977).
Variations in utilisation of a multi-state company dental plan.
Am J Public Health 67:1173-1177.
- Leverett DH, Jong A (1970).
Variations in use of dental care facilities by low-income white and black urban populations.
J Am Dent Assoc 80:137-140.
- Lewin-Epstein N (1991).
Determinants of regular source of health care in Black, Mexican, Puerto Rican, and non-Hispanic white populations.
Medical Care 29:543-557.
- Locker D, Liddell A, Burman D. (1991).
Dental fear and anxiety in an older adult population.
Comm Dent Oral Epidemiol 19:120-124.

MacEntee MI, Dowell TB, Scully C (1988).

Oral health concerns of an elderly population in England.

Gerodontology 16:72-74.

Macquarie University graduate school of management (1992).

Graduate school of management MBA Program 1992, GSM890 - consulting project: Western Sydney Area Health Services - Development of an intra area resources allocation methodology 1992.

Sydney: Macquarie University Graduate School of Management.

Mak KKY, Lind OP, Evans RW (1990).

Utilisation of the government dental services by Chinese civil servants in Hong Kong.

Comm Dent Oral Epidemiol 18:190-193.

Manning WG, Benjamin B, Bailit HL, Newhouse JP (1985).

The demand for dental care: evidence from a randomised trial in health insurance.

J Am Dent Assoc 110:895-902.

McKeithen EJ (1966).

The patient's image of the dentists.

J Am Coll Dent 33:87-107.

Metz AS, Richard LG (1967).

Children's preventive dental visits: influencing factors.

J Am Coll Dent 34:204-212.

Miller RR, Kiyak HA (1980).

Psychological barriers to dental service utilisation (unpublished paper).

Cited in: Gift HC (1984). Utilisation of professional dental services.

In: Cohen LK, Bryant PS, eds. Social sciences and dentistry, a critical bibliography. Vol II.

London: Quintessence Publishing Co. Ltd. on behalf of FDI. pp.202-266.

Morehead MA, Donaldson R, Zanes A (1971).

Dental services at Teamster Comprehensive Care Program, Montefiore hospital and medical care.

J Am Dent Assoc 83:607-613.

Mulvihill JE, Bear WS, Dunning JM, Giddon DB (1972).

Utilisation of a prepaid plan of commercial dental insurance.

J Public Health Dent 32:187-196.

Murray BP, Wiese HJ (1975).

Satisfaction with care and the utilisation of dental services at a neighbourhood health centre.

J Public Health Dent 35:170-176.

Murtomaa H, Masalin K (1982).

Public image of dentists and dental visits in Finland.

Comm Dent Oral Epidemiol 10:133-136.

Newman JF, Anderson OW (1972).

Patterns of dental service utilisation in the United States: A nationwide social survey.

Chicago: Center for Health Administration Studies, University of Chicago.

Nikias MK (1968).

Social class and the use of dental care under prepayment.

Medical Care 6:381-393.

Okada LM, Wan TTH (1979).

Factors associated with increased dental care utilisation in five urban, low-income areas.
Am J Public Health 69:1001-1007.

O'Shea RM, Gray SB (1968).

Dental patients' attitudes and behaviour concerning prevention. Public Health Rep. 83:405.
Cited in: Sheiham A. (1981). Planning for manpower requirements in dental public health.
In: Slack GL. Dental public health. An introduction to community dentistry. 2nd edn.
Bristol: Wright.

Petersen PE (1981).

Dental health behaviour, dental health status and treatment need among workers and staff-members in a big Danish industrial firm.
Institute for Community Dentistry and graduate studies, Royal Dental College, Copenhagen, Denmark (Ph.D dissertation).
Cited in: Gift HC (1984). Utilisation of Professional Dental services.
In: Cohen LK, Bryant PS, eds. Social sciences and Dentistry, a critical bibliography Vol II.
London: Quintessence Publishing Co. Ltd. on behalf of F.D.I. pp.202-266.

Petersen PE (1983).

Dental visits and self-assessment of dental health status in the adult Danish population.
Comm Dent Oral Epidemiol 11:162-168.

Pramono D (1989).

Trends of dental caries prevalence in schoolchildren.
Sydney: MDS thesis, University of Sydney.

Rajala AI, Rajala M, Paunio I (1978).

Utilisation of dental care in a Finnish industrial population.
Comm Dent Oral Epidemiol 6:121-125.

Rankin JA, Harris MB (1985).

Patients' preferences for dentists' behaviours.
J Am Dent Assoc 110:323-327.

Rayner JF (1970).

Socioeconomic status and factors influencing the dental health practices of mother.
Am J Public Health 60:1250-1258.

Razak IA, Jaafar N (1987).

Dental needs, demands and patterns of service utilisation in a selected Malaysian urban population.
Comm Dent Oral Epidemiol 15:188-191.

Reisine S (1987).

A path analysis of the utilisation of dental services.
Comm Dent Oral Epidemiol 15:119-124.

Rovin S, Nash J (1982).

Traditional and emerging forms of dental practice cost, accessibility and quality factors.
Am J Public Health 72:656-662.

Schuurs AHB, Duivenvoorden HJ, Thoden Van Velzen SK (1984).

Regularity of dental attendance in the Netherlands related to preference for preservation of teeth.
Comm Dent Oral Epidemiol 12:249-254.

- Schuurs AHB, Duivenvoorden HJ, Thoden Van Velzen SK, Verhage F (1984).
Dental anxiety, the parental family and regularity of dental attendance.
Comm Dent Oral Epidemiol 12:89-95.
- Schuurs AHB, Duivenvoorden HJ, Thoden Van Velzen SK, Verhage F, Eijkman MAJ, Makkes PC (1985).
Sociodemographic correlates of dental anxiety.
Comm Dent Oral Epidemiol 13:212-215.
- Schwarz E, Hansen ER (1976).
Utilisation of dental services in the adult Danish population 1975.
Comm Dent Oral Epidemiol 4:221-226.
- Selikowitz HS, Holst D (1986).
Dental health behaviour in a migrant perspective: use of dental services of Pakistan immigrants in Norway.
Comm Dent Oral Epidemiol 14:297-301.
- Sheiham A (1981).
Planning for manpower requirements in dental public health.
In: Slack GL, ed. Dental public health. An introduction to community dentistry. 2nd edn.
Bristol: Wright.
- Sheiham A, Maizels J, Cushing A, Holmes J (1985).
Dental attendance and dental status.
Comm Dent Oral Epidemiol 13:304-309.
- Shuval JT (1970).
Social and psychological factors in Israel's dental health.
J Public Health Dent 30:179-193.
- Sivaneswaran S, Barnard PD (1990).
Changes in the pattern of sugar consumption in Australia.
Dunedin: IADR (ANZ Div.) 30th Annual Meeting 22-25 August.
- Smith JM, Sheiham A (1980).
Dental treatment needs and demands of an elderly population in England.
Comm Dent Oral Epidemiol 8:360-364.
- Soble RK (1979).
Patient's perceptions of dental clinic services in an educational environment.
J Dent Res 58 (special issue A) abstract no.723 (paper presented at the 57th IADR annual meeting. New Orleans, March 1979).
- Srikandi TW, Carey SE, Clarke NG (1983).
Utilisation of dental services and its relation to the periodontal status in a group of South Australian employees.
Comm Dent Oral Epidemiol 11:90-94.
- Stouthard MEA, Hoogstraten J (1990).
Prevalence of dental anxiety in the Netherlands.
Comm Dent Oral Epidemiol 18:139-142.
- Strauss RP (1976).
Sociocultural influences upon preventive health behaviour and attitudes towards dentistry.
Am J Public Health 66:375-377.

Suchman EA, Rothman AA (1969).

The utilisation of dental services.

Milbank Mem Fund Q 47:56-63.

Syrjala AMH, Knuuttila MLE, Syrjala LK (1992).

Reasons preventing regular dental care.

Comm Dent Oral Epidemiol 20:10-14.

Tash RH, O'Shea RM, Cohen LK (1969).

Testing a preventive symptomatic theory of dental health behaviour.

Am J Public Health 59:514-521.

The Iowa survey of oral health 1980 (1982).

A joint project of the University of Iowa College of Dentistry and the Iowa Dental Association.

Iowa: The University of Iowa College of Dentistry and the Iowa Dental Association.

Thornberry O, Yacovone JA, Walker A, Scott HD (1975).

Determinants of dental utilisation: Implications of financing programs. Providence RI: Rhodes Island Health Services Research Inc..

Cited in: Douglass CW (1979). Utilisation of dental services in the United States.

J Dent Educ 43:223-238.

Wang WJ (1990).

School Dental Services in Australia.

Sydney: DPHDent thesis, University of Sydney.

Western Sydney area health taskforce - New South Wales (1988).

Report of the Western Sydney health taskforce.

Sydney: N.S.W. Department of Health.

WHO (1985).

Oral health care systems. An international collaborative study.

London: Quintessence Publishing Co. Ltd.

WHO (1986).

Oral health surveys: Basic methods. 3rd edn.

Geneva: World Health Organization.

Woolgrove J, Cumberbatch G, Gelbier S (1987).

Understanding dental attendance behaviour.

Comm Dent Health 4:215-222.

APPENDICES

APPENDIX 1: THE QUESTIONNAIRE

Department of Preventive Dentistry
University of Sydney, Westmead Hospital
Westmead NSW 2145

July/August 1993

DENTAL SERVICE UTILISATION BY YEAR 6 STUDENTS IN WESTERN SYDNEY AREA

1. Please tell me about yourself

- (a) What was your age at your last birthday? _____
- (b) What was the date of your birth? _____
- (c) Are you a boy or a girl? _____
- (d) What is the name of your school? _____
- (e) Is it a government school or a private school? _____

Please put a tick in the box next to the right answer.

2. Do you have private dental insurance ?

- Yes []
- No []
- Don't know []

3. How many times did you brush your teeth yesterday ?

- I didn't brush my teeth yesterday []
- Once []
- Twice []
- Three times []
- Four times or more []

4. What is the occupation (job) of the main money earner in your family? Please give the full name of this person's job if you can.

Some examples of jobs might be: accountant, cook, machine operator, mechanic, doctor, electrician, lawyer, teacher, factory worker.

If the main money earner in your family works for the government, write down the name of the department this person works for and the name of his or her job. if the job is in the armed forces, say what branch of the armed forces (army, navy or air force) and the person's rank.

If you don't know the name of the occupation, please say what it is like.

Please turn over

Please put a tick in the space next to the right answer.

5. In what country were you born?

- Australia []
 England []
 Scotland []
 Italy []
 Greece []
 New Zealand []
 The Netherlands []
 Vietnam []

Another Country: [] Write the name of this country _____

Don't know []

6. In what country was your father born?

- Australia []
 England []
 Scotland []
 Italy []
 Greece []
 New Zealand []
 The Netherlands []
 Vietnam []

Another country: [] Write the name of this country _____

Don't know []

7. In what country was your mother born?

- Australia []
 England []
 Scotland []
 Italy []
 Greece []
 New Zealand []
 The Netherlands []
 Vietnam []

Another country: [] Write the name of this country _____

Don't know []

8. Do you speak a language other than English at home?

- No, speak only English []
 Yes, Italian []
 Yes, Greek []
 Yes, Cantonese []
 Yes, Mandarin []
 Yes, German []
 Yes, Arabic []
 Yes, Vietnamese []

Yes, Another language: [] Write the name of this language _____

Please turn over

9. Have you seen anyone about your teeth in the last 12 months?
- Once []
 - Twice []
 - Three times []
 - Four times []
 - Five times or more []
 - Don't know []
 - No - I haven't seen anyone about my teeth in the last 12 months []

If you didn't see anyone about your teeth in the last 12 months, what was the MAIN reason?

- No problem with teeth []
- Too young []
- Too expensive []
- Other reason []
- Don't know []

10. How long has it been since you saw anyone at all about your teeth?
- Six months ago or less []
 - More than six to twelve months ago []
 - More than twelve to eighteen months ago []
 - More than eighteen months to three years ago []
 - More than three to five years ago []
 - More than five years ago []
 - Never []
 - Don't know []

11. Is the School Dental Service available at your school?

- Yes []
- No []
- Don't know []

12. Have you ever had a checkup or treatment from the School Dental Service?

- Yes []
- No []
- Don't know []

If you said **NO** to this question, what was your reason?

- I haven't had any problems with my teeth []
- We use a private/ family dentist []
- Other reasons []
- Don't know []

13. How long has it been since you last used the School Dental Service?

- Two weeks ago or less []
- More than two weeks to six months ago []
- More than six to twelve months ago []
- More than twelve to eighteen months ago []
- More than eighteen months ago []
- Don't know []

14. Do you currently have a dental appointment?

- No []
 Don't know []
 Yes []

If you said YES to this question, what is your appointment for?

- A special dental problem []
 A checkup []
 Don't know []

15. How often do you go for checkups?

- Less than once a year []
 Once a year []
 Twice a year []
 Three or more times a year []

16. I would like you to think about the last time you saw someone about your teeth. Was this for a checkup or for some other reason?

- Checkup []
 Other reason []
 Don't know []

17. Where did you attend your last dental visit?

- Private Dental Surgery []
 School Dental Clinic []
 Hospital []
 Dental Clinic []
 Other []
 Don't know []

18. At this last visit what type of treatment did you receive?

- Teeth taken out []
 X-ray []
 Teeth cleaned or polished []
 Fluoride treatment or coating []
 Fillings []
 Fitting, maintenance of braces/bands []
 A checkup only - no treatment []

Another treatment: [] What was this treatment? _____

Don't know []

19. Have you ever worn any braces/bands?

- Yes, currently wear braces/bands []
 Yes, used to wear braces/bands but not now []
 No, I haven't ever worn braces/bands []
 Don't know []

- Thank you for your co-operation -

APPENDIX 2: LETTER TO THE PARENT



The University of Sydney

Dr. Edwin Cheung, B.D.S.
 Department of Preventive Dentistry
 University of Sydney, Westmead Hospital
 WESTMEAD NSW 2145

Telephone: 633 6546

July 1993

Dear Parent,

SURVEY OF DENTAL SERVICE UTILISATION BY YEAR SIX STUDENTS IN WESTERN SYDNEY AREA

The rapidly growing population of the Western Sydney area requires careful planning in regard to the evaluation of current dental services, the development of dental care programs and the assessment of dental workforce requirements.

In order to gather information to enable this planning, a survey of all Year 6 students in a representative sample of fifteen schools in Western Sydney has been devised by the Department of Preventive Dentistry, University of Sydney, Westmead Hospital. This survey has been approved by the Regional Office of the Department of School Education, the Catholic Education Office and the Principal of your child's school.

The survey will be completed at school by the children. As co-ordinator of the research I will be available to talk to students about the survey and about dental health in general.

One of the questions in the survey relates to whether or not your family has private dental insurance. Your help in providing your child with this information would be greatly appreciated.

I have, for your information, attached a copy of the survey. Participation in the research is, of course, voluntary. There will be no clinical examination or treatment provided. At the bottom of this letter is a permission slip. If you are prepared to allow your child to take part in the research please fill in the permission slip and return it with the survey form to your child's school.

Thank you very much for your consideration.

Yours sincerely,

DR EDWIN CHEUNG
 Department of Preventive Dentistry
 University of Sydney, Westmead Hospital

Permission slip - to be returned to school

SURVEY OF DENTAL SERVICE UTILISATION BY YEAR SIX STUDENTS IN WESTERN SYDNEY

I give permission for my child _____

of Year 6 at _____

School to participate in the Dental Service survey.

Signature of parent/guardian

Date _____

APPENDIX 3: LETTER TO THE PRINCIPAL

Dr. Edwin Cheung, B.D.S.
Department of Preventive Dentistry
University of Sydney, Westmead Hospital
WESTMEAD NSW 2145

Telephone: 6336546

The Principal

1 July 1993

Dear ,

SURVEY OF DENTAL SERVICE UTILISATION BY YEAR SIX STUDENTS IN
WESTERN SYDNEY AREA

The rapidly growing population of the Western Sydney area requires careful planning in regard to the evaluation of current dental services, the development of dental care programs and the assessment of dental workforce requirements.

In order to gather information to enable this planning, a survey of all Year 6 students in a representative sample of fifteen schools in Western Sydney has been devised by the Department of Preventive Dentistry, University of Sydney, Westmead Hospital.

As co-ordinator of the research I will be available to talk to students about the survey and about dental health in general. The survey will take approximately twenty minutes to complete. I have, for your information, attached copies of the survey, the letter of approval from the Regional Office of the Department of School Education, the letter of approval from the Catholic Education Office and the letter to be sent to parents requesting permission for the participation of their children in the survey.

Your support in allowing the survey to be conducted in your school would be greatly appreciated. I will contact you in the near future and at that time will answer any questions you might have in regard to the research project.

Yours sincerely,

DR EDWIN CHEUNG

APPENDIX 4: CORE COMPONENTS ON REASONS FOR
QUESTIONS BEING ASKED

The following gives a brief explanation of why questions are asked and how information obtained could be used.

Q.1 (a) What was your age at your last birthday?

(b) What was the date of your birth?

(c) Are you a boy or a girl?

Reason: Socio-demographic variables such as age and sex are known to affect dental service utilisation. The information on age and date of birth is necessary also because only students between 10-14 years old are selected for this study so that comparison can be made with previous ABS studies for the same age group.

Information on age and sex is useful for data analysis and cross tabulation to see how patterns of dental service utilisation vary with age and sex.

Q.1 (d) What is the name of your school?

(e) Is it a government school or private school?

Reason: As the sample is stratified by location and also by Government or non-Government school, information so obtained is useful for data analysis and cross tabulation to see how dental service utilisation patterns differ between Government and non-Government schools, and also between schools in different geographic location.

Q.2 Do you have private dental insurance?

Reason: Cost is considered as a barrier to dental service. Private dental insurance coverage serves as an indicator of accessibility to dental service. The data obtained can be used for cross tabulation and data analysis to see the impact of private dental insurance on dental service utilisation.

Q.3 How many times did you brush your teeth yesterday?

Reason: Number of times teeth brushed yesterday indicates oral hygiene habits, may give an indication of oral health status and serves as an indicator of how strong the student's perceived need for self care of teeth is.

Q.4 What is the occupation (job) of the main money earner in your family?

Reason: Occupation of head of household serves as an indicator for the socio-economic background of the students. Information obtained is useful for data analysis, cross tabulation and to see how dental service utilisation patterns vary between different socio-economic groups.

Q.5 In what country were you born?

Q.6 In what country was your father born?

Q.7 In what country was your mother born?

Q.8 Do you speak a language other than English at home?

Reason: Information obtained from these questions are

relevant to the determination of ethnicity and serves as an indicator for cultural background of the student. The information can be used for cross tabulation and data analysis and to determine how utilisation pattern of dental service varies with students of different ethnicity and cultural background.

Q.9 Have you seen anyone (and how many times) about your teeth in the previous 12 months?

Reason: Seeing someone about teeth and number of times of dental visit in the previous 12 months serve as indicators of utilisation and past perceived need for dental treatment. Number of visits in the previous 12 months is a widely accepted indicator of utilisation that measures volume of services. The information obtained is useful for predicting dental behaviour, demand for dental service, and planning for future dental workforce requirement.

Q.If you didn't see anyone about your teeth in the last 12 months, what was the main reason?

Reason: This question tries to identify some of the barriers to dental service utilisation, whether it be no perceived need (no problem with teeth, too young), inaccessibility (too expensive), or other reason. The information obtained will be useful for predicting dental behaviour, demand for dental service and planning for future dental workforce requirement.

Q.10 How long has it been since you saw anyone at all about your teeth?

Reason: Time since last saw someone about teeth serves as an indicator of past perceived need for treatment. This measures the level of contact and is useful in predicting dental behaviour, demand for dental service and planning for future dental workforce requirement.

Q.11 Is the School Dental Service available at your school?

Reason: The information obtained serves as an indicator of availability/perceived availability of School Dental Service and helps to determine the adequacy of School Dental Service.

Q.12 Have you ever had a checkup or treatment from the School Dental Service?

Reason: Having a checkup or treatment from the School Dental Service serves as an indicator of acceptability and effective demand for the School Dental Service by the schoolchildren. The information obtained is useful in predicting demand for the School Dental Service and planning for future School Dental Service.

Q.If you said NO to this question, what was your reason?

Reason: This question tries to identify the main reason for non-acceptability of the School Dental Service (if

available) by the school children, whether it be no perceived need (no problem with teeth), accessibility to other dental service (use private/family dentist), or other reason. The information obtained is useful for predicting dental behaviour and demand for dental service.

Q.13 How long has it been since you last used the School Dental Service?

Reason: Time since last used the School Dental Service measures the level of contact with the School Dental Service. The information obtained is useful as a predictor for dental behaviour, demand for School Dental Service, and planning for future dental workforce requirement.

Q.14 Do you currently have a dental appointment?

If you said YES to this question, what is your appointment for?

Reason: Currently having a dental appointment serves as an indicator of current accessibility and availability of dental service to the students. Currently having a dental appointment for a checkup serves as an indicator of perceived need for prevention and availability of recall system. Currently having a dental appointment for a specific dental complaint serves as an indicator of perceived need for treatment due to symptomatic reason. The information obtained is useful for predicting dental

behaviour and demand for dental service.

Q.15 How often do you go for checkups?

Reason: The number of times given for checkups per year serves as an indicator of how strong the perceived need is for prevention. The information obtained is useful for predicting dental behaviour, demand for dental service and planning for future dental workforce requirement.

Q.16 I would like you to think about the last time you saw someone about your teeth. Was this for a checkup or for some other reason?

Reason: Going for a checkup serves as an indicator of past perceived need for a preventive visit. The information obtained is useful for predicting dental behaviour, planning for future dental service and dental workforce requirement.

Q.17 Where did you attend your last dental visit?

Reason: Place attended for last dental visit serves as an indicator of past experience of accessibility to, acceptability of, and effective demand for the various sources of dental delivery by the students. The information obtained is useful for predicting behaviour, demand for various sources of dental delivery and planning for future dental workforce requirement.

Q.18 At this last visit what type of treatment did you receive?

Reason: Type of treatment received at last dental visit serves as an indicator of effective demand for various treatment, whether it be diagnostic (x-ray, checkup), curative (extraction, fillings), preventive (teeth cleaned or polished, fluoride treatment), orthodontic treatment or other treatment. The information obtained is useful as a predictor for future demand and planning for dental workforce requirement.

Q.19 Have you ever worn any braces/bands?

Reason: Wearing any braces/bands serves as an indicator of effective demand for orthodontic treatment. The information obtained is useful as a predictor for future demand and planning for dental workforce requirement.

APPENDIX 5: COUNTRY OF BIRTH OF STUDENT

Table 41. Distribution of country of birth of student - by Australia or overseas.

<u>Country of birth of student</u>	<u>Frequency</u>
Australia	486
Overseas	117
Total	603

Table 42. Distribution of country of birth of student - by country

<u>Country of birth of student</u>	<u>Frequency</u>
<i>Australia</i>	<i>486</i>
Afghanistan	3
Argentina	1
Burma	2
Cambodia	1
Canada	1
Chile	1
China	3
Czech Republic	2
El Salvador	1
England	6
Egypt	2
Fiji	6
Hong Kong	6
India	9
Indonesia	3
Iran	4
Korea	8
Lebanon	7
Malaysia	1
Malta	1
Mauritius	1

Nepal	1
New Zealand	11
Nicaragua	1
Pakistan	2
Philippines	16
Poland	1
Samoa	1
Singapore	1
South Africa	1
Sri Lanka	2
Taiwan	4
Timor	1
Uruguay	1
USA	2
Vietnam	2
Yugoslavia	1

APPENDIX 6: COUNTRY OF BIRTH OF FATHER

Table 43. Distribution of country of birth of father - by Australia or overseas.

<u>Country of Birth - Father</u>	<u>Frequency</u>
Father born in Australia	276
Father born overseas	317
Do not know	8
Deceased	1
Not given	1
Total	603

Table 44. Distribution of country of birth of father - by country.

<u>Country of birth of father</u>	<u>Frequency</u>
<i>Australia</i>	<i>276</i>
Afghanistan	3
Argentina	1
Austria	2
Bangladesh	1
Belgium	1
Burma	2
Cambodia	1
Chile	2
China	10
Colombia	1
Cook Island	1
Cyprus	2
Czech Republic	2
Egypt	8
El Salvador	1
England	28
Eritrea	1
Fiji	9
France	1
Germany	2
Greece	3

Hong Kong	8
Hungary	1
India	15
Indonesia	3
Iran	3
Ireland	5
Israel	1
Italy	10
Jordan	1
Korea	11
Lebanon	47
Macau	1
Macedonia	1
Malaysia	3
Malta	18
Mauritius	2
Nepal	1
New Zealand	13
Pakistan	4
Palestine	2
Philippines	21
Poland	5
Portugal	1
Samoa	4
Scotland	9
South Africa	2
Spain	2
Sri Lanka	4

Switzerland	1
Syria	4
Taiwan	3
The Netherlands	3
Timor	1
Tonga	4
Turkey	11
Uruguay	1
USA	2
Vietnam	3
Yugoslavia	4

APPENDIX 7: COUNTRY OF BIRTH OF MOTHER

Table 45. Distribution of country of birth of mother - by
Australia or overseas

<u>Country of Birth - Mother</u>	<u>Frequency</u>
Australia	301
Overseas	300
Do not know	2
Total	603

Table 46. Distribution of country of birth of mother - by country

<u>Country of birth of mother</u>	<u>Frequency</u>
<i>Australia</i>	<i>301</i>
Afghanistan	3
Argentina	2
Bangladesh	1
Belgium	1
Brunei	1
Burma	2
Cambodia	1
Chile	3
China	6
Cook Island	2
Cyprus	2
Czech Republic	2
East Africa	1
Egypt	7
El Salvador	1
England	24
Eritrea	1
Fiji	10
Germany	2
Greece	1
Holland	2

Hong Kong	10
Hungary	2
India	14
Indonesia	3
Iran	4
Ireland	1
Italy	3
Jamaica	1
Japan	1
Jordan	2
Korea	11
Lebanon	46
Macau	2
Macedonia	1
Malaysia	4
Malta	18
Mauritius	4
Nepal	1
New Zealand	10
Nicaragua	1
Pakistan	4
Palestine	1
Philippines	25
Poland	3
Portugal	1
Samoa	4
Scotland	4
Singapore	1

South Africa	3
Spain	1
Sri Lanka	4
Syria	3
Switzerland	1
Taiwan	3
The Netherlands	1
Timor	1
Tonga	2
Turkey	11
Uruguay	1
USA	1
USA	1
Vietnam	5
Yugoslavia	1
Yugoslavia	4

APPENDIX 8: LANGUAGE SPOKEN AT HOME

Table 47. Distribution of language spoken at home - by English or another language

<u>Language spoken at home</u>	<u>Frequency</u>
English only	398
Another language	204
Not given	1
Total	603

Table 48. Distribution of language spoken at home - by language

<u>Language spoken at home</u>	<u>Frequency</u>
<i>English only</i>	398
Albanian	1
Arabic	58
Bengali	2
Burmese	2
Cambodian	1
Cantonese	16
Czech	2
Fijian	1
Filipino	7
French	4
Greek	2
Hindi	8
Indian	2
Indonesia	2
Iranian	1
Italian	4
Jordanian	1
Korean	11
Lebanese	3
Macedonian	1
Malyalam	1

Maltese	11
Mandarin	5
Maori	1
Nepali	1
Punjabi	1
Parsi	1
Persian	5
Polish	4
Russian	1
Samoan	4
Serbian	1
Spanish	7
Sri Lankan	1
Tagalog	8
Tamil	1
Telugu	1
Tongan	2
Turkish	11
Urdu	2
Vietnamese	4
Yugoslavian	2

