

# THE CONCEPT OF HEALTH PROMOTING SCHOOL IN RELATION TO ORAL HEALTH IN EAST LONDON, UK

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## ABSTRACT

*An ecological study design was adopted for this study to assess whether the health promoting school concept in state secondary schools of three boroughs of East London (Tower Hamlets, Newham and City and Hackney) was related to good oral health. Representative data from secondary schools to compare disease frequencies between different groups during the same period of time (2005) were used. Association between health promoting schools and measure of dental caries was assessed. All schools in the three boroughs of Tower Hamlets, Newham and City and Hackney were included in the sample. Non-parametric statistical test such as Mann-Whitney test was used to test statistical significance of associations. Analysis was done using SPSS package (version 13.0).*

*The results showed that the median DMFT of second molars was not associated with healthy schools ( $P=0.280$ ). On the other hand, the association between the median DMFT of mouth and healthy schools was statistically significant ( $P=0.036$ ).*

*The study shows that health promoting school is not related to good oral health. There is a need for further research in this subject as well as development of appropriate instruments for the measurement of healthy school status. Oral health policies should also be incorporated with general health policies for achieving good oral health in healthy schools.*

**Key words:** Health promoting school; effectiveness; health promotion; oral health education; schools

## INTRODUCTION

Oral health is fundamental to general health and well-being. It is defined as the standard of oral and related tissues which enables an individual to eat, speak and socialise without active disease, discomfort or embarrassment and which contributes to general well being <sup>1</sup>. Poor oral health significantly impacts on quality of life, causing pain and embarrassment, limiting function and being costly to treat <sup>2</sup>. Worldwide, more than 50 million hours annually are lost from school due to oral diseases <sup>3</sup>.

While there has been improvement in oral health of children in the last few decades, a substantial proportion of children in many developing countries are affected by tooth decay <sup>4</sup>, and most decay is left untreated due to limited access to oral health services. The occurrence of gum disease is high among older children and adolescents, with 50% to 100% of 12-years-old children having the signs of gum inflammation <sup>4</sup>.

Dental trauma, which usually affects the upper front teeth, may result from accidents, sport related injuries, violence, and epilepsy. Dental erosion (tooth wear), linked to increased consumption of carbonated and fruit drinks, is becoming a problem in some countries <sup>5</sup>. Oral cancer, on the other hand, is on the increase, with a 5-year survival rate of less than 50% <sup>6</sup>. Its prevalence varies greatly between countries. Cigarette smoking and "spit or chewing" tobacco use among adolescents in the US has been increasing each year, with 35% of those who use tobacco having tobacco-related oral lesions. Other tobacco containing products that are marketed directly at children and adolescents include pan masala, bidis and ghutka (The WHO Tobacco Free Initiative, 2003) which have attractive packaging and flavours, thus often mistaken as sweets. Children who start consuming these products at an early age may therefore have an increased risk of oral cancer in later life. Health promotion should be targeted in schools to reduce such risks.

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The school provides an ideal setting for promoting oral health because over one billion children worldwide are reached and, through them, families and community members<sup>7</sup>. The school years cover a period that runs from childhood to adolescence. Children are receptive during this period; the earlier the habits are established, the longer lasting the impact. Health education may be more effective in promoting oral health in children provided there is supportive environment. A health promoting school is one that constantly strengthens its capacity as a healthy setting for living, learning and working. It follows all five principles of Ottawa Charter 1986 (Building healthy public policy, Creating supportive environment, Improving personal skills, Strengthening community actions and Re-orienting health services).

## METHODOLOGY

This ecological study was carried out in the East London Boroughs of Tower Hamlets, Newham, and City and Hackney.

The population studied were state secondary schools in these three London boroughs. All schools were eligible to participate in the study. Schools were excluded on the basis of unavailability of data, in particular, data on healthy school and oral health status. This study included twenty four state secondary schools in the London boroughs of Tower Hamlets, City and Hackney and Newham.

Clinical data which was previously collected by RELACHS in 2005 was used. Healthy school status information in 2005 was collected from official school websites. Non-clinical data was collected from the schools' respective Ofsted Inspection Reports, their official websites, 'wired for health' website and then was confirmed by the regional healthy school coordinators. Clinical data comprised median DMFT of whole mouth, median DMFT of second molars. The DMFT data was collected using the BASCD protocol. The DMFT of 15 year old school children were used in the study and were aggregated into the school median DMFT. DMFT of the mouth reflected the whole life pattern of oral health of the children whereas the DMFT of second molars reflected the secondary school life of the children as these teeth erupt only in secondary school age.

Non-Clinical data included type of the schools, healthy school status and religious schools. Schools were divided into three sub groups in relation to gender; mixed, girls only and boys only. Schools were also divided into two subgroups; having healthy school status and not having healthy school status.

Data analysis included descriptive statistics. Non-parametric statistical test such as Mann-Whitney test was used to assess the association between oral health and having healthy school status. The level of significance was set at 5%. For the statistical analysis, the data was converted into SPSS package (version 13.0).

## RESULTS

Complete information was obtained for twenty four state secondary schools. The frequency distribution of type of schools is presented in Table 1. Schools were assessed on the following: gender specific, healthy school status and whether these schools were secular or religious. The percentage of mixed schools were in majority (54.2%; n=13) while the female schools were 29.2% (n=7) and male schools were 16.4% (n=4). Schools having healthy school status were seven out of twenty four. The number of religious schools were smaller than the secular schools (n=6). (Table 1)

Table 2 a. presents the median DMFT of the second molars and whole mouth for schools with healthy school status. The school's median DMFT (second molar) was 0.37 and ranged from 0.26 to 0.62 whereas median DMFT (mouth) was 1.64 ranging from 1.28 to 1.83. On the other hand, Table 2 b. presents the median DMFT of second molars and whole mouth of schools having no healthy school status. The median DMFT in these schools was 0.2 and ranged from 0.11 to 0.51 while median DMFT (mouth) was 1.29 ranging from 0.73 to 1.80. In this study, the association between the median DMFT (second molar and mouth) and healthy school status was assessed using Mann-Whitney statistical test (Table 3). Caries experience in second molars showed no association with healthy school status ( $P=0.280$ ) while on the other hand, an association was seen between DMFT (mouth) and healthy school status ( $P=0.036$ ).

The results showed association between healthy schools and DMFT (mouth) whereas no association was observed in the association between healthy schools and DMFT (second molar).

TABLE 1: FREQUENCY DISTRIBUTIONS OF TYPE OF SCHOOL OF 24 STATE SECONDARY SCHOOLS IN NEWHAM, TOWER HAMLETS AND CITY AND HACKNEY (n=24)

DMFT	Mean	Minimum	Quartiles			Maximum
			25	50	75	
Second molar	0.3024	0.11	0.1750	0.3200	0.4050	0.51
Mouth	1.26	0.73	1.045	1.29	1.525	1.80

TABLE 2-A: FREQUENCY DISTRIBUTIONS OF DMFT OF SECOND MOLAR AND DMFT OF MOUTH IN A SAMPLE OF 24 STATE SECONDARY SCHOOLS IN NEWHAM, TOWER HAMLETS AND CITY AND HACKNEY (n=24) SCHOOLS WITH HEALTHY SCHOOL STATUS (n=7)

DMFT	Mean	Mini-mum	Quartiles			Maxi-mum
			25	50	75	
Second molar	0.3886	0.26	0.33	0.37	0.41	0.62
Mouth	1.58	1.28	1.35	1.64	1.80	1.83

TABLE 2-B: FREQUENCY DISTRIBUTIONS OF DMFT OF SECOND MOLAR AND DMFT OF MOUTH IN A SAMPLE OF 24 STATE SECONDARY SCHOOLS IN NEWHAM, TOWER HAMLETS AND CITY AND HACKNEY (n=24) SCHOOLS WITH NO HEALTHY SCHOOL STATUS (n=17)

Variable	Fre-quency (n)	Relative frequency (%)
Mixed	13	54.2
Male only	4	16.7
Female only	7	29.2
Total	24	100.0
Healthy school status	7	29.2
No healthy school status	17	70.8
Total	24	100.0
Secular school	18	75.0
Religious school	6	25.0
Total	24	100.0

TABLE 3-A: RESULTS OF MANN-WHITNEY TEST FOR THE ASSOCIATION OF HEALTHY SCHOOLS AND CARIES EXPERIENCE (DMFT) IN THE SAMPLE OF 24 STATE SECONDARY SCHOOLS

		n	Mean rank	Sum of ranks	P-value
DMFT (molar)	Healthy school status	7	1493	104.50	0.280
	No healthy school status	17	11.50	195.50	
Total		24			

TABLE 3-B: RESULTS OF MANN-WHITNEY TEST FOR THE ASSOCIATION OF HEALTHY SCHOOLS AND CARIES EXPERIENCE (DMFT) IN THE SAMPLE OF 24 STATE SECONDARY SCHOOLS

		n	Mean rank	Sum of ranks	P-value
DMFT (molar)	Healthy school status	7	17.21	120.50	0.036
	No healthy school status	17	10.56	179.50	
Total		24			

## DISCUSSION

Ecological studies have been conducted by social scientists for more than a century<sup>8</sup> and have been used extensively by epidemiologists in many research areas. Ecological studies usually rely on data collected for other purposes and data on different exposures. However, socio-economic factors may not be available. An ecological bias results if inappropriate conclusions are drawn on the basis of ecological data. The association observed between variables at the school level does not necessarily represent the association that exist at the individual level. Ecological studies, however, have often provided a fruitful start for more detailed epidemiological work<sup>9</sup>.

The results obtained in this study are inconsistent. There could be several reasons for this. One of them could be improper measurement of criteria for healthy school in England. Currently the whole school approach (National Healthy School Programme), UK, is focusing on four core themes which includes personal, social and health education, healthy eating, physical activity and emotional well being. In relation to injuries and prevention of dental trauma, a wide range of actions and policies are possible. Although health policies have been introduced in many schools, the outcomes of these policies have not been observed. For example, the level of caries has not been observed after the implementation of healthy eating policy. Caries experience reflects the dietary intake of pupils in the secondary school. Dietary habits are established before school years. Therefore, the child may have caries on entering school. Health promoting school may have an influence to improve oral health of the children with no caries experience. However, a health promoting school might not have an influence on the oral health of children having caries.

The mean DMFT of molars was high in schools. There are several causes of this high level of median

DMFT which are either the availability of food products in the school canteens which are high in non-milk extrinsic sugars or the vending machines sell chocolates and sweets along with fizzy drinks. Another major reason could be the lack of oral health awareness in the pupils. Oral health awareness can be achieved in children by teacher training in oral health awareness programmes for children and their community. The increased DMFT of molars could be the reason that the outputs of the health policies were not measured. DMFT of the whole mouth was not explanatory for the secondary school aged pupils. This DMFT could possibly be related to the intake effect in schools. This means, that the children who joined secondary school could be having carious teeth at the time of their admission and not during the secondary school years. The intake effect is significant to the life pattern of children which shows the potential explanation about caries level of the mouth while the DMFT of the second molar explains the secondary school oral health pattern of the pupils.

Interestingly, the whole mouth caries experience in this project was related to health promoting school ( $P=0.036$ ). This does not refer to the period of life in secondary schools. The findings in relation to mouth may be explained by reverse causality; i.e. health promoting schools were first implemented in unhealthy schools. Oral health is established at early childhood and pre school years. Healthy oral habits are taken up by the child if educated well. If oral health is not maintained, the child may enter the school with high DMFT and oral related problems. This would in turn affect the child's school life as well as the school's overall DMFT. If a child has caries experience before school due to poor oral habits, he might have increased DMFT in secondary school.

Oral health policies are important to be incorporated alongside health policies in schools to improve oral health. In UK, there is no oral health policy in healthy schools. Examples of healthy schools incorporating oral health policies can be taken from the schools in Denmark<sup>10</sup> and China<sup>11</sup>. By introducing oral health promotion in schools (health promoting schools), ideally, the oral health of children should be improved with a decrease in caries level as well as DMFT. Policies are possible for the reduction in dental caries and improvements in oral health. Examples

of such policies are healthy food policies, provision of healthy food in canteens, canteen staff training, provision of healthy beverages and food in vending machines at school, provision of safe drinking water also used for brushing teeth. New hypothesis based on the current findings could be the implications of oral health policies in current healthy school criteria.

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