



AIH DENTAL STATISTICS
AND RESEARCH UNIT



HEALTH DEPARTMENT OF
WESTERN AUSTRALIA



THE UNIVERSITY OF
ADELAIDE

The Child Dental Health Survey Western Australia 1989

by

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and Research Unit

Published by:
AIH Dental Statistics and Research Unit
The University of Adelaide
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August 5, 1991

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The AIH Dental Statistics and Research Unit (DSRU) is an external unit of the Australian Institute of Health and was established in 1988 at The University of Adelaide. The DSRU was funded to improve the range and quality of dental statistics and research on the dental workforce, dental health status, dental practices and use of dental services.

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THE CHILD DENTAL HEALTH SURVEY - WESTERN AUSTRALIA 1989

Purpose of this report.

This report provides descriptive findings from the West Australian component of the Child Dental Health Survey. The report contains tables and one figure. Information listed in the tables includes: the age and sex of children in the sample, their deciduous and permanent caries experience, distribution of fissure sealants, frequency of initial examinations and calculus and inflammation indices. The figure combines and summarizes information from three of the tables.

These data were collected during the 1989 calendar year from School Dental Service patients of Dental Services (Western Australia). The data were transferred from patient treatment records to data forms during 1990 by dental therapists and dentists. A random sampling procedure was used to select approximately one in thirteen (1:12.5) patients. This was achieved by selecting those children whose birthday was on the 29th, 30th or 31st of any month. One in thirteen treatment records of children whose date of birth was unknown were also sampled. Since records with and without a known date of birth were sampled with equal probability, there has been no weighting of the records analyzed for this report.

Table 1: Demographic composition of the sample.

The great majority of children in the sample (96 per cent) were aged between 4 and 13 years inclusive. The largest single age group was 5-year-olds who were approximately twice as frequently represented as 12-year-olds. Even within the age-range confined to primary schools (5-11 years), there was a consistent reduction in number of sampled children with increasing age. While the small number of children outside the 5 to 11 year age group is consistent with the principal target population of the WA School Dental Service, the reasons for smaller numbers of older children within this age range are unclear.

The total numbers of males and females in the sample are virtually equivalent, and variations within individual ages are not substantial (ranging from 46 to 52 per cent male in the range 5 to 12 years).

The age and sex distribution of the sample reinforces the notion that the sample is intended to be representative of primary school aged children served by the School Dental Service, rather than all children in WA. Moreover, the small numbers of children aged 4 and 13 or over results in less reliability of computed statistics for those ages, and they have been suppressed where indicated in the following tables. It is also important to note that those children who are outside the main School Dental Service target groups may differ on key characteristics and are likely to be less representative of their respective age groups in the WA population. It is difficult to account for the reduced representation of older children within the main target ages (5 to 11 years). However the under-representation indicates that there may be a need for caution concerning potential sources of bias associated with aspects of the sampling. For example, bias could occur if sub-groups of older children are systematically excluded.

Table 3: Deciduous teeth: age-specific prevalence.

The mean number of decayed teeth among children aged 5 to 9 years varies quite markedly (0.80 to 0.33) and is lower among older children. The magnitude of variation in mean dmft in this age group is similar (1.27 to 1.73), although the prevalence is higher among older children. Mean dmft declines over the age of 9, and this should be interpreted as an effect due to exfoliation of deciduous teeth as children grow older. The mean dmft prevalence generally is lower than that observed in 1986 (Dental Health of Children in Australia 1977-1986, Commonwealth Department of Health, 1987). The differences are most notable for 9 year olds (1986 dmft = 2.45; 1989 dmft = 1.73), and this is despite the recent change to the index of caries experience, which now includes deciduous teeth which are missing due to caries. Such a change could be expected to result in a slightly higher mean prevalence. Instead, further reductions from the 1986 figures have been observed, and suggest that a substantial decline in deciduous caries experience is being maintained.

The percentage of caries experience due to decay (d/dmft) shows a dramatic age-associated decline, reducing from 74.1 per cent among 4-year-olds to 18.4 per cent among 10-year-olds. This is the strongest and most consistent age-associated effect for deciduous teeth. By comparison, the percentage of caries-free children (% dmft=0) shows a more modest reduction from 65.0 per cent among 4-year-olds to 44.6 per cent among 9-year-olds. The percentage of caries free children therefore mirrors the mean dmft prevalence.

Table 4: Permanent teeth: age specific prevalence.

The mean number of decayed permanent teeth generally is smaller than the mean number of decayed deciduous teeth and is relatively constant across the range of 7 to 11 years. There is a more noticeable age-associated increase in mean DMFT increasing to from 0.18 to 1.24 in reasonably even increments in the range 7 to 11 years. However, there is a greater incremental increase in DMFT above the age of 11. The transition from 11 to 12 years is particularly noteworthy, when a large increase in both DMFT and D is observed. It is unclear whether this represents a greater than expected rate of disease among 12 year olds, or whether the characteristics of those children differ in important respects from those in the main target groups (5 to 11 years). Certainly, the reductions in these age-specific mean DMFT prevalences compared with those reported in 1986 are less apparent for 12 year olds (2.38 in 1986 compared with 2.04 here) than younger ages. As noted already, it may be necessary to consider possible source of sampling bias for these older children.

The percentage of DMFT due to decay (D/DMFT) and the percentage of caries free children (DMFT=0) declines across age groups in a manner which mirrors the D and DMFT indices. Age-specific D/DMFT percentages are higher than d/dmft percentages for 6 to 8-year-olds. However this phenomenon is due largely to the very low mean DMFT values which are the denominators in D/DMFT and which drive the percentage upwards. It is noteworthy that more than 50 per cent of children aged 10 or less are caries free (DMFT=0), but that this percentage reduces rapidly among groups above the age of 11 years.

Table 5: All teeth: age specific prevalence.

Untreated caries in the combined deciduous and permanent dentitions (d+D=1, 2, 3 or 4+) exists for less than 35 per cent of children in the age range 5 to 12 years. The greatest likelihood of untreated decay occurs for 6-year-olds, while some 80 per cent of 11-year-olds have no untreated decay (d+D=0). Based on observations from previous tables, much of this untreated decay among younger children can be attributed to the deciduous dentition. Furthermore, it is noteworthy that the most extensive levels of untreated decay (d+D=4 or more) occur in the younger age groups (5 and 6 years), although the frequency does not exceed ten per cent. Older age groups are less likely to have this severe level of untreated

caries. Again, this age distribution suggests that the greatest contribution comes from the deciduous dentition.

More than 97 per cent of children in the age range 5 to 11 years have no deciduous or permanent teeth missing due to caries. There is a notable reduction in this percentage among children aged 12 or more, and this again suggests a need for caution in assessing the representativeness of these older groups within the sample. Smaller percentages of children avoid fillings, and this clearly is age associated, with older children being more likely to have one or more fillings. Similarly, there is a reasonably consistent decline in the percentage of children with no caries experience in either deciduous or permanent dentition ($dmft+DMFT=0$), from 62.0 per cent at age five to 27.4 per cent at age 12. Nonetheless, this latter statistic serves to demonstrate that more than one quarter of children at any given age in the range 5 to 12 years have no history of dental caries experience in either the permanent or deciduous dentition.

Table 6: Fissure sealants: age-specific prevalence.

Fissure sealants are prevalent in children aged 7 to 12 years, and at those ages the mean number of fissure sealants exceeds the mean number of decayed teeth, being closer to the mean number of DMF teeth. The percentage of children with fissure sealants among those with no caries experience ($DMFT=0$) ranges from 14.6 to 32.0, with no clear age association. The range is similar (15.8 to 32.7 per cent) among those with some caries experience. One interpretation of this pattern is that fissure sealants are being applied with equal frequency to children with and without past caries activity. Another interpretation is that the application of fissure sealants to caries-free children is effectively maintaining them in a caries-free state, and hence serving to diminish differences which otherwise would emerge as these higher risk children age.

Table 8: School Dental Service examinations.

Young children aged five years or less were most likely to receive their first examination with the School Dental Service during 1989, although no more than 70 per cent of any age group received an initial examination. A fairly constant percentage of those aged 7 to 12 years (approximately nine per cent) received their first examination during 1990, and this presumably reflects an underlying rate of residential movement into the State, with subsequent utilization of the School Dental Service.

Table S1: Calculus and Inflammation indices.

These tables contain data which address a specific request of Dental Services (Western Australia). The WA data collection includes an inflammation index, which is a count of the number of dental sextants in which gingival inflammation is observed (minimum=0, maximum=6). Similarly, the calculus index is a count of the number of sextants in which calculus is observed, and has the same range. These tables report indices for 12 and 15-year-olds - two of the requested ages. A third age group (17 years) was requested, however there were no such children sampled during 1989.

Table S2: Age-specific means and standard errors.

These data were derived from tables 3, 4 and 6 and are presented at the specific request of Dental Services (Western Australia). Again, data for 17-year-olds were requested, however there were no such children in the 1989 sample.

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

This figure presents data contained in tables 3, 4 and 5 to summarize the extent of dental health (represented by percentage with no caries experience) and the extent of more extensive untreated decay (represented by the percentage with d+D=4 or more).

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TABLE 1: DEMOGRAPHIC COMPOSITION OF THE SAMPLE

Data for the Child Dental Health Survey are collected from a stratified random sample of children in all Australian States and Territories. In Western Australia the sampling ratio is 1:13. For 1989, this ratio was achieved by retrospectively selecting records from children born on the 29th, 30th or 31st of any month. When the child's date of birth was unknown, one in 13 records were selected. The following table describes the number of records processed from children in Western Australia.

State/Territory: **Western Australia**

Sampling Ratio: **1:13**

Data for period **January-December 1989**

Date of Report: **5th August 1991**

Age (years)	NUMBER OF RECORDS PROCESSED		
	Males	Females	Persons
2	5	4	9
3	36	42	78
4	204	193	397
5	396	414	810
6	340	399	739
7	370	332	702
8	357	339	696
9	324	338	662
10	309	338	647
11	303	283	586
12	215	197	412
13	165	170	335
14	94	63	157
15	2	3	5
Total	3120	3115	6235

TABLE 2: COUNTRY OF BIRTH (INCLUDING ABORIGINALITY)

These data were not collected in Western Australia during the period January-December 1989.

TABLE 3: DECIDUOUS TEETH: AGE-SPECIFIC PREVALENCE¹

This table uses Statewide data to describe the dmft index and its components for individual (year of birth) ages. Indices are calculated from data collected over a 12 month period. Age-specific indices denoted with an asterisk (*) are those in which the relative standard error exceeds 25 per cent, and population estimates of these indices are statistically unreliable.

State/Territory: **Western Australia**

Sampling ratio: **1:13**

Data for period **January-December 1989**

Date of report: **5th August 1991**

Age (years)	Number of children in sample	decayed		dmft		d/dmf %	Children with dmft=0 %
		mean	sd	mean	sd		
≤3	87	0.75	1.64	0.97	1.77	72.1	65.5
4	397	0.75	1.68	1.06	2.13	74.1	65.0
5	810	0.80	1.81	1.27	2.40	64.4	62.5
6	740	0.69	1.44	1.62	2.52	46.2	53.1
7	702	0.42	0.92	1.70	2.39	28.6	51.7
8	696	0.35	0.85	1.71	2.33	25.0	49.0
9	662	0.33	0.72	1.73	2.20	21.8	44.6
10	647	0.23	0.68	1.49	1.98	18.4	48.7
11	586	0.13	0.43	1.05	1.68	15.5	60.9
12	412	0.08	0.32	0.49	1.14	19.5	76.9

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

TABLE 4: PERMANENT TEETH: AGE-SPECIFIC PREVALENCE¹

This table uses Statewide data to describe the DMFT index and its components for individual (year of birth) ages. Indices are calculated from data collected over a 12 month period. Age-specific indices denoted with an asterisk (*) are those in which the relative standard error exceeds 25 per cent, and population estimates of these indices are statistically unreliable.

State/Territory: **Western Australia**

Sampling ratio: **1:13**

Data for period **January-December 1989**

Date of report: **5th August 1991**

Age (years)	Number of children in sample	DECAYED		DMFT		D/DMFT %	Children with DMFT=0 %
		mean	sd	mean	sd		
5	810	*	*	*	*	*	99.3
6	740	0.07	0.34	0.10	0.47	79.5	94.2
7	702	0.10	0.37	0.18	0.55	61.0	88.0
8	696	0.15	0.48	0.43	0.91	38.2	75.9
9	662	0.16	0.52	0.60	1.05	25.8	68.0
10	647	0.19	0.56	0.83	1.24	23.5	58.6
11	586	0.20	0.65	1.24	1.55	14.4	49.3
12	412	0.30	0.70	2.04	2.55	16.5	33.3
13	335	0.35	0.84	2.91	2.91	13.4	21.2
14	157	0.36	0.79	3.62	3.82	13.9	17.2
≥15	5	*	*	3.20	1.30	-	-

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

TABLE 5: ALL TEETH: AGE-SPECIFIC PREVALENCE¹

This table uses Statewide data to describe the combined dmft and DMFT indices and their components for individual (year of birth) ages. Indices are calculated from data collected over a 12 month period. Age-specific indices denoted with an asterisk (*) are those in which the relative standard error exceeds 25 per cent, and population estimates of these indices are statistically unreliable.

State/Territory: **Western Australia**

Sampling ratio: **1:13**

Data for period **January-December 1989**

Date of report: **5th August 1991**

Age (years)	Number of children in sample	% of children with d+D=					% of children with		
		0	1	2	3	≥4	m+M=0	f+F=0	dmft+DMFT=0
≤4	484	71.9	9.7	8.5	2.5	7.4	98.6	88.8	64.7
5	810	70.7	11.0	7.5	3.8	6.9	99.5	82.1	62.0
6	740	66.2	14.7	9.7	3.8	5.5	98.9	66.8	51.6
7	702	71.5	15.2	6.1	4.7	2.4	98.7	57.4	49.1
8	696	70.7	18.1	6.3	2.4	2.4	98.3	49.4	40.4
9	662	70.5	16.9	8.3	2.6	1.7	98.9	42.9	34.7
10	647	73.7	17.3	4.9	2.3	1.7	98.0	41.3	33.2
11	586	79.7	11.9	6.1	*	*	97.3	38.4	32.8
12	412	75.0	16.3	5.6	2.4	*	94.9	34.0	27.4
13	335	77.9	13.4	6.3	*	*	89.9	25.7	20.0
14	157	75.8	16.6	*	*	*	84.1	27.4	17.2
≥15	5	100.0	-	-	-	-	100.0	-	-

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 PREVALENCE¹

This table uses Statewide 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. Indices are calculated from data collected over a 12 month period. Age-specific indices denoted with an asterisk (*) are those in which the relative standard error exceeds 25 per cent, and population estimates of these indices are statistically unreliable.

State/Territory: **Western Australia**

Sampling ratio: **1:13**

Data for period **January-December 1989**

Date of report: **5th August 1991**

Age (years)	Number of children in sample	Number of sealants		CHILDREN WITH DMFT=0		CHILDREN WITH DMFT=1+	
		mean	sd	number	% with F/S=1+	number	% with F/S=1+
6	740	0.09	0.43	697	3.3	43	25.6
7	702	0.38	0.99	618	14.6	84	25.0
8	696	0.76	1.33	528	28.8	168	32.7
9	662	0.80	1.38	450	32.0	212	26.4
10	647	0.60	1.16	379	25.6	268	26.5
11	586	0.41	1.00	289	23.5	297	15.8
12	412	0.42	1.03	137	17.5	275	20.0
13	335	0.49	1.07	71	19.7	264	22.0
14	157	0.71	1.27	27	18.5	130	30.8
15	5	*	*	0	-	5	*

¹ Legend: DMFT - decayed, missing or filled permanent teeth
 F/S - number of fissure sealed teeth
 sd - standard deviation

TABLE 7: IMMEDIATE TREATMENT NEEDS: AGE-SPECIFIC DISTRIBUTION

**These data were not collected in Western Australia
during the period January-December 1989.**

**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 25 per cent, and population estimates of these percentages are statistically unreliable.

State/Territory: **Western Australia**

Sampling ratio: **1:13**

Data for period **January-December 1989**

Date of report: **5th August 1991**

Age (years)	Number of children examined	% of children	
		Previously examined	First examination
≤3	87	29.9	70.1
4	397	31.0	69.0
5	810	58.4	41.6
6	740	88.5	11.5
7	702	91.9	8.1
8	696	92.0	8.0
9	662	91.1	8.9
10	647	91.2	8.8
11	586	91.6	8.4
12	412	92.0	8.0
13	335	94.3	5.7
14	157	98.1	1.9
≥15	5	100.0	-

TABLE S1: CALCULUS AND INFLAMMATION INDICES¹

This table describes the distribution of calculus and inflammation indices among specific ages. These data were requested by Dental Services (Western Australia) as a specific report. Data from all 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 25 per cent, and population estimates of these percentages are statistically unreliable.

State/Territory: **Western Australia**

Sampling ratio: **1:13**

Data for period January-December 1989

Date of report: 5th August 1991

Age (years)	Number of children in sample	<u>CALCULUS INDEX</u>			<u>INFLAMMATION INDEX</u>		
		mean	sd	se	mean	sd	se
12	412	0.27	0.59	0.13	0.74	1.63	0.051
15	5	*	-	-	*	-	-

¹ Legend: sd - standard deviation
 se - standard error

FIGURE 1: PERCENTAGE OF CHILDREN WITH dmft=0, DMFT=0 and d+D=0

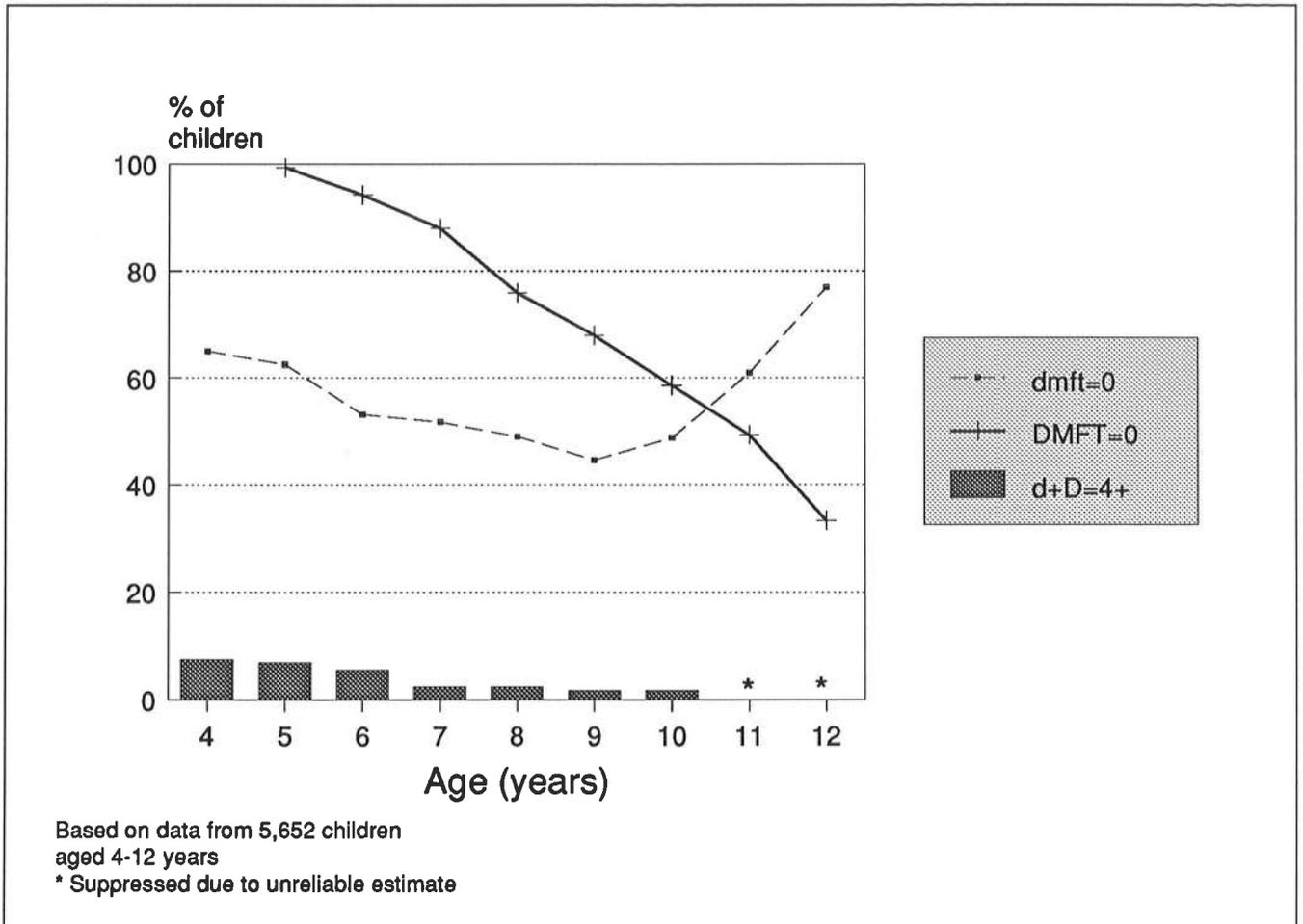


TABLE S2: AGE-SPECIFIC MEANS AND STANDARD ERRORS¹

Data in this table are derived from tables 3, 4 and 6, and contain estimates (including standard errors) of key ages, as requested by Dental Services (Western Australia) for a specific report. Data from all 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 25 per cent, and population estimates of these percentages are statistically unreliable.

State/Territory: **Western Australia**

Sampling ratio: **1:13**

Data for period **January-December 1989**

Date of report: **5th August 1991**

Age (years)	Number of children in sample	dmft			dmft=0		F/S		
		mean	sd	se	%	se	mean	sd	se
5	810	1.27	2.40	0.084	62.5	1.70	-	-	-
8	696	1.71	2.33	0.088	49.0	1.89	0.76	1.33	0.050

Age (years)	Number of children in sample	DMFT			DMFT=0		F/S		
		mean	sd	se	%	se	mean	sd	se
12	412	2.04	2.55	0.13	33.3	2.32	0.42	1.03	0.051
15	5	*	-	-	*	-	*	-	-

¹ Legend: dmft - decayed, missing or filled deciduous teeth
 DMFT - decayed, missing or filled permanent teeth
 F/S - number of fissure sealed teeth
 sd - standard deviation
 se - standard error