

PREVALENCE OF DENTAL CARIES AMONG 5-14 YEARS OLD POOR LOCALITY SCHOOL CHILDREN OF LAHORE

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ABSTRACT

The aim of study was to investigate the Prevalence of dental caries among 5-14 years old poor locality school children of Lahore Pakistan. Sixteen hundred and seventy three poor locality school children aged 5-14 years; 1113, 5-11 years old and 560, 12-14 years old were examined for dental caries and oral hygiene status using the World Health Organization criteria for diagnosis of caries and oral hygiene status. The overall caries prevalence among the study group was 71%. The mean df (decayed and filled primary teeth) score in the 5-11 years age group was 2.98. The mean DMFT (decayed, missing and filled teeth) score among 12-14 years old age group it was 3.70. Only 14% of the poor locality school children had good oral hygiene with corresponding mean df of 1.33 and mean DMFT score of 1.97, followed by 31% having fairly good oral hygiene, 26% having poor oral hygiene. 29% of children had a very poor oral hygiene with corresponding mean df score of 2.96 and mean DMFT score of 3.31. The results of the study emphasize the need for re-orientation of oral health services and programs to a more preventive approach. Serious efforts need to be made by focusing on this neglected group of population.

Key words: Dental caries, poor locality school children, Prevalence of dental caries, DMFT, df

INTRODUCTION

Dental caries is a chronic disease of hard tissues of the tooth, characterized by alternating phases of demineralization and remineralization, which can lead to cavitations and eventually tooth loss.¹ Dental caries affects 60% - 90 % of school children and a vast majority of adults across the globe and is known to restrict activities in schools, at work and at home, causing millions of school and work hours to be lost each year all over the world. Moreover the physical, functional, social, psychological and emotional impacts of dental caries have been well documented to diminish the quality of life.^{2,3,4}

In most developing countries prevalence of dental caries is on the rise, probably because oral diseases are the fourth most expensive diseases to treat and the access to services is very limited.⁵ According to World Health Organizations pathfinder survey which examined over nine thousand individuals in twenty one districts of Pakistan, dental caries was found the single most common chronic childhood disease in the country being 5 times more common than Asthma and 7 times more common than hay fever.⁶ Khan reported that more than 50% of children between ages of 12-15 years are caries free however on the negative side 97% of all carious lesions are untreated.⁷ Unfortunately no study regarding prevalence of dental caries

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has been conducted in Lahore specifically targeting the large amount of children studying at poor locality schools.

METHODOLOGY

This study was carried out in two phases in September-October 2011. In the first phase data of all poor locality schools affiliated with government of Punjab, board of Intermediate and Secondary education (BISE) Lahore was obtained from the education department government of Punjab. A multistage random sampling technique was then adopted which consisted of following stages:

- At the first stage a random selection between Lahore City and Lahore Cantt from the data of Lahore district was made.
- Once Lahore city was selected the second hierarchy of structure was considered i.e. the poor locality schools. Out of the 34 poor locality schools registered with Government of Punjab (Board of Intermediate and Secondary Education) Lahore, 10 were selected using a random number technique.
- A formal permission was then taken by the Incharge of each poor locality school by explaining the complete study protocol and the benefits. Before starting the actual study a pilot study was conducted to overcome any issues in actual study. In this pilot study a total of 40 students were recruited and examined by the calibrated dentists for the presence of dental caries using the WHO criteria for recording caries.⁸ The parameters measured were df and DMF. This pilot study was conducted over a period of three days in one of the selected schools.
- In the second phase all sixteen hundred and seventy three poor locality school children aged 5 to 14 years were included in the study from the 10 selected schools. The age distribution of children was based on the index age groups as per World Health Organization guidelines.⁸

5-11 years old: 1113 (66%)

12-14 years old: 560 (34%)

The study team consisting for four calibrated dentists was divided into two groups i.e. Group A and B. Each group consisted for two members. Group A was assigned to take history and socio demographics of the children using standardized validated form and Group B was assigned to examine the oral condition. Groups A members recorded the information on missing, decayed and filled teeth form while Group B members were examining the children. The oral examination was carried using a wooden tongue depression and explorer under sunlight while seating every child on chair to identify presence of caries. Although the examiners checked soft tissue including gums tongue palate for any gum disease, calculus or abnormality but the main emphasis was given on caries, missing and filled teeth. The information recorded included:

- 1 Demographic data i.e. name of school, name of student and age of student.
- 2 Data for dental caries i.e. Number of decayed and filled deciduous teeth (df), Number of decayed filled or missing permanent teeth (DMFT).
- 3 Data for oral hygiene as per parameters recommended by the WHO: existence of food deposits, calculus, gingivitis and periodontal disease. Thus the oral hygiene was divided into 4 categories i.e. good, fairly good, poor and very poor; as per WHO recommendations.

Data were entered and analyzed using SPSS version 16.0

RESULTS

A total of sixteen hundred and seventy three poor locality school children aged 5-14 years; 1113 (66%) 5-11 years old and 560 (34%) 12-14 years old were examined for dental caries and oral hygiene status. The overall caries prevalence among the study group was 71%.

Table 1 reports the decayed filled (df) primary teeth and decayed filled and missing permanent teeth (DMFT) of the study sample according to the age groups i.e. 5-11 years and 12-14 years respectively.

Table 2 reports the oral hygiene status and the corresponding dental caries index scores i.e. df and DMFT scores of the study sample.

TABLE 1: DF AND DMF INDICES BY AGE (SCHOOL CHILDREN OF LAHORE)

Age in years	Total n (%)	d	f	df	D	M	F	DMF
5-11	1113(66%)	3296	24	2.98	—	—	—	—
12-14	560(34%)	—	—	—	1965	74	38	3.70

d: decayed primary teeth

f: filled primary teeth

D: decayed permanent teeth

M: missing permanent teeth

F: filled permanent teeth

TABLE 2: ORAL HYGIENE AND DENTAL CARIES

Oral hygiene	Population n (%)	df	DMFT
Good	234(14%)	1.33	1.97
Fairly good	519(31%)	1.69	2.03
Poor	435(26%)	2.82	2.23
Very poor	485(29%)	2.96	3.31

DISCUSSION

The aim of this study was to investigate the Prevalence of dental caries among poor locality school children of Lahore Pakistan. The results of the study show that the overall prevalence of dental caries in the study sample was 71%. This finding is in line with studies conducted in China where the prevalence of dental caries among 5-7 years old school children was found to be 76.6% and Mexico where the prevalence of dental caries among 6-10 years old school children was found to be 65.5%.^{9,10} The finding is however different from study conducted in United Kingdom where lower levels of dental caries of 39.6% among 5 years old were recorded.¹¹ Although a decline in caries has been observed in most developed countries, its prevalence still poses a considerable challenge. Alone in the USA where there is expected to be less caries than anywhere else national surveys have reported that the prevalence of any dental caries among children aged 12—17 years declined from 90.4% in 1971—1974 to 67% in 1988—1991; severity (measured as the mean number of decayed, missing, or filled teeth) declined from 6.2 to 2.8 during this period.^{12,13,14,15} However it is still surprising to note that these decreases in caries prevalence and severity have been uneven across the general population; the burden of disease now is concentrated among certain groups and persons. For example, 80% of the dental caries in permanent teeth of U.S. children aged 5—17 years occurs among 25% of those children.¹⁵

According to the result of the path finder survey of World Health Organization (WHO) more than 50% of children of Pakistan were found to be caries free⁷ however, the results of this study have revealed that 71% of poor locality school children have dental caries. The finding is also far away from the WHO goal of at least 80% of caries free children.¹⁶

The results of this study also show that the mean df score in the 5-11 years age group was 2.98. This finding is in coherence with other studies conducted on similar age groups (6-10 years) in Mexico where mean dmfs score was 2.36,¹⁰ In Saudi Arabia where the mean dmfs score among 5-12 years old school children was reported to be 3.20.¹⁷ However this finding differs from the study of Bardal et al in Brazil among 7-12 years old school children where the mean dmfs score was found to be 1.82.¹⁸

The mean DMFT score among 12-14 years old age group of this study was 3.70. This finding is much higher than the DMFT of 12-15 years old school children of UAE where mean DMFT was 2.1,¹⁹ China where mean DMFT of same age group was 1.2,²⁰ India where mean DMFT of 12-15 years old school children was 1.1²¹ and in Nigeria where mean DMFT for 12-15 years old age group was 1.0.²² The WHO global data of 2003 has shown an increase in DMFT of 12 years old Pakistani children from 0.9 to 1.38.²³ The results of the current study show a much higher value (3.70) of DMFT among 12-14 years old children.

The possible limitation of the study is exclusion of females from the study sample but that is well justified since no female student was enrolled as permanent student in any of the poor locality schools selected for the study. One of the strengths of the study is the size of sample, which involved numerous localities and examined a sufficient number of poor locality school children in different parts of Lahore City. Also all the examiners were well trained and calibrated before the study in order to enhance the precision of results and to reduce bias.

Based on the findings of the study the recommendations for future research are that studies should now be conducted in different districts of the country in order to further explore the prevalence of dental caries among poor locality school children which will be helpful in gaining immediate attention of policy makers and political administrations. The recommendation for future policy is that the health services should immediately be reoriented towards a preventive approach which should encompass the poor locality schools which are being neglected currently and have a vast majority of children enrolled for basic education. The health services should have specific preventive programs in poor locality schools, elementary schools and low-income areas to address the growing burden of oral diseases. Surveillance of the caries prevention programs should be carried out to evaluate the benefits of the programs, detect groups with greater needs, and identify the communities with higher risk of dental caries.

REFERENCES

- Kidd E A M. *Essentials of Dental Caries – the Disease and Its Management*. 3rd edn. Oxford university press; 1992.
- Center of Disease Control. Promoting oral health: Interventions for preventing dental caries, Oral and pharyngeal cancers and sports related craniofacial injuries. A report on recommendations of task force on community preventive forces. MMWR 2001; 50:1-13.
- World Health Organization. Global Oral Health Data Bank 2004, Geneva.
- World Health Organization. The World Oral Health Report. Continuous improvement of oral health in the 21st century the approach of the WHO Global oral health program 2003, (http://www.who.int/oral_health/media/en/orh_report03_en.pdf , Accessed on 12th May 2009).
- Peterson.P.E, Bourgeois.D, Ogawa.H, Estupinan-Day. S et al. The Global Burden of Oral Diseases and risks to Oral Health. Bulletin of World Health Organization 2005; 83, 9:661-69.
- Maher R. Dental disorders in Pakistan-a national pathfinder study. Journal of Pakistan Medical Association 1991; 41,10: 250-52.
- Khan AA. Prevalence of dental caries in school children of Lahore, Pakistan. Community Dentistry and Oral Epidemiology 1992; 20,3:155.
- Oral health surveys: basic methods, 4th ed. Geneva, World Health Organization, 1979.
- Jiang.H, Tai.B, Du.M, Peng.B. Effect of Professional Application of APF Foam on Caries Reduction in Permanent First Molars in 6-7- yr old Children: 24-month clinical trial. Journal of Dentistry 2004; 33:469-73.
- Maria EI, Adriana MG, Marco AZZ et al. Trends in dental caries in Mexican school children. Med Oral Patol Oral Cir Bucal-Ahead OfPrint - Article In Press. <http://www.medicinaoral.com/medoralfree01/aop/18008.pdf>, accessed on 23rd May 2012.
- Pitts.N.B, Boyles. J, Nugent.Z.J, Thomas.N et al. The Dental Caries Experience of 5-yr old Children in Great Britain (2005/06). Community Dental Health 2007; 24, 1:59-63.
- National Institute of Dental Research. The prevalence of dental caries in United States children, 1979—1980. Bethesda, MD: U.S. Public Health Service, Department of Health and Human Services, National Institutes of Health, 1981; NIH publication no. 82-2245.
- Kelly JE, Harvey CR. Basic dental examination findings of persons 1—74 years. In: Basic data on dental examination findings of persons 1—74 years, United States, 1971—1974. Hyattsville, MD: US Department of Health, Education, and Welfare, Public Health Service, Office of Health Research, Statistics, and Technology, National Center for Health Statistics, 1979; DHEW publication no. (PHS) 79-1662. (Vital and health statistics data from the National Health Interview Survey; series 11, no. 214).
- National Institute of Dental Research. Oral health of United States children. The National Survey of Dental Caries in U.S. School Children: 1986—1987. National and regional findings. Bethesda, MD: US Department of Health and Human Services, Public Health Service, National National Institutes of Health, National Institute of Dental Research, 1989; NIH publication no. 89-2247.
- Kaste LM, Selwitz RH, Oldakowski RJ, Brunelle JA, Winn DM, Brown LJ. Coronal caries in the primary and permanent dentition of children and adolescents 1—17 years of age: United States, 1988—1991. J Dent Res 1996;75(special issue):631—41.
- World Health Organization. Health 21—Regional health-for all policy and strategy for the 21st century. East Mediterr Health J. 2000;6:568-603.
- Al Banyan RA et al. Oral health survey of 5-12-year-old children of National Guard employees in Riyadh, Saudi Arabia. Int J Paediatr Dent 2000; 10(1):39-45.
- Bardal PAE, Olympio KPK, Buzalaf MAR et al. Dental caries and dental fluorosis in 7-12 years old school children in Catalao, Goias, Brazil. J App Oral Sci 2005; 13,1:35-40.
- El-Nadeef MAI, Al Hussani E, Hassab H et al. National survey of oral health of 12 and 15 years old school children in the United Arab Emirates. Eastern Mediterranean Health Journal 2009; 15,4:993-1004.
- Wang HY et al. The second national survey of oral health status of children and adults in China. International dental journal 2002; 52(4):283—90.
- David J et al. Dental caries and associated factors in 12-year-old schoolchildren in Thiruvananthapuram, Kerala, India. International journal of paediatric dentistry 2005; 15(6): 420—28.
- Adegbenbo AO, El-Nadeef M, Adeyinka A. National survey of dental caries status and treatment needs in Nigeria. International dental journal 1995; 45:35—44.
- Bratthall D. Estimation of global DMFT for 12-year-olds in 2004. Int Dent J 2005;55:370—72.