

# Caries experience of Ghanaian school children in rural and urban areas

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## Introduction

In contrast to Germany, there are no regular oral health surveys in Ghana that investigate the caries incidence in public facilities<sup>1</sup>. The last cross-sectional examination was published in 2001, resulting in a dmft/DMFT of 1.11 among 7 to 9-year-olds and a DMFT of 0.4 among 12-year-olds<sup>2</sup>. In order to generate screening examinations and to establish diagnoses in the public health area, the present study was carried out in Ghana in accordance with German law (SGB V, §21)<sup>3</sup>.

## Aim of the study

The purpose was to give an overview of the oral health status of Ghanaian pre-school and school-aged children in rural and urban areas between the ages of 3 and 12 years in the southern area of the country. The study was carried out in 2017 and focused on identifying differences between these areas in terms of caries prevalence.

## Material and Methods

The study was designed as a socio-epidemiological cross-sectional survey to include Ghanaian children and adolescents between 3 to 4, 6 to 7, and 12 to 13 years of age. The participants were recruited from nurseries and schools in Accra (Greater Accra Region), representing urban and Kpando (Volta Region), representing rural areas of the country. The dental examination was conducted according to WHO criteria (1987)<sup>4</sup> by one standardised investigator. The total number of decayed, missing, and filled primary teeth (dmft) for 3, 4, 6, and 7-year-olds or permanent teeth (DMFT) for 12 to 13-year-olds were recorded. Accordingly, from the generated dataset, the ratio of primary healthy dentitions as well as the treatment-need-index were calculated.



Fig. 1: Accra (Greater Accra Region)



Fig. 2: Kpando (Volta Region)



Fig. 3: Dental examination

## Results

A total number of 313 children (165 urban in Accra (A.), 148 rural in Kpando (K.)) were recruited. The distribution of participants according to age was as follows: 3 to 4 years (n=98), 6 to 7 years (n=102), and 12 to 13 years (n=113). The average dmft among 3 to 4-year-old children was 0.9 in urban and 1.5 in rural areas, and among 6 to 7-year-olds 0.8 and 1.4, respectively. The average DMFT among 12 to 13-year-old adolescents was 0.9 and 0.3, respectively.

Age Group	3 – 4		6 – 7		12 – 13	
Area	A	K	A	K	A	K
Mean	0.9	1.5	0.8	1.4	0.9	0.3

Table 1: dmft + DMFT scores according to age group

Generally, among the first age group, more children showed a primary healthy dentition than a dentition with carious lesions (ratio approximately 60 to 40%). The percent distribution of primary healthy dentitions vs. dentitions in need of treatment among 6 and 7-year-olds showed more children in need of treatment and fewer children with primary healthy dentition in rural areas compared to urban areas. Although 12 to 13-year-olds in urban areas had more caries than in rural areas, both areas commonly had more primary healthy dentitions than dentitions in need of treatment on a percentage basis.

Age Group	3 – 4				6 – 7				12 – 13			
	A		K		A		K		A		K	
State of caries disease	p.h.	t.n.	p.h.	t.n.	p.h.	t.n.	p.h.	t.n.	p.h.	t.n.	p.h.	t.n.
Absolute Numbers	34	23	26	15	30	15	27	30	35	28	38	12
Percentage	60%	40%	63%	37%	67%	33%	47%	53%	56%	44%	76%	24%

Table 2: Distribution of primary healthy dentitions (p.h.) and those in need of treatment (t.n.)

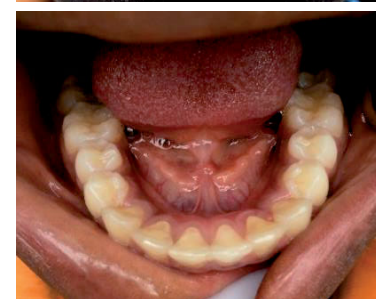


Fig. 4 and 5: Example of a primary healthy dentition



Fig. 6 and 7: Example of a dentition in need of treatment

## Conclusion

The average dmft/DMFT-scores of Ghanaian children and adolescents ranges between 0.3 and 1.5. Whereas children from rural areas in the age groups 3 to 4 and 6 to 7 years consistently had more caries than those from urban areas, adolescents in urban areas had a higher DMFT than those in rural areas. The overall ratio of primary healthy dentitions vs. dentitions in need of treatment was 61 to 39% (treatment-need-index 39%).

## References

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