PREVALENCE OF DENTAL CARIES AMONG SCHOOL GOING CHILDREN TWELVE TO FIFTEEN YEARS OF PESHAWAR CITY

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ABSTRACT

***Objective**: To determine the prevalence of dental caries and to calculate the average DMFT score of school-going children (12-15 years). To compare age, gender and socioeconomic status with the DMFT score.*

***Materials and Methods**: A cross-sectional study was conducted in school-going children aged 12-15 years Of Peshawar city (Hayatabad). The sample size was 500 students, which was calculated by WHO formula $N=z^2 x P (1 – P)/ d^2$. The inclusion criteria were students age 12-15 years, and only those schools offering matriculate system were included. All the schools offering the Cambridge system and students below 12 years and above 15 years were excluded.*

***Results**: The results of the current study reveal that the prevalence of dental caries of school-going children 12-15 years was 71%. The average DMFT score of the sample was 2.61. Among the different age groups, 15 years old children had the highest DMFT score of 3.7. The DMFT score of females, i.e., 2.57, was found more than the DMFT of males, i.e., 1.77. The medium socioeconomic class showed the highest, i.e., DMFT scores i.e., 3.1. The data collected were analyzed and tested for significance using statistical software package, SPSS software for windows (version 19.0).*

***Conclusion**: The study shows a very high prevalence of 71%, which was highest in 15-year-old children. Females were more affected than males. Children belonging to the middle and lower class were more affected than the children of the high socioeconomic group.*

***Keywords*:** *Dental caries, DMFT, school-going children, prevalence.*

INTRODUCTION

Dental caries is a reversible**,** progressive disease of the dental hard tissues, instigated by the action of bacteria upon fermentable carbohydrates in the plaque biofilm on tooth surfaces, leading to acid demineralization and ultimately proteolytic destruction of the organic component of the dental tissues [1.] Dental caries is considered to be the major challenge for oral health care[2]. According to WHO, dental caries is the third most common non-communicable disease worldwide and is ten times more common than oral diseases like periodontitis[3]. It is a fact that many environmental factors are also responsible for the progression and resistance of dental caries, e.g., cultural, lifestyle, socioeconomic and dietary habits.[4,5,6,7,8] Dental caries can have negative impacts on quality of life[9,10] and it has been reported that children with poor oral health are 12 times more liable to have restricted activities like speaking, eating, missing time at school than those who have a better oral health and hygiene conditions.

There is a reduction in the prevalence of dental caries in developed countries and is increasing in developing countries with low socioeconomic status.[11] Pathfinder survey conducted by WHO in 2003 in 25 districts of Pakistan revealed that dental caries is the most prevalent disease of children.

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The decayed, missing filled teeth (DMFT) score of 12-year-old children in Pakistan has increased from 1.2 to 1.6 from 1988 to 2003 whereas in 12-18 years ago, it increased from 1.6-2.3 in the same period[12] a total DMFT of 1.67 in 12-15 years old boys in Multan was also reported. The DMFT was strongly affected by the socioeconomic status of the students as there was a significantly high DMFT in the poor class (2.4) as compared to the middle class (1.5)[13]. In Pakistan, 50% 12-15 are caries-free and 50% have caries of which 97% remain untreated[14]. In Pakistan, the latest research that reported the burden of caries was in 2003[15]. This study aimed to provide updated evidence with regard to the prevalence of caries in our population.

MATERIALS AND METHODS

study of the prevalence of dental caries of school-going children 12-15 years of Peshawar (Hayatabad) Was undertaken to evaluate the prevalence of dental caries. This survey was carried out in different schools of Peshawar (Hayatabad). These different schools were randomly selected. Inclusion criteria were students aged 12-15 years in schools offering matriculate system. Children below 12 years and above 15 years were excluded from the study and also schools offering Cambridge / O levels.

The sample size drawn for this particular study with a 95% interval was 384 (approximated to 500) which was calculated using sample size formula by WHO. The first step in cluster sampling was to take a sampling frame (a complete list of population units from which the sample is drawn) that was provided by the Education department. The next step was to draw a cumulative population (the school population of the first school added with the second and so on). The cumulative of all the schools included in the survey was 6061 which was rounded off to 6100. Sampling interval was calculated by dividing the cumulative population (6100) with the total no of clusters (15), i.e., 410. Therefore the sampling interval was 400. A random no was taken as the starting point, i.e., 5. By this method, the 15 clusters were drawn and adjusted according to the population of the schools. This gave us a sample through probability proportionate to size, i.e., PPS.

The data collection was conducted for one month. The survey instrument consisted of demographic information, i.e., age, gender, socioeconomic status followed by clinical examination of the children for recording dental caries using the DMFT index.A tooth was classified as carious when there was either a cavity, undermined enamel or a softened floor or wall on either the pit or fissure or on one of the smooth tooth surfaces, filled if it had any permanent restorations, and missing if it had been extracted previously because of caries. The data collected were analyzed and tested for significance using statistical software package, SPSS software for windows (version 19.0).

RESULTS

A total number of 500 school going children age 12-15 years were examined to determine the dental caries prevalence, the overall caries prevalence in the study group was found 71%.

Table 1 shows the total DMFT score of the sample 2.61. The DMFT score of 12, 13, 14, and 15 years was 2.11, 1.53, 2.8, and 3.7, respectively. The DMFT score of 15 years old students was the highest. The DMFT score of the 13 years old had the lowest score.

Table 2, The DMFT score for males was 1.77, and females were 2.57. On comparing both the scores, it was observed that females had a higher score than the males.

Table 3 shows the statistical significance of social class and DMFT. Shows the DMFT scores of all the three social classes', i.e. low, medium, high, were calculated as 2.27, 3.1, and 0.69 respectively. The highest DMFT score was that of medium socioeconomic class. The school children of the high-income level had the lowest DMFT score.

DISCUSSION

The study aimed to investigate the prevalence of dental caries among school-going children (12-15 years) of Peshawar city. The results of the current study showed that the overall caries prevalence was 71%. The current study showed an increase in the prevalence of dental caries. A similar study was done in Lahore by Ali S. et al. [16] also showed caries prevalence of 71% among 5-14 years school children that were in accordance with the current results. A National Health Survey conducted in 2004 in the neighboring country India had shown dental caries in 12 and 15-year-old children to be 53.8% and 63.1% in 15.[17.] In another study done in Qatar showed

Comparison of Average Dmftbscores With Age

AGE	MEAN DMFT	MEAN DMFT OF SAMPLE	P-value
12 years	2.11	2.54	.001
13 years	1.53		
14 years	2.8		
15 years	3.7		

Comparison Of Gender With Dmft

GENDER	Total no	MEAN DMFT	P-value
MALE	266	1.77	0.003
FEMALE	230	2.57	

Comparison Of Socioeconomic Status With Dmft

Socioeconomic status	Total no	DMFT Value	P value
Low	178	1.81	0.002
Medium	276	3.1	
High	42	0.69	

dental caries prevalence of 85% [18,] which shows a higher prevalence than the current study. This high prevalence may be due to a lack of awareness among our population, inadequate facilities for caries prevention, economic conditions.[17-19]

In many countries, the 12-year-olds had a mean DMFT higher than 3.0. These countries include Latvia (7.7), Poland (5.1), Ukraine (4.4), Hungary (4.3), Lithuania and Belarus (3.8), Russia (3.7), Romania, Portugal, and Bulgaria.[20] The average DMFT score is higher in international studies than the current study, i.e., 2.61. It may be due to very little awareness of parents to bring their children for filling the carious teeth or extraction of non-restorable teeth which affects the DMFT score.

In this study, male children (53.4%) were higher in number than female children (46.6%). Many factors may be responsible for this gender difference. In our population, female education is far less than males. In the current study, the DMFT of females 2.57 is more than males 1.77 and, when compared, was found statistically significant. In another study done in India, it was found that females 2.93 had higher DMFT than males 1.42 which shows a lower DMFT than the current study[21]. The mean DMFT values of the females were higher than males. The current finding might have been due to the information that eruption of teeth in females takes place earlier than males which suggests that females teeth are unprotected to oral environment for a more extended period than the male of the same age.[22]

The third and most important variable was the socioeconomic status of the students and its comparison with the DMFT. The results of the current study revealed that the middle and low had a higher DMFT score than the high socioeconomic group. The middle income had a DMFT of 3.1, 2.27 and 0.69. In another study in Lahore, the results were in accordance with our study showing DMFT of 1.46 and 1.06 in females and males. Socioeconomic status is considered to have a strong association between health and income. Most of the literature for all conditions morbidity rates are higher in people belonging to a lower socioeconomic group. Low-income population tend to have limited access to health care

CONCLUSION

The current thesis revealed that dental caries prevalence was high, i.e., 71%. Among 12-15 years of age group, 15 years is the most affected group. The reasons for this would mainly be a lack of dental awareness, motivation, ignorance, poor oral hygiene, improper tooth brushing techniques and inadequate exposure to fluorides. The prevalence was high in females as compared to males. This can be attributed to the early eruption of teeth in females. The third aspect addressed in this study was a socioeconomic

status that showed that the low and middle-income socioeconomic status was the most affected group as compared to the high-income class. This might be due to the limited access to the health care system. This difference can also be due to unhealthy dietary habits as compared to higher socioeconomic classes.

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