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Caries Experience in 8-, 12- and 15-year old Westphalian Children from 1990 to 2001

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Objectives

The aims of the study were to evaluate the prevalence of dental caries in the permanent dentition in 8-, 12- and 15-year-old children attending different schools in the Ennepe-Ruhr-District (EN), Westphalia, in 2001, and to compare the prevalence of caries in these age groups with those found in previous surveys in 1990 and 1995.



Material and Methods

- A stratified proportionate random sampling design was used with the size of schools and gender as the main stratifying factors (table 1).

	Age group		
	8	12	15
1990	456	497	486
1995	378	392	405
2001	570	755	656

Table 1: Number of subjects examined in 1990, 1995 and 2001.

- For the 1990, 1995 and 2001 survey clinical examinations were carried out by the same dentist (H.S.).
- Caries was diagnosed at the cavitation level (WHO 1987).
- The DMFT was calculated (SAS data base) and comparisons were made (Tukeys student range test; p value: 5%).

Results

- In 8-yr-olds the main DMFT remained unchanged over the ten-year period with 0.3 DMFT while the percentage of caries free children increased from 80.7% to 86% (table 2, figure 1).
- In 12-yr-olds caries declined from 2.1 DMFT in 1990 to 0.9 DMFT in 2001. The percentage of caries free children increased from 35% in 1990 to 86.6% in 2001 (table 2, figure 1).
- In 15-yr-olds a DMFT of 4.3 was revealed in 1990 and of 1.6 in 2001. The percentage of caries free children in 1990 and 2001 improved from 19.8 to 48% (table 2, figure 1).

Age group	1990	1995	2001
	caries free %		
8	80.7	89.0	86.0

12	35.0	50.0	86.6
15	19.8	41.0	48.0

Table 2: Percentage of 8-, 12- and 15-year-olds without caries experience in 1990, 1995 and 2001.

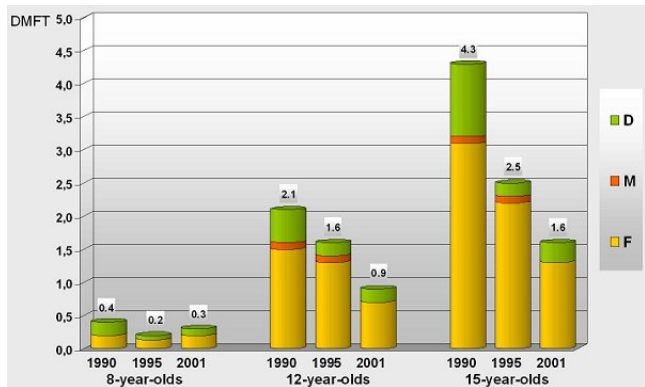


Figure 1: Mean DMFT scores by age groups, with D, M and F components in 1990, 1995 and 2001.

- Comparing different educational levels, caries prevalence of 12-yr-olds visiting grammar schools (GS) declined from 1.8 to 0.3 DMFT, and from 3.2 to 1.0 DMFT in 15-yr-olds within ten years (table 3, 4). Children visiting secondary modern schools (SMS) showed a declining prevalence from 2.5 to 1.8 DMFT in 12-yr-olds, and from 5.2 to 2.7 DMFT in 15-yr-olds. In students of junior highschools (JHS) the DMFT decreased from 2.2 to 0.8 in 12-yr-olds and from 4.3 to 1.3 DMFT in 15-yr-olds.

	1990		1995		2001	
	DMFT	SD	DMFT	SD	DMFT	SD
<i>12-year olds</i>						
Secondary modern schools (SMS)	2.5*	2.5	2.6	2.7	1.8*	2.5
Junior highschools (JHS)	2.2*	2.3	1.3*	2.0	0.8*	1.5
Grammar schools (GS)	1.8*	2.3	1.0*	1.7	0.3*	0.9
<i>15-year olds</i>						
Secondary modern schools	5.2*	4.0	4.0*	4.4	2.7*	3.1
Junior highschools	4.3*	4.1	2.0*	2.4	1.3*	2.4
Grammar schools	3.2*	3.5	1.9*	2.9	1.0*	1.7

statistically significant overtime period* and between schooltypes; p < 0.05

Table 3: Mean DMFT by age groups and schooltype in 1990, 1995 and 2001.

	12-yr-olds			15-yr-olds		
	SMS	JHS	GS	SMS	JHS	GS
1990	90	23	171	146	198	140
1995	109	168	115	111	174	120
2001	190	362	203	203	225	201

Table 4: Number of subjects investigated by schooltype.

- The skewed distribution of caries illustrated by the Lorenz curves showed in 12-yr-olds attending grammar schools that 76% of the DMFT were concentrated in 9% of these children at a cut-off point < 1 DMFT, and in 12-yr-olds at secondary modern schools nearly 85% of the caries affected teeth were concentrated in 30% of the children at a cut-off point > 2 DMFT (figure 2).

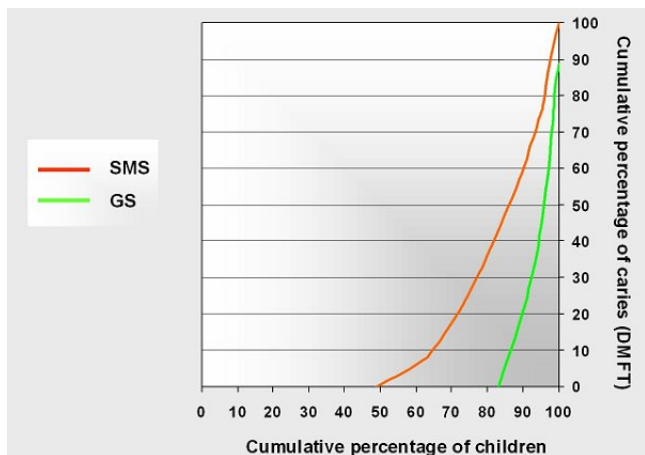


Figure 2: Lorenz curves of 12-year-olds attending grammar schools and secondary modern school.

Conclusions

During the last ten years a substantial caries decline was observed in Westphalian schoolchildren, but this improvement in oral health differed significantly related to the educational level.

This poster was submitted by Dr. Helga Senkel.

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Poster Faksimile:

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Caries Experience in 8-, 12- and 15-Year-Old Westphalian Children from 1990 to 2001

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INTRODUCTION

A school based preventive programme whereby dentists or dental auxiliaries provide oral health care for children attending different schools, has been in operation in parts of Germany for about fifteen years. The preventive programme consists of dental health education, supervised instruction in oral hygiene, diet control and use of fluoride toothpaste (1100 - 1500 ppm F⁻). Information on a declining prevalence in dental caries from countrywide representative surveys as well as from local studies are limited.

Table 1: Number of subjects examined in 1990, 1995 and 2001

	Age group		
	8	12	15
1990	456	497	486
1995	378	392	405
2001	670	755	666

Table 2: Percentage of 8-, 12- and 15-year-olds without caries experience in 1990, 1995 and 2001

Age group	1990	1995	2001
8	80.7	89.0	86.0
12	35.0	50.0	86.6
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Figure 1: Mean DMFT scores by age groups, with D, M and F components in 1990, 1995 and 2001

Table 3: Mean DMFT by age groups and schooltype in 1990, 1995 and 2001

	1990		1995		2001	
	DMFT	SD	DMFT	SD	DMFT	SD
12-year-olds						
Secondary modern schools (SMS)	2.8*	2.5	2.6	2.7	1.8*	2.5
Junior highschools (JHS)	2.2*	2.3	1.3*	2.0	0.8*	1.5
Grammar schools (GS)	1.8*	2.3	1.0*	1.7	0.3*	0.9
15-year-olds						
Secondary modern schools	5.2*	4.0	4.0*	4.4	2.7*	3.1
Junior highschools	4.3*	4.1	2.0*	2.4	1.3*	2.4
Grammar schools	3.2*	3.6	1.9*	2.9	1.0*	1.7

statistically significant over time period* and between schooltypes; p < 0.05

Table 4: Number of subjects investigated by schooltype

	12-yr-olds			15-yr-olds		
	SMS	JHS	GS	SMS	JHS	GS
1990	90	23	171	146	198	140
1995	109	168	115	111	174	120
2001	190	362	263	263	225	261

Figure 2: Lorenz curves of 12-year-olds attending grammar schools and secondary modern school

AIMS

- The aims of the study were to evaluate the prevalence of dental caries in the permanent dentition in 8-, 12- and 15-year-old children attending different schools in the Ennepe-Ruhr-District (EN), Westphalia, in 2001, and
- to compare the prevalence of caries in these age groups with those found in previous surveys in 1990 and 1995.

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RESULTS AND DISCUSSION

- In 8-yr-olds the main DMFT remained unchanged over the ten-year period with 0.3 DMFT while the percentage of caries free children increased from 80.7% to 86% (table 2, figure 1).
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- Comparing different educational levels, caries prevalence of 12-yr-olds visiting grammar schools (GS) declined from 1.8 to 0.3 DMFT, and from 3.2 to 1.0 DMFT in 15-yr-olds within ten years (table 3, 4). Children visiting secondary modern schools (SMS) showed a declining prevalence from 2.6 to 1.8 DMFT in 12-yr-olds, and from 5.2 to 2.7 DMFT in 15-yr-olds. In students of junior highschools (JHS) the DMFT decreased from 2.2 to 0.8 in 12-yr-olds and from 4.3 to 1.3 DMFT in 15-yr-olds.
- The skewed distribution of caries illustrated by the Lorenz curves showed in 12-yr-olds attending grammar schools that 76% of the DMFT were concentrated in 9% of these children at a cut-off point <1 DMFT, and in 12-yr-olds at secondary modern schools nearly 85% of the caries affected teeth were concentrated in 30% of the children at a cut-off point <2 DMFT (figure 2).

CONCLUSION

- During the last ten years a substantial caries decline was observed in Westphalian schoolchildren, but this improvement in oral health differed significantly related to the educational level.