

REPORT ON A SURVEY OF THE
INCIDENCE OF DENTAL CARIES IN
NATIONAL SCHOOL CHILDREN IN THE
TULLAMORE URBAN AREA, CO. OFFALY.

1972

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NATIONAL SCHOOL CHILDREN IN THE TULLAMORE URBAN AREA, CO. OFFALY

JANUARY - MARCH, 1972

Although the Health (Fluoridation of Water Supplies) Act, 1960 provided for the fluoridation of Local Authority's water supplies, this had not yet taken place in Tullamore by the end of 1971, although it was due to be introduced by the Spring of 1972.

Consequently it was felt that a survey, similar to that carried out by the Medical Research Council of Ireland in, among other areas, County Offaly in 1962-63, would be of value:

1. to see if there had been any improvement in the standard of dental health in the County following several dental health "weeks",
2. to serve as a base-line survey immediately prior to the fluoridation of the water supplies in the urban areas,
3. to enable the Senior Dental Surgeon to estimate the immediate and future demands liable to be made on the dental services.

The survey was carried out from January to March, 1972. Two dental surgeons undertook the field work - Dr. J.F. Kennedy and Dr. W.M. Thomas. Two dental receptionists acted as recorders, each working with the same dentist at all times, while a third receptionist acted in the role of organising the children to and from the classrooms.

DENTAL EXAMINATION.

The procedure followed in examining the children and grading the degree of caries was the same as that used in the previous survey of 1962-63. The dentists were provided with the necessary equipment

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and charts (Appendix 1) on which the results of the dental examination could be entered.

The system of grading the degree of caries which was adopted was the same as on the previous survey. Six grades were recognised:

- Grade 1. Discolouration of the enamel.
- Grade 2. Pitting of enamel.
- Grade 3. Deep pitting into dentine.
- Grade 4. Cavity into dentine.
- Grade 5. Large cavity penetrating deeply into dentine.
- Grade 6. Cavity with periapical infection, fistula etc.

Grades 1 and 2 cannot be estimated with assurance by tactile and visual procedures and the estimate of grade 3 was not deemed to be capable of accurate assessment within the survey method employed. Only lesions in grades 4, 5 and 6 were recorded, and this was done as one single group referred to as D.M.F. (Decayed, Missing, Filled).

A standard system of recording was adopted to indicate the teeth present, the extent of caries or of filling in an affected tooth, the teeth lost by reason of caries, and those lost for other reasons.

Up to the age of five, it was assumed that any missing deciduous teeth were lost through caries. From five to eight years, it was assumed that any missing deciduous canines or molars were lost through caries. Children with clefts were omitted from the survey.

SIZE OF SURVEY

All six of the National Schools in the urban area of Tullamore were included in the survey. Every child was given the opportunity to be examined and given a consent form to be signed by the parent or guardian. Of the 1690 attending the schools, 1,575 were examined, 88 were absent due to illness or other reasons, and 27 refused

examination, giving an examination/acceptance rate of 93.20%, compared with 84.36% in the previous survey.

Of the 1,575 examined, 13 were not included in the final figures, 11 being outside the age limits of the survey (4 to 13 years) and 2 having repaired clefts.

FIELD WORK

The schools were visited prior to the survey, and its purpose explained to the Principal of each school. Consent forms were issued at this date and collected on the day of examination. The co-operation of the Principals and Teachers was excellent.

Field work commenced on January, 25th, 1972 and was completed on March, 23rd, 1972.

CONSISTENCY OF RECORDING

The two survey teams met twice before the survey started to discuss and practice the way in which it would be carried out in the schools, and to establish some degree of consistency in assessment and recording. During the field work patients were selected at random for re-examination by the other dentist and checked against the original findings. 35 patients were examined twice and the accuracy established at 96.40%.

RESULTS OF EXAMINATION

It should be remembered that this survey, by not including Grades 1, 2 and 3, has not disclosed the maximum number of incipient lesions of these grades. Consequently, the figures recorded are an understatement of the true incidence of the disease to be found in the National School Children in the Tullamore Urban Area.

- TABLE I. Shows the number of children at each year of age examined.
- TABLE II. Shows the average numbers of d.m.f. (decayed, missing, filled) deciduous teeth for ages 4 - 9 years.
- TABLE III. Shows the average numbers of D.M.F. (Decayed, Missing, Filled) permanent teeth for ages 8 - 13 years.
- TABLE IV. Shows the distribution by age and number of d.m.f. deciduous teeth.
- TABLE V. Shows the distribution by age and number of D.M.F. permanent teeth.
- TABLE VI. Shows the average number of D.M.F. (Deciduous and permanent dentitions) for all children.
- TABLE VII. Shows the average number of D.M.F. (Deciduous and permanent dentitions) for boys and girls at each year of age.
- TABLE VIII. Shows the percentage of boys and girls at aged 4 - 9 with numbers of d.m.f. in deciduous dentitions.
- TABLE IX. Shows the percentage of boys and girls at ages 8 - 13 with numbers of D.M.F. in permanent dentitions.
- TABLE X. Shows the average number of decayed, missing and filled in boys and girls in deciduous dentitions.
- TABLE XI. Shows the average number of Decayed, Missing and Filled teeth in boys and girls in permanent dentitions.

TABLE 1.

Number of Children at each year of age examined.

<u>AGE</u>	<u>BOYS</u>	<u>GIRLS</u>	<u>TOTAL</u>
4	52	45	97
5	93	100	193
6	74	109	183
7	114	102	216
8	97	99	196
9	99	85	184
10	82	91	173
11	89	86	175
12	46	67	113
13	15	17	32
TOTALS	<u>761</u>	<u>801</u>	<u>1,562</u>

TABLE 11.

Average numbers of d.m.f. deciduous teeth for ages 4 to 9 years.

<u>AGE</u>	<u>D.M.F.</u>
4	4.00
5	4.79
6	4.83
7	5.52
8	5.77
9	2.73
Average 4 - 9 years	4.70

TABLE 111.

Average numbers of D.M.F. permanent teeth for ages 5 - 13 years.

<u>AGE</u>	<u>D.M.F.</u>
5	0.18
6	0.44
7	1.23
8	2.52
9	3.11
10	3.93
11	4.57
12	5.37
13	6.25
Average 5 - 13 years	2.55

TABLE IV

Distribution by age and number of d.m.f. deciduous teeth of children examined.

BOYS

AGE	NUMBER OF CHILDREN	<u>NUMBER OF d.m.f. TEETH</u>																	
		0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17 or more
4	52	8	6	8	3	7	5	3	2	6	-	3	-	-	-	-	-	1	-
5	93	17	6	8	8	10	6	10	4	4	5	6	5	2	1	1	-	-	-
6	74	5	7	8	5	6	8	10	9	9	5	2	-	-	1	-	-	-	1(20)
7	114	6	7	10	5	11	15	13	12	14	7	7	3	3	1	-	-	-	-
8	97	3	3	4	12	9	16	12	11	5	12	4	2	4	-	-	-	-	-
9	99	17	18	17	21	9	7	4	4	-	1	1	-	-	-	-	-	-	-
10	82	26	15	11	15	6	8	2	1	-	-	-	-	-	-	-	-	-	-
11	89	54	20	6	8	1	-	1	1	-	-	-	-	-	-	-	-	-	-
12	46	43	1	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
13	15	12	1	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TOTALS	761	191	84	73	78	59	65	55	44	38	28	23	10	9	5	1	-	1	1

TABLE IV

Distribution by age and number of D.M.F. deciduous teeth of children examined.

GIRLS

AGE	NUMBER OF CHILDREN	<u>NUMBER OF d.m.f. TEETH</u>																	
		0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17 or more
4	45	13	1	5	4	7	3	3	-	3	-	3	1	-	-	1	1	-	-
5	100	18	10	9	9	7	6	10	4	8	5	5	3	1	-	3	1	1	-
6	109	15	14	10	8	12	13	6	7	10	8	3	2	-	-	-	2	1	-
7	102	9	5	5	13	7	11	10	12	18	4	7	-	1	-	-	-	-	-
8	99	6	5	5	6	11	13	15	7	12	11	4	3	1	-	-	-	-	-
9	85	15	10	19	11	10	6	6	6	2	-	-	-	-	-	-	-	-	-
10	91	39	17	14	8	1	7	2	1	-	2	-	-	-	-	-	-	-	-
11	86	56	8	8	9	4	1	-	-	-	-	-	-	-	-	-	-	-	-
12	67	62	4	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
13	17	15	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TOTALS	801	246	76	76	68	59	60	52	37	53	30	22	9	3	-	4	4	2	-

TABLE V

Distribution by age and number of D.M.F. permanent teeth of children examined.

BOYS

AGE	NUMBER OF CHILDREN	NUMBER OF D.M.F. PERMANENT TEETH																				
		0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20 or more
4	52	52	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
5	95	86	4	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
6	74	59	7	5	2	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
7	114	49	22	22	13	6	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
8	97	14	18	20	14	29	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
9	99	16	12	20	14	30	3	1	2	-	-	-	1	-	-	-	-	-	-	-	-	-
10	82	5	8	10	14	31	6	2	2	1	2	1	-	-	-	-	-	-	-	-	-	-
11	89	6	5	9	12	25	12	6	5	5	-	1	-	1	-	1	-	1	-	-	-	-
12	46	-	-	9	5	7	8	5	5	4	-	-	1	2	-	-	-	-	-	-	-	-
15	15	-	1	-	1	4	2	2	1	-	-	1	-	1	2	-	-	-	-	-	-	-
TOTALS	761	287	77	98	75	133	34	17	15	10	2	3	1	5	2	1	-	1	-	-	-	-

TABLE V.

Distribution by age and number of D.M.F. permanent teeth of children examined.

GIRLS

AGE	NUMBER OF CHILDREN	NUMBER OF D.M.F. TEETH																					
		0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20 or more	
4	45	45	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
5	100	89	4	3	2	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
6	109	79	16	8	3	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
7	102	51	13	12	16	8	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
8	99	13	9	19	21	32	2	2	1	-	-	-	-	-	-	-	-	-	-	-	-	-	
9	85	2	7	12	11	35	10	4	2	1	-	-	1	-	-	-	-	-	-	-	-	-	
10	91	1	3	9	16	32	13	6	4	4	2	-	-	-	-	-	-	-	-	1	-	-	
11	86	5	3	2	14	21	14	11	5	4	2	2	1	-	-	-	1	1	-	-	-	-	
12	67	3	3	5	4	14	9	9	3	5	2	3	2	3	1	1	-	-	-	-	-	-	
13	17	1	-	1	3	-	3	2	2	1	2	1	-	-	-	-	1	-	-	-	-	-	
TOTALS	801	289	58	71	90	147	53	34	17	15	8	6	4	3	1	1	1	1	1	1	1	-	-

TABLE VI

Average number of D.M.F. (deciduous and permanent dentitions) for all children.

<u>AGE</u>	<u>DECIDUOUS DENTITION</u>	<u>PERMANENT DENTITION</u>
4	4.00	0.00
5	4.79	0.18
6	4.83	0.44
7	5.52	1.23
8	5.77	2.52
9	2.73	3.11
10	1.76	3.93
11	0.83	4.57
12	0.12	5.37
13	0.25	6.25

TABLE VII

Average number of D.M.F. (deciduous and permanent dentitions) for Boys and Girls at each year of age.

AGE	DECIDUOUS DENTITION		PERMANENT DENTITION	
	BOYS	GIRLS	BOYS	GIRLS
4	4.04	3.96	0.00	0.00
5	4.81	4.78	0.11	0.24
6	5.09	4.64	0.36	0.49
7	5.70	5.33	1.22	1.25
8	5.88	5.69	2.34	2.70
9	2.60	2.88	2.64	3.68
10	1.94	1.59	3.49	4.33
11	0.82	0.84	4.34	4.86
12	0.15	0.09	5.07	5.58
13	0.40	0.12	6.47	6.06

TABLE VIII

Percentage of Boys and Girls at ages 4 - 9 with numbers of d.m.f. in deciduous dentitions.

BOYS

AGE	NONE	1 - 4	5 - 9	10 OR MORE	TOTAL
4	15.39	46.15	30.77	7.69	100.00
5	18.28	34.41	31.18	16.13	100.00
6	6.76	35.14	52.70	5.40	100.00
7	5.26	28.95	53.51	12.28	100.00
8	3.09	28.87	57.73	10.31	100.00
9	17.17	65.66	16.16	1.01	100.00

GIRLS

AGE	NONE	1 - 4	5 - 9	10 OR MORE	TOTAL
4	28.89	37.78	20.00	13.33	100.00
5	18.00	35.00	33.00	14.00	100.00
6	11.92	40.37	40.37	7.34	100.00
7	8.82	29.42	53.92	7.84	100.00
8	6.06	27.27	58.59	6.08	100.00
9	17.65	58.82	23.53	0.00	100.00

TABLE IX

Percentage of Boys and Girls at ages 8 - 13 with numbers of D.M.F. in permanent dentitions

BOYS

AGE	NONE	1 - 4	5 - 9	10 OR MORE	TOTAL
8	14.43	83.51	2.06	0.00	100.00
9	16.16	76.77	6.06	1.01	100.00
10	6.10	76.83	15.85	1.22	100.00
11	6.74	57.30	31.46	4.50	100.00
12	0.00	45.65	47.83	6.52	100.00
13	0.00	40.00	33.33	26.67	100.00

GIRLS

AGE	NONE	1 - 4	5 - 9	10 OR MORE	TOTAL
8	13.13	81.82	5.05	0.00	100.00
9	2.35	76.47	20.00	1.18	100.00
10	1.10	65.93	31.87	1.10	100.00
11	5.81	46.52	41.86	5.81	100.00
12	4.48	38.81	41.79	14.92	100.00
13	5.88	23.53	58.82	11.77	100.00

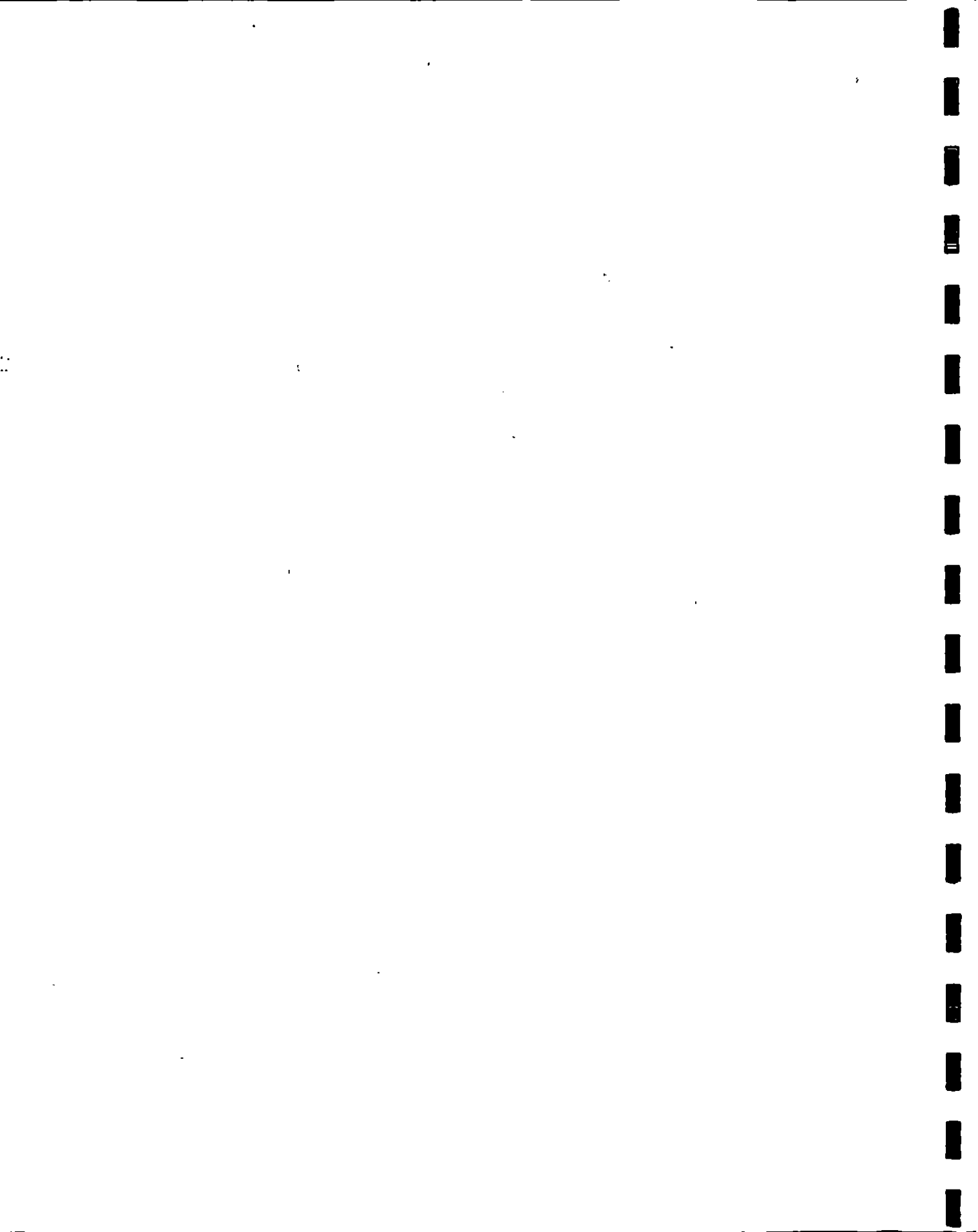


TABLE X

The average number of decayed, missing and filled teeth in boys and girls in deciduous dentitions.

<u>AGE IN YEARS</u>	<u>BOYS AVERAGE</u>	<u>GIRLS AVERAGE</u>
4	4.04	3.96
5	4.81	4.78
6	5.09	4.64
7	5.70	5.32
8	5.88	5.67
9	2.60	2.88
10	1.94	1.59
11	0.82	0.84
12	0.15	0.09

TABLE XI

Average number of decayed, missing and filled teeth in boys and girls in permanent dentitions.

<u>AGE IN YEARS</u>	<u>BOYS AVERAGE</u>	<u>GIRLS AVERAGE</u>
6	0.36	0.49
7	1.22	1.25
8	2.34	2.70
9	2.64	3.68
10	3.49	4.33
11	4.34	4.86
12	5.07	5.58
13	6.47	6.06

INTERPRETATION OF FIGURES CONTAINED.

COMPARISON WITH PREVIOUS SURVEY.

The figures at Table VII (average number of D.M.F. in deciduous and permanent dentitions for boys and girls at each year of age) are very similar to the figures obtained in the 1962 - 63 survey, i.e. despite any dental campaigns of the past, and the labours of the dental officers over nine years, the overall position has remained the same, with no improvement in the dental health of the children.

In the 1962-63 survey, no difference was found between the children living in the urban areas of the county and those living in the rural areas. It would be reasonable therefore to assume that the figures obtained in this survey are representative of the county as a whole.

Hence:

If 1,562 children have 3,586 decayed deciduous teeth, then 10,696 (National School population, in Co. Offaly 1970) will have

24,555 decayed deciduous teeth

Likewise, if 1,562 children have 2,562 decayed permanent teeth, then 10,696 will have

17,543 decayed permanent teeth.

i.e. $24,555 + 17,543 = \underline{42,098}$ decayed deciduous and permanent teeth.

If we add half again to include grades 1, 2 and 3, (a conservative estimate) we reach the staggering total of -

42,098 + 21,049 = 63,147 decayed teeth in children alone.

This takes no account of the adults in the county who are eligible for dental treatment.

With existing staff (1 Senior Dental Officer, 1 Permanent Dental Officer, 1 Temporary Dental Officer) it would take over TEN years to do this work.

At the same time, each child develops on average two new cavities each year, i.e. $10,696 + 10,696 = 21,392$ NEW cavities per annum. If three dentists do 6,000 fillings each year, we would still be losing ground at the rate of $21,392 - 6,000 = 15,392$ per annum.

To deal with 21,392 new cavities per annum, we would require a staff of 10 dental officers at least, if they are to do other work apart from fillings (prevention, orthodontics, extractions etc.) This would still not leave any staff over to deal with the eligible adult population.

Until adequate staff can be found, the dental services in Co. Offaly must remain in a low profile, being mainly a "relief of pain" service.

W.M. Thomas B.D.S. (Q.U.B.)
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CO. OFFALY.

