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The Child Dental Health Survey Tasmania 1997

AIHW Dental Statistics and Research Unit
The University of Adelaide

in collaboration with
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Contents

Purpose of this report	1
Sources of subjects and sampling.....	1
Data analysis	2
Demographic composition of the sample	2
Deciduous teeth: age-specific experience	3
Permanent teeth: age-specific experience	4
All teeth: age-specific experience	5
Fissure sealants: age-specific experience	6
Immediate treatment needs	6
School Dental Service examinations.....	7
Percentage of children with dmft=0, DMFT=0 and d+D=4+	9

Tables

Table 1. Demographic composition of the sample	2
Table 2. Deciduous teeth: age-specific caries experience.....	3
Table 3. Permanent teeth: age-specific caries experience	4
Table 4. All teeth: age-specific caries experience	5
Table 5. Fissure sealants: age-specific experience.....	6
Table 6. Immediate treatment needs: age-specific experience.....	7
Table 7. School Dental Service examinations: age-specific distribution.....	7
Table 8. School Dental Service examinations: time since last visit.....	8

Figures

Figure 1. Percentage of children by region for sample and Tasmanian population	1
Figure 2: Time since last dental examination	8
Figure 3: Percentage of children with dmft=0, DMFT=0 and d+D \geq 4.....	9

Abbreviations

d – deciduous decayed teeth

m – deciduous missing teeth

f – deciduous filled teeth

dmft – deciduous decayed, missing and filled teeth

D – permanent decayed teeth

M – permanent missing teeth

F – permanent filled teeth

DMFT – permanent decayed, missing and filled teeth

SD – standard deviation

Purpose of this report

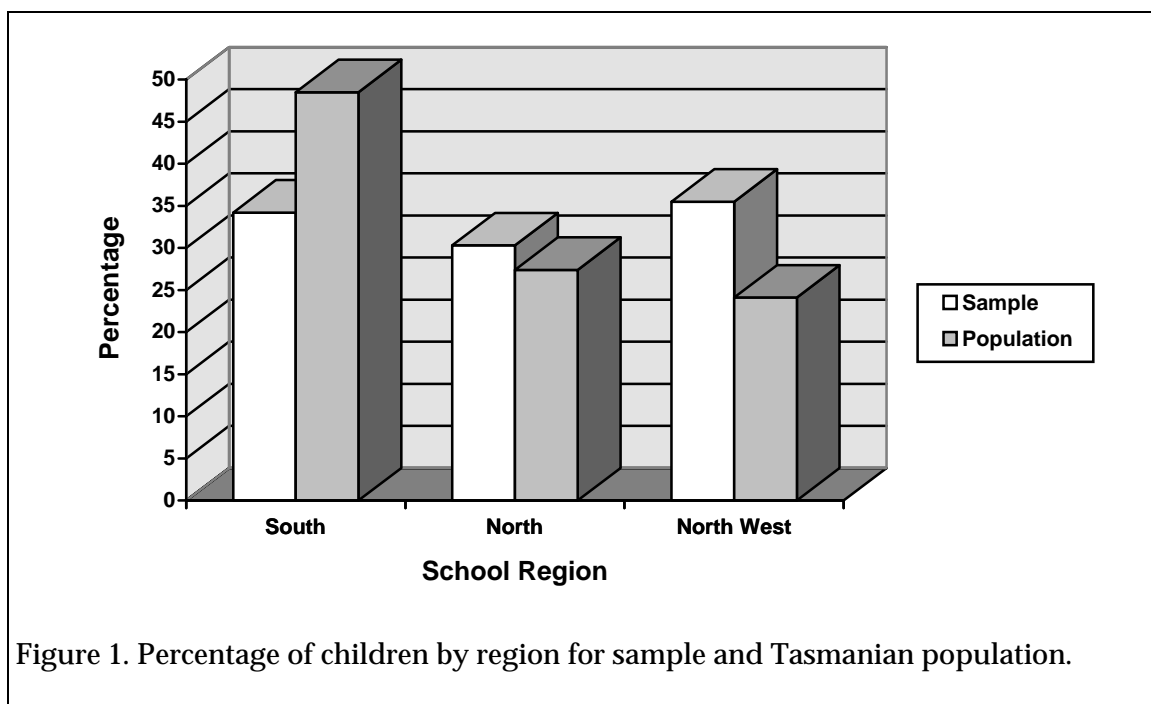
This report is part of the annual series providing descriptive statistics concerning child dental health in Tasmania. Information listed in the report includes the age and sex of children in the sample, their deciduous and permanent caries experience, frequency of fissure sealants, immediate treatment needs and history of school dental service examinations.

The sections below also provide a simple, summary statement highlighting differences between the 1997 and 1996 findings. However, no formal hypothesis tests have been undertaken and descriptions of differences between years are intended as a guide to the reader rather than an evaluation of the significance of any trends.

Sources of subjects and sampling

The data for this report were collected during the 1997 calendar year from patients of the Tasmania Dental Service by dental therapists and dentists. A random sampling procedure was used to select slightly less than one in two (1:2.5) patients. This was achieved by selecting those children whose birthday fell on the first sixteen days of any month.

Data were weighted for all analyses to more accurately reflect the population in Tasmania. Children from the Southern region (including Greater Hobart) were initially under-represented in the sampling whereas children from the North and North West regions were over-represented relative to actual population distribution (see Figure 1). Weighting was carried out so that the regional contributions for the study equalled the distribution of children aged 5–14 years in Tasmania as at 30 June 1997. Children aged 5–14 years of age comprised 87.6% of the sample.



Data analysis

The data were extensively cleaned prior to analysis to correct data entry errors. In addition, cases with ages more than 3 standard deviations from the mean age for a given number of either deciduous or permanent teeth were removed from the analysis or corrected where this could be determined. These cases most likely represented data input errors. As a result, 231 cases were removed from the data set prior to analysis.

All indices are calculated from data collected over a 12-month period. Where children received more than one examination during this period the information derived from examinations other than the first has been excluded. Age-specific indices denoted with an asterisk (*) are those in which the relative standard error exceeds 40% and population estimates of these indices may be considered to be statistically unreliable and should be interpreted with due care.

Demographic composition of the sample

There was a total of 10,501 people sampled for analysis during 1997 (see Table 1). The majority of the children were aged between 4 and 15 years of age (98.1%) with the highest frequencies being for children aged between 5 and 11 years of age. This corresponds to the predominant ages of the primary school population, and reflects the targeting of care principally to children at primary school. For all subsequent analyses children aged 2–4 years old were collapsed into a single group, as were children aged 16–18 years.

Table 1: Demographic composition of the sample

Age (years)	Children in sample			Children in sample (weighted)		
	Males	Females	Persons	Males	Females	Persons
	<i>n</i>	<i>n</i>	<i>n</i>	<i>n</i>	<i>n</i>	<i>n</i>
2	18	17	35	17	15	32
3	59	57	116	58	52	110
4	245	281	526	252	283	534
5	500	492	992	494	485	979
6	544	500	1,044	547	515	1,062
7	546	499	1,045	564	512	1,076
8	578	539	1,117	580	548	1,129
9	521	467	988	539	478	1,017
10	541	514	1,055	561	520	1,081
11	529	509	1,038	543	514	1,057
12	379	404	783	372	383	754
13	289	275	564	283	258	541
14	275	299	574	262	285	548
15	270	309	579	255	287	541
16	13	15	28	14	17	31
17	7	5	12	5	4	9
18	2	3	5	1	2	4
Total	5,316	5,185	10,501	5,347	5,158	10,505

Males and females were represented in approximately equal proportions although slightly more males than females were represented. This is consistent with the distribution in these age groups within the Tasmanian population.

Weighting of the data did not produce appreciable differences in the age and sex composition of the sample.

Changes in demographic composition since 1996

Considerably more children ($n = 1,376$) were sampled in 1997 than 1996 with increased numbers sampled in all age groups. The sex distribution across years was comparable.

Deciduous teeth: age-specific experience

Table 2 shows the age specific caries experience in deciduous teeth for children up to 12 years of age. The mean dmft score increased from 1.12 for 5 year-olds to 1.73 for 8 year-olds before declining to 1.03 for 12 year-olds.

The range in the mean number of clinically detectable decayed deciduous teeth was similar to that observed for dmft, decreasing from 1.05 among children up to 4 years old to 0.28 among 12 year-olds. The percentage of caries experience represented as clinically detectable decay was highest for young children. For those children up to the age of 4, 91.1% of their dmft score could be attributed to untreated decay. This figure declined systematically with increasing age so that by 10 years of age only 31.4% of children's dmft score was attributable to clinically detectable decay. The percentage of children up to the age of 9 with dmft=0 declined with age. Approximately 66% of children up to the age of 4 had dmft=0 while only 45.9% of children aged 9 years had no clinically detectable caries experience.

Changes in deciduous caries experience since 1996

In 1997, compared to 1996, the mean number of teeth with clinically detectable decay decreased for 7 and 8 year-old children yet increased for several other age groups. Consistent with the changes in mean decay, mean dmft scores also increased for some age groups and is especially apparent for children up to the age of 6 years old. There were also decreases in several age groups in the percentage of children with dmft=0.

Table 2: Deciduous teeth: age-specific caries experience

Age (years)	Children	Teeth Present			dmft		d/dmft	Children with dmft=0
		mean	Decayed	SD	mean	SD		
Up to 4	674	19.85	1.05	2.26	1.15	2.34	91.1	65.9
5	978	19.51	0.83	1.79	1.12	2.18	74.1	64.8
6	1,062	17.36	0.87	1.67	1.45	2.47	65.1	58.8
7	1,069	14.32	0.66	1.33	1.50	2.27	48.1	53.7
8	1,116	12.25	0.61	1.16	1.73	2.32	40.8	47.8
9	1,009	10.69	0.55	1.00	1.71	2.18	38.4	45.9
10	973	8.73	0.44	0.89	1.51	2.03	31.4	48.6
11	784	6.48	0.35	0.78	1.12	1.69	36.2	54.3
12	369	5.01	0.28	0.70	1.03	1.58	29.3	58.0

Permanent teeth: age-specific experience

The mean number of decayed and DMF teeth increased in a fairly consistent manner, but at differing rates, across increasing age groups (see Table 3). As a consequence, the percentage of DMFT due to decay (D/DMFT) declined across age groups. The percentage of caries free children (DMFT=0) also declined regularly with increasing age. It is noteworthy that at least 55% of any age group up to 12 years had been caries free in their permanent dentition (DMFT=0). The 12 year-old DMFT was 0.96.

Among those aged 12 years or more, the age-associated increase in mean DMFT was greater than that for younger children. This pattern suggests either that new caries progression accelerates from the age of 12, or that these older children represent a cohort with a higher historical caries experience.

Changes in permanent caries experience since 1996

Small increases in clinically detectable decay were found for 8, 10 and 11 year-old children in 1997 compared to 1996. Mean decay in 12 year-olds was similar in 1997 to that in 1996. However, there were systematic changes in mean DMFT with increases demonstrated by almost all age groups in 1997. Reflecting the higher DMFT scores, the percentage of people with DMFT=0 decreased for most age groups.

Table 3: Permanent teeth: age-specific caries experience

Age (years)	Children	Teeth Present	Decayed		DMFT		D/DMFT	Children with DMFT=0
			mean	SD	mean	SD	%	%
5	228	3.41	0.02*	0.19*	0.04*	0.30*	71.5	97.8
6	856	5.62	0.06	0.34	0.08	0.40	82.2	95.1
7	1,058	8.63	0.14	0.49	0.20	0.66	81.5	88.4
8	1,126	11.12	0.19	0.55	0.31	0.74	62.0	80.8
9	1,019	12.71	0.20	0.57	0.44	0.93	50.3	76.0
10	1,081	15.97	0.31	0.83	0.66	1.24	46.5	67.5
11	1,057	20.03	0.34	0.87	0.83	1.38	40.7	61.2
12	753	23.64	0.42	1.02	0.96	1.45	41.8	55.8
13	545	26.24	0.60	1.24	1.34	1.92	45.5	47.7
14	549	27.27	0.66	1.19	1.70	2.06	40.7	40.2
15	541	27.54	0.82	1.54	2.13	2.75	39.4	38.7
16-18	44	27.68	1.08	2.16	3.20	3.33	22.9	21.9

All teeth: age-specific experience

It can be seen from Table 4 that untreated clinical decay in the combined deciduous and permanent dentitions ($d+D=1, 2, 3$ or $4+$) existed for between 29.4 and 38.8% of students. The greatest likelihood of untreated decay occurred for 8 and 9 year-olds. However, the most extensive levels of untreated clinical decay ($d+D=4$ or more) occurred most frequently in the youngest and the oldest children.

While fewer than 4% of children had at least one deciduous or permanent tooth missing due to caries, considerably higher percentages presented with fillings. The prevalence of fillings increased to 47.4% for 10 year-olds, decreased to 36.7% for 13 year-olds, and then increased again.

There was a reasonably consistent decline in the percentage of children with no caries experience in either deciduous or permanent dentition ($dmft+DMFT=0$), from 64.6% among the youngest children to 39.5% at age 9. The percentage fluctuated around the 40% range among most older ages, reflecting the pattern of exfoliation of deciduous teeth. More than 40% of children in almost all of the key primary school ages had no evident caries experience at the time of their examination.

Changes in caries experience for all teeth since 1996

Not surprisingly, given changes in the caries experience of both deciduous and permanent teeth, the percentage of children with $d+D=0$ in a number of the age groups has reduced and there has been an increase in the percentages of children with detectable decay in these age groups. Overall, however, there was little change in the percentage of children with $d+D\geq 4$ in 1997 than in 1996. No other systematic changes in caries experience are detectable between these years.

Table 4: All teeth: age-specific caries experience

Age (years)	Children <i>n</i>	<i>d+D=</i>					<i>m+M=0</i>	<i>f+F=0</i>	<i>dmft+DMFT=0</i>
		0	1	2	3	4+			
		%	%	%	%	%	%	%	%
5	990	70.6	10.2	6.9	4.1	8.3	98.8	88.4	64.6
6	1,074	64.8	12.3	9.2	5.8	8.0	98.3	79.3	57.7
7	1,081	63.4	17.7	8.0	5.0	5.9	97.6	68.8	49.9
8	1,129	61.2	19.1	9.5	5.0	5.2	97.4	58.3	42.8
9	1,020	61.4	17.3	12.0	5.5	3.8	96.7	55.4	40.3
10	1,080	64.1	17.8	9.9	3.6	4.6	97.7	52.6	39.5
11	1,059	66.7	18.8	8.1	3.8	2.6	98.8	58.4	43.6
12	754	70.0	15.9	7.9	2.9	3.3	99.1	59.8	45.6
13	546	67.3	17.1	9.6	2.3	3.7	98.2	63.3	43.8
14	550	64.3	18.4	9.2	5.0	3.1	98.2	55.5	38.7
15	542	63.3	16.2	9.0	5.3	6.2	98.5	53.0	38.1
16-18	44	66.5	14.9	1.6*	3.3*	13.7	98.4	26.9	21.9

Fissure sealants: age-specific experience

Data for fissure sealants are presented in Table 5. Prevalence of fissure sealants increased with increasing age. In all age groups there was evidence of preferential use of fissure sealants among those with caries experience. For example, 29.4% of 12 year olds with permanent caries experience (DMFT \geq 1) had fissure sealants, compared with 19.7% among those with DMFT=0.

Changes since 1996

There are appreciable reductions in the number of children with fissure sealants across all age groups between 1996 and 1997 and often large decreases in the mean number of sealants placed per child. Declines in fissure sealant placement are seen in both those children with DMFT=0 and those with caries experience.

Table 5: Fissure sealants: age-specific experience

Age (years)	Children	No. of sealants		Children with DMFT=0		Children with DMFT \geq 1	
	<i>n</i>	mean	SD	<i>n</i>	%	<i>n</i>	%
5	228	–	–	223	0.0	5	0.0
6	858	0.03	0.28	816	0.8	42	8.6
7	1,058	0.12	0.60	936	3.8	123	11.6
8	1,127	0.27	0.86	911	7.3	216	23.3
9	1,020	0.49	1.16	776	14.8	245	28.3
10	1,083	0.54	1.14	731	17.2	352	30.1
11	1,059	0.56	1.19	648	15.1	411	33.2
12	754	0.66	1.31	421	18.4	333	32.5
13	546	0.73	1.58	261	19.7	286	29.4
14	550	0.99	1.75	221	25.3	329	37.0
15	542	1.05	1.91	210	24.5	332	35.2
16–18	44	0.26*	0.82*	10	0.0	34	14.8

Immediate treatment needs

As shown in Table 6, only a small number of children were indicated as being in immediate need of treatment (0.7% of the total sample). This classification is accorded to children who have, or who are likely to develop within four weeks, oral pain or infection. Sixty four percent of these 77 children (*n*=49) were aged 8 years or younger. The mean dmft or DMFT of all children indicated for immediate treatment was appreciably higher than for the respective age group in the sample total.

Changes in immediate treatment needs since 1996

In 1996, only 11 children were classified as being in need of immediate treatment. Hence no statistics were reported on this data item in 1996 and comparisons between 1996 and 1997 are unavailable.

Table 6: Immediate treatment needs: age-specific distribution

Age (years)	Children in the sample		dmft		DMFT		% with d+D=				
	<i>n</i>	%	mean	SD	mean	SD	0	1	2	3	4+
Up to 4	11	1.6	6.33	6.43	–	–	19.8*	13.3*	13.3*	0.0	53.7
5	12	1.2	1.67*	2.53*	–	–	47.7	25.4	6.7*	6.7*	13.5*
6	9	0.8	2.82	1.63	–	–	18.0*	19.2*	26.6*	0.0	36.2
7	6	0.5	2.22*	3.05*	–	–	40.9	29.5*	14.8*	0.0	14.8*
8	11	1.0	3.74	2.42	0.13*	0.35*	12.7*	27.0	34.1	19.9*	6.3*
9	6	0.6	3.68	2.83	0.63*	1.08*	0.0	25.4*	49.2	0.0	25.4*
10	6	0.5	3.40	2.83	1.66*	1.58*	14.5*	29.1*	14.5*	27.3*	14.5*
11	2	0.2*	3.47*	4.48*	3.00	1.10	0.0	30.5*	0.0	34.7*	34.7*
12	3	0.4*	0.48*	1.05*	5.12*	5.82*	51.5*	0.0	0.0	0.0	48.5*
13	3	0.6*	0.50*	0.61*	3.23	2.19	0.0	0.0	76.6	23.4*	0.0
14	6	1.2	–	–	2.26	1.38	35.6*	51.6	12.9*	0.0	0.0
15	2	0.3*	–	–	3.50	–	0.0	50.0*	50.0*	0.0	0.0
16–18	0	0.0	–	–	–	–	–	–	–	–	–

School Dental Service examinations

Table 7 describes the percentage of children who were new patients (having had no previous dental examination) in the Tasmanian Dental Service. The figure was highest for the youngest ages (6 years or less) while no more than 7% of those aged 7 years or more had had no previous examination. This pattern is expected and indicates that most patients are enrolled during their early school years.

Table 7: School Dental Service examinations: age-specific distribution

Age (years)	Students	Previous examination in School Dental Service		
		No	Yes	Unknown
	<i>n</i>	%	%	%
Up to 4	681	78.6	21.3	0.1*
5	990	61.3	38.7	0.0*
6	1,074	18.4	81.5	0.1*
7	1,082	6.5	93.5	0.0*
8	1,130	4.9	94.9	0.1*
9	1,020	3.8	96.0	0.2*
10	1,083	4.2	95.8	0.0*
11	1,059	3.1	96.8	0.1*
12	754	3.1	96.9	0.0*
13	546	1.4	98.6	0.0*
14	550	2.2	97.8	0.0*
15	542	1.4	98.5	0.1*
16–18	44	0.0	100.0	0.0*

Table 8: School Dental Service examinations: time since last visit

Age (years)	Children					Time since last examination	
		0-6	7-12	13-24	25+	mean	SD
	<i>n</i>	months	months	months	months		
Up to 4	145	21.2	31.6	43.3	4.0	11.33	7.10
5	383	7.9	35.4	54.3	2.4	12.70	5.42
6	876	5.3	27.9	65.1	1.6	13.91	5.31
7	1,012	4.1	25.5	66.4	4.1	14.79	6.64
8	1,072	3.3	24.8	67.3	4.5	15.00	5.54
9	9780	3.3	24.0	67.5	5.3	15.51	5.69
10	1,038	2.5	21.8	70.6	5.1	15.64	5.71
11	1,025	3.0	26.7	65.5	4.8	15.14	7.01
12	731	4.7	26.4	62.5	6.4	15.37	7.45
13	539	2.9	26.2	57.2	13.8	16.42	7.21
14	538	2.9	20.1	60.3	16.8	17.46	9.36
15	534	4.6	24.5	56.0	15.0	17.28	8.90
16-18	44	7.0*	42.0	33.7	17.3	17.17	14.02

Table 8 refers only to children with previous examinations, and indicates the time since their last dental examination. Approximately 20-28% of children in most ages received examinations within 7 to 12 months of their previous examination. A re-examination interval of 13-24 months years occurred for the majority of children (between 54.3 and 70.6% of 5-15 year-olds). Re-examination within 6 months was only common among the youngest children (≤ 4 years of age) whereas re-examination after a period of two or more years occurred most frequently among the oldest children (aged 13 years or more). Mean time since last examination ranged from 11.33 months for the youngest children to 17.46 months for 14 year-olds.

Average recall periods for 6 and 12 year-old children are shown in Figure 2.

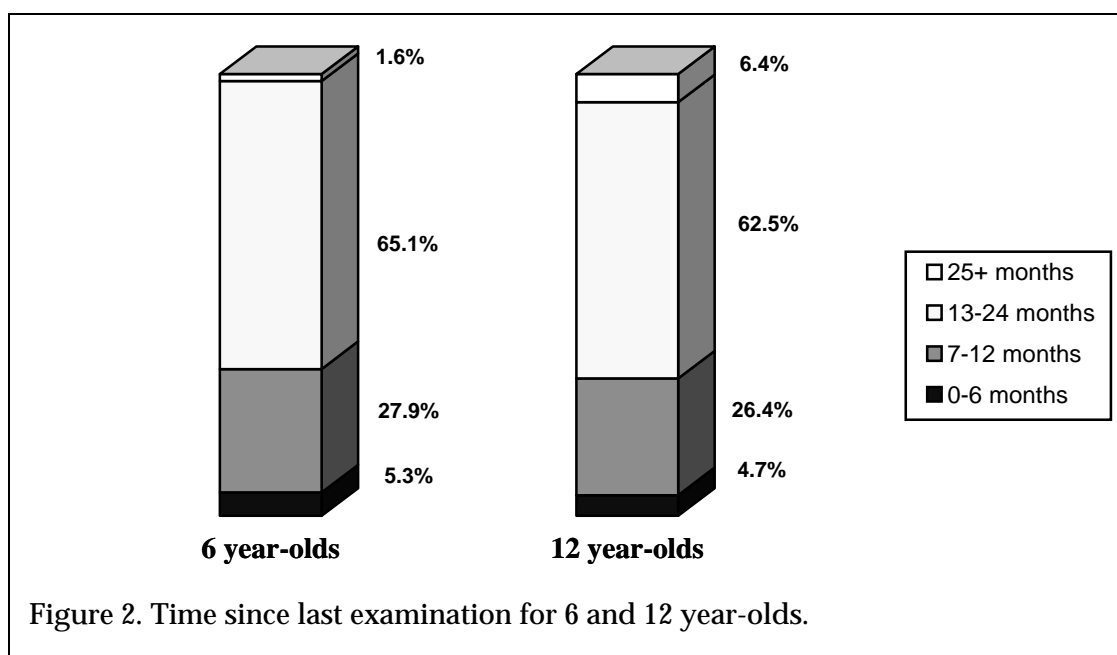


Figure 2. Time since last examination for 6 and 12 year-olds.

Changes in Dental Service examination patterns since 1996

In 1997 slightly fewer children had had a previous examination than in 1996 and this is especially evident in the youngest age groups. Of those children who had received a previous exam, there was a dramatic decrease for all age groups having received the exam 7–12 months previously and a correspondingly large increase in having had the exam 13–24 months previously. There are also increases across several age groups in the percentage of children having had their last examination more than 2 years previously.

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

Figure 3 presents data contained in tables 3, 4 and 5 and summarises percentage of children with no caries experience and the extent of more extensive untreated decay, represented by the percentage with d+D=4 or more.

