



THE UNIVERSITY OF ADELAIDE

The Child Dental Health Survey South Australia 1996

AIHW Dental Statistics and Research Unit
The University of Adelaide

in collaboration with
The South Australian Dental Service

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Purpose of this report

This report continues the series of annual reports providing descriptive statistics concerning child dental health in South Australia, and follows the 1995 report. Information listed in the tables includes: the age and sex of children in the sample, their deciduous and permanent caries experience, frequency of fissure sealants and children's history of School Dental Service examinations. These data were collected during the 1996 calendar year from SA School Dental Service patients by dental therapists and dentists. A random sampling procedure was used. This was achieved by selecting those children whose birthdays were on the 13th, 30th or 31st day of any month. Participants from non-metropolitan clinics who had previously participated in the Child Fluoride Study¹ were sampled at a higher rate by including children born on the 13th or between the 26th and 31st of any month. Approximately one third of children sampled from non-metropolitan clinics had previously participated in the Child Fluoride Study and these children comprised approximately one fifth of the total sample for this report.

The following sections describe briefly each table and contain a simple summary statement highlighting differences between the 1996 and 1995 data. However, no formal hypothesis tests have been undertaken, and *descriptions of difference between years are intended as a guide to the reader, rather than a statistical evaluation of trends.*

Demographic composition of the sample

Table 1 lists at the left the number of children sampled according to their age. The majority of children were aged 5 years or more, and there were large numbers of children in the range 5 to 15 years. There was a tendency for children aged 9-12 years within this age range to be represented in slightly greater numbers. Males and females were represented in approximately equivalent numbers. There was not more than 20 per cent variation in the gender balance within most age groups, the exception being for 6 year-olds where there were 24 per cent more females than males, and for 9 year-olds where there were 32 per cent more males than females.

The age distribution of the sample is related to the main target groups of children served by the School Dental Service in SA. This illustrates that the sample is representative of children in primary school and early secondary school, rather than all children in South Australia. Consequently, those children who are outside the main school dental service target groups (less than 5 or more than 17 years) may differ on key characteristics and are likely to be less representative of their respective age groups in the SA population.

Table 1 also shows the weighted distribution of children by age. This distribution is derived by weighting the numbers of children by both the sampling ratio used to select them and time since last visit. The number of children in the weighted sample is 17 less than for the raw sample due to missing data for some children for time since last visit. It should be noted that all subsequent analyses use the weighted distribution of children to derive results.

¹ An NHMRC funded project, conducted in collaboration with SADS, designed to examine the effect of water fluoridation on caries incidence.

Changes since 1995

The 1996 sample is larger than the 1995 sample by 545 children. In other respects, the proportional distribution of ages and sexes is similar to the 1995 sample.

Area of sampling

Approximately twice as many children were sampled from clinics in metropolitan Adelaide than were sampled from non-metropolitan clinics. Sampling rates across age groups are roughly comparable. The weighted distribution shown in Table 2 indicates that weighted results are based on a sample comprising approximately three times the children seen in metropolitan clinics than children seen in non-metropolitan clinics.

Deciduous teeth: age-specific caries experience

The mean number of clinically decayed teeth shows variation among key ages, ranging from a low of 0.29 among children aged 10 years to a high of 0.65 among children up to 4 years of age (see Table 3). There is an age-associated decline in the number of clinically decayed teeth up to the age of 10 years. The trend in dmft is not as clear. Interestingly, deciduous dmft is highest among nine year-olds (mean = 1.58) and lowest among six year-olds (mean = 1.17) despite the nine year-olds having, on average, seven less deciduous teeth than six year-olds.

The percentage of caries experience presenting as untreated decay (d/dmft) shows a strong age-associated decline, reducing from 55.8 per cent among children aged 5 years to 23.6 per cent for children aged 10 years. This pattern of deciduous caries experience among the youngest groups (dominated by patients new to the School Dental Service) indicates that these children enter the dental program with a relatively high level of untreated decay.

The percentage of children free of clinically detectable caries (% dmft = 0) also shows a general age-associated reduction from 67.3 per cent among children up to the age of four years to 52.6 per cent among nine year-olds.

Changes since 1995

The mean number of clinically decayed teeth decreased from 1995, with declines occurring across all age groups. There were also declines in the mean dmft for most ages, in the order of 0.1 to 0.4 teeth. However, children up to four years of age and those aged five years showed an increase in dmft. These results produced a substantial reduction in the d/dmft ratio for these youngest groups (40.4 per cent less for children up to four and 14.6 per cent less for five year-olds). The percentage of children with no deciduous caries experience (dmft=0) increased for children age six to nine, remained relatively unchanged for 10 year-olds and decreased for children aged up to five years-old.

Permanent teeth: age-specific caries experience

The mean number of clinically decayed permanent teeth was consistently smaller than the mean number of decayed deciduous teeth for children aged less than 11 years (see

Table 4). In children up to the age of eight years this can be accounted for by the small number of permanent teeth present. However the mean number of clinically decayed teeth remains low (peaking at a mean of 0.37 for 14 year-olds) despite the rapid eruption of permanent teeth from the age of nine years.

The mean DMFT increased with age from a low of 0.01 for 5 year-olds to a high of 1.20 for 16-18 year-olds. The mean DMFT for 12 year-olds was 0.47.

The D/DMFT ratio declined from the youngest ages until age 10 years, where it achieved a relatively stable level below 35 per cent, before reducing even further for the oldest children. D/DMFT was lowest for children aged 16 years and over (mean = 13.2 per cent)

The percentage of children free of clinically detectable caries in their permanent dentition also declined systematically with increasing age. More than 70 per cent of 12 year-old children had DMFT=0.

Changes since 1995

There is evidence of a decline in both the number of decayed permanent teeth and DMFT across a number of ages, with the largest reductions occurring in the older age groups. The only increase in DMFT occurred for 11 and 14 year-old children (up 0.12 and 0.32 respectively).

The reduction in decayed teeth is mirrored by a change in the D/DMFT ratios between years, with a lower proportion evidenced across most age groups. Except for 11 and 14 year-olds, the percentage of children with DMFT=0 has increased for most ages .

All teeth: age-specific caries experience

Shown in Table 5, the percentage of children with at least one instance of untreated caries in the combined deciduous and permanent dentition ranged from 11.1 per cent of 16-18 year-olds to 29.4 per cent of children aged 5 years. Based on observations from previous tables, much of this untreated decay could be attributed to observable carious lesions in the deciduous dentition.

More than 97 per cent of children across all ages had no deciduous or permanent teeth missing due to caries ($m+M=0$). The percentage of children with neither deciduous or permanent caries experience ($dmft+DMFT=0$) declined into the middle age ranges (9 to 11 years), increased for children aged 12 and 13 years (60.4 and 59.3 per cent respectively), and then declined again.

Changes since 1995

There have been increases in the percentages of children with $d+D=0$ across most ages. The tendency noted historically for younger children to be more frequently represented among those with extensive decay ($d+D=3$ or $d+D=4+$) appears to have diminished so that there is no discernible age relationship. There have been increases in the percentages of children with $dmft+DMFT=0$.

Fissure sealants: age-specific experience

As can be seen in Table 6, the mean number of fissure sealants increased with increasing age of the children. There was a mean of 1.2 sealants per child among 12 year-olds. The prevalence of fissure sealants among those without permanent caries experience (DMFT=0) was consistently less than among those with some permanent caries experience (DMFT=1+). This suggests that fissure sealants were being used preferentially in children with past caries experience.

Changes since 1995

There was evidence of an increase in the average number of fissure sealants for most ages (the exception being 15 year-olds).

Immediate treatment needs

This data item refers to children who at the time of examination have, or are likely to develop within four weeks, pain, infection or serious life threatening conditions. It is intended to capture the more severe clinical conditions which may not be apparent from statistics such as the number of teeth affected with some caries experience. As is shown in Table 7, extremely low percentages of children had immediate treatment needs. Both deciduous and permanent caries experience (dmft and DMFT) were frequently high for this group.

Changes since 1995

Although, due to small numbers, there has been no significant change across most age groups in the percentage of children with immediate treatment needs, overall there has been a trebling of children indicated as needing immediate treatment (from 16 in 1995 to 48 in 1996).

School Dental Service examinations

Table 8 shows that almost all the children had previously been examined within the School Dental Service. The right hand side of the table refers to the period of time since the previous School Dental Service examination among children with a previous record of examination. There was a distinctive age-related pattern with younger children more likely than older children to have received a previous examination within the last 12 months. Approximately one-third of children aged six years or less had received an examination within the previous 12 months.

Changes since 1995

The number of children up to 5 years of age who have received a previous examination has increased. However, it should be noted that the 1995 results used unweighted data, making direct comparisons with this years results problematic.

Percentage of children with dmft=0, DMFT=0 and d+D=4+

Figure 1 presents data contained in Tables 3, 4 and 5 to summarise the extent of dental health (represented by percentage with no deciduous and permanent caries experience) and the extent of more extensive untreated decay (represented by the percentage with d+D=4 or more).

TABLES

Table 1: Demographic composition of the sample

Age (years)	No. of children in sample ¹			No. of children in sample (weighted) ²		
	Males	Females	Persons	Males	Females	Persons
2	6	9	15	1	2	3
3	27	27	54	7	10	17
4	48	68	116	14	29	44
5	124	112	236	96	88	184
6	98	122	220	113	116	230
7	118	115	233	131	129	260
8	115	112	227	121	131	251
9	200	157	357	211	165	376
10	227	200	427	221	211	433
11	260	233	493	261	246	507
12	210	214	424	222	217	439
13	171	158	329	168	164	332
14	153	137	290	151	139	290
15	106	105	211	115	111	226
16	91	85	176	100	97	196
17	51	51	102	53	53	106
18	2	2	4	1	2	3
Total	2007	1907	3914	1988	1909	3897

¹ The number of children included in the sample equals the total number of records sampled where date of birth is known less second and subsequent examinations of children already sampled within the reporting period.

² Weighting is used to adjust for the differential sampling of children from metropolitan and non-metropolitan clinics and for differences in time since last visit.

Table 2: Area of sampling (weighted)

Age (years)	Metro		Non-metro		Unknown		Total	
	No.	%	No.	%	No.	%	No.	%
2	3	0.1	–	–	–	–	3	0.1
3	13	0.4	3	0.3	–	–	16	0.4
4	32	1.1	10	1.1	2	5.0	44	1.1
5	120	4.1	63	7.0	1	2.5	184	4.7
6	176	6.0	53	5.9	–	–	229	5.9
7	172	5.8	87	9.7	1	2.5	260	6.7
8	203	6.9	48	5.4	–	–	251	6.4
9	303	10.3	69	7.7	4	10.0	376	9.7
10	328	11.1	101	11.3	4	10.0	433	11.1
11	381	12.9	120	13.4	6	15.0	507	13.0
12	332	11.2	96	10.7	11	27.5	439	11.3
13	256	8.7	74	8.2	2	5.0	332	8.5
14	220	7.4	68	7.6	1	2.5	289	7.4
15	176	6.0	44	4.9	6	15.0	226	5.8
16	155	5.2	39	4.3	2	5.0	196	5.0
17	84	2.8	21	2.3	–	–	105	2.7
18	2	0.1	1	0.1	–	–	3	0.1
Total	2956	100	897	100	40	100	3893	100

Table 3: Deciduous teeth: age-specific caries experience¹

This table uses State-wide data to describe the dmft index and its components for individual (year of birth) ages. Age-specific indices denoted with an asterisk (*) are those in which the relative standard error exceeds 40 per cent, and population estimates of these indices are statistically unreliable.

Age (years)	No. of children (weighted)	Deciduous Teeth Present	Decayed ²		dmft		d/dmft	Children with dmft=0
		mean	mean	sd	mean	sd	%	%
Up to 4	64	19.96	0.65	1.99	1.22	2.54	46.78	67.3
5	184	19.48	0.58	1.12	1.25	2.18	55.76	62.3
6	230	17.51	0.44	1.06	1.17	2.32	48.55	65.7
7	260	14.98	0.38	0.94	1.33	2.47	34.84	61.3
8	251	12.21	0.36	0.83	1.34	2.07	29.68	57.1
9	376	10.52	0.31	0.72	1.58	2.16	24.57	52.6
10	433	7.82	0.29	0.76	1.27	1.90	23.58	55.5

¹ Legend d – decayed deciduous teeth
dmft – decayed, missing or filled deciduous teeth
sd – standard deviation

² Including recurrent caries in filled teeth.

Table 4: Permanent teeth: age-specific caries experience¹

This table uses State-wide data to describe the DMFT index and its components for individual (year of birth) ages. Age-specific indices denoted with an asterisk (*) are those in which the relative standard error exceeds 40 per cent, and population estimates of these indices are statistically unreliable.

Age (years)	No. of children (weighted)	Permanent Teeth Present		Decayed		DMFT		D/DMFT	Children with DMFT=0
		mean	sd	mean	sd	mean	sd	%	%
5	184	1.07	0.10*	0.01*	0.10*	0.01*	0.10*	100.00	99.1
6	230	4.57	0.32	0.07	0.32	0.11	0.46	73.53	93.9
7	260	8.06	0.25*	0.03*	0.25*	0.07	0.37	37.50	95.4
8	251	11.18	0.26	0.07	0.26	0.16	0.45	49.58	86.2
9	376	13.07	0.32	0.08	0.32	0.25	0.68	40.37	84.8
10	433	16.10	0.27	0.07	0.27	0.28	0.66	25.75	80.4
11	507	20.10	0.49	0.15	0.49	0.47	0.88	30.40	71.2
12	439	24.24	0.48	0.15	0.48	0.47	0.95	32.52	71.8
13	332	26.08	0.53	0.20	0.53	0.59	1.00	33.63	65.2
14	290	27.01	1.18	0.37	1.18	1.03	1.79	34.48	57.2
15	226	27.25	0.58	0.23	0.58	1.10	1.54	23.07	52.3
16-18	305	27.45	0.45	0.14	0.45	1.20	1.78	13.19	51.9

¹ Legend D – decayed permanent teeth
 DMFT – decayed, missing or filled permanent teeth
 sd – standard deviation

Table 5: All teeth: age-specific caries experience¹

This table uses State-wide data to describe the combined dmft and DMFT indices and their components for individual (year of birth) ages. Age-specific indices denoted with an asterisk (*) are those in which the relative standard error exceeds 40 per cent, and population estimates of these indices are statistically unreliable.

Age (years)	No. of children (weighted)	% with d+D=					% with		
		0	1	2	3	4+	m+M=0	f+F=0	dmft+DMFT =0
Up to 4	64	79.8	10.4	0.8*	2.3*	0.4*	98.4	80.6	67.3
5	184	70.6	13.2	9.7	3.1	3.3	98.4	76.7	62.3
6	230	74.2	12.4	7.7	3.3	0.4*	97.8	75.3	63.8
7	260	78.2	11.8	5.1	0.4*	3.0	98.9	67.5	58.9
8	251	74.4	15.2	6.3	2.3	0.4*	98.4	60.1	51.1
9	376	74.8	16.7	5.5	2.0	0.5*	98.5	56.4	47.0
10	433	77.9	14.9	3.7	1.4	2.0	98.9	55.0	49.6
11	507	75.7	14.0	6.6	3.1	0.5*	99.7	56.3	47.5
12	439	83.8	11.1	3.7	0.5*	0.5*	99.9	68.7	60.4
13	332	83.1	12.2	3.8	0.5*	0.0	99.5	68.5	59.3
14	290	80.6	12.3	3.4	0.4*	0.4*	100.0	66.4	54.6
15	226	83.6	10.5	5.0	0.7*	3.3*	99.5	57.9	51.2
16-18	305	88.9	8.7	2.0	1.0*	3.3*	100.0	55.4	51.9

¹ Legend
d – decayed deciduous teeth
D – decayed permanent teeth
m – deciduous teeth missing due to caries
M – permanent teeth missing due to caries
f – deciduous teeth restored due to caries
F – permanent teeth restored due to caries
dmft – decayed, missing or filled deciduous teeth
DMFT – decayed, missing or filled permanent teeth

Table 6: Fissure sealants: age-specific experience¹

This table uses State-specific data to describe the distribution of fissure sealants for individual (year of birth) ages, along with the caries experience of those who have fissure sealants and those who do not. Age-specific indices denoted with an asterisk (*) are those in which the relative standard error exceeds 40 per cent, and population estimates of these indices are statistically unreliable.

Age (years)	No. of children (weighted)	No. of sealants		Children with DMFT=0		Children with DMFT=1+	
		mean	sd	no.	% with F/S=1+	no.	% with F/S=1+
6	230	0.03*	0.34*	216	0.5*	14	0.0
7	260	0.19	0.73	248	6.3	12	29.5
8	251	0.57	1.12	217	22.3	35	52.2
9	376	0.93	1.42	319	32.7	57	55.0
10	433	0.91	1.38	348	32.4	85	66.6
11	507	1.08	1.50	361	37.6	146	55.3
12	439	1.20	1.67	315	38.8	124	55.4
13	332	1.61	2.04	217	43.6	116	72.1
14	290	1.89	2.35	166	48.2	124	73.5
15	226	1.83	2.12	118	56.8	108	64.3
16-18	305	2.50	2.56	158	50.1	147	84.0

¹ Legend DMFT – decayed, missing or filled permanent teeth.

Table 7: Immediate treatment needs: age-specific distribution¹

This table, based on State-wide data, describes the number and proportion of children in immediate need of dental treatment. This classification is accorded to children who have, or who are likely to develop within four weeks, oral pain or infection. The dental caries experience of this group of children is also described. Age-specific indices denoted with an asterisk (*) are those in which the relative standard error exceeds 40 per cent, and population estimates of these indices are statistically unreliable.

Age (years)	No. of children (weighted) ²	No.	% of all children	dmft		DMFT		% with d+D=				
				mean	sd	mean	sd	0	1	2	3	4+
Up to 4	64	0	0.1*	1.00	–	–	–	0.0	100.0	0.0	0.0	0.0
5	184	2	1.1*	4.08	–	–	–	0.0	0.0	91.7	0.0	8.3*
6	230	2	0.9*	4.71	–	–	–	63.0*	0.0	33.0*	4.2*	0.0
7	260	3	1.3*	2.50*	3.60*	–	–	39.0*	39.0*	0.0	0.0	22.0*
8	251	4	1.4*	3.18	2.23	–	–	32.0*	2.3*	36.0*	30.0*	0.0
9	376	3	0.9*	3.93	2.54	2.00	1.60	0.0	11.0*	27.0*	0.0	61.0*
10	433	4	0.9*	2.80*	2.40*	1.40*	1.80*	23.0*	20.0*	44.0*	0.0	13.0*
11	507	5	1.0*	0.35*	1.10*	1.30*	1.30*	84.6	15.0*	0.0	0.0	0.0
12	439	4	0.8*	2.32	0.88	0.83	0.44	0.0	100.0	0.0	0.0	0.0
13	332	6	1.7	0.14*	0.55*	2.10	0.33	0.0	10.0*	89.8	0.0	0.0
14	290	4	1.4*	–	–	2.30*	2.10*	86.0	0.0	14.0*	0.0	0.0
15	226	6	2.6	–	–	2.50*	2.50*	23.0*	77.2	0.0	0.0	0.0
16–18	305	5	1.7*	–	–	2.97	2.50	49.0*	32.0*	20.0*	0.0	0.0

¹ Legend: dmft – number of decayed, missing or filled deciduous teeth
 DMFT – decayed, missing or filled permanent teeth
 d – number of decayed deciduous teeth
 D – number of decayed permanent teeth

² Data relating to second or subsequent examinations of children within this reporting period are eliminated.

Table 8: School Dental Service examinations: age-specific distribution

This table describes the percentage distribution of children who have received initial and subsequent dental examinations in the School Dental Service. Data from all examinations of children who were examined during the report period are included in this table; percentage estimates denoted with an asterisk (*) are those in which the relative standard error exceeds 40 per cent, and population estimates of these percentages are statistically unreliable.

Age (years)	No. of children examined	Previous examination in School Dental Service (%)			Children with previous examination Months since last examination (%) ¹			
		Yes	No	Unknown	0-6	7-12	13-24	25+
Up to 4	64	83.3	16.4	0.3*	3.9*	40.4	55.6	0.2*
5	184	96.7	2.8*	0.5*	2.0*	22.9	75.0	0.1*
6	230	98.8	1.0*	0.2*	0.8*	18.9	74.0	6.3
7	260	99.5	0.3*	0.2*	0.8*	16.7	77.9	4.5
8	251	99.5	0.3*	0.2*	0.5*	21.2	72.8	5.5
9	376	99.9	0.0	0.0	0.9*	17.2	78.9	2.9
10	433	99.8	0.1*	0.1*	0.4*	13.0	80.2	6.3
11	507	99.9	0.0	0.0	0.7*	8.3	81.9	9.1
12	439	99.8	0.1*	0.1*	0.3*	8.8	85.3	5.5
13	332	99.9	0.0	0.0	0.1*	12.3	82.9	4.7
14	290	100.0	0.0	0.0	0.7*	11.6	77.8	9.8
15	226	100.0	0.0	0.0	0.0	7.6	86.2	6.2
16-18	305	100.0	0.0	0.0	0.2*	7.6	81.5	10.7

¹ Excludes those with no previous examination and where the date of previous examination is unknown.

FIGURES

Figure 1: Percentage of children with dmft=0, DMFT=0 and d+D=4+

