

ORIGINAL ARTICLE

Effect of Socioeconomic Status on Frequency of Dental Caries among 3-11 years old patients with Maloccluded Teeth

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ABSTRACT

Aim: To explore the effect of socioeconomic status on frequency of dental caries among patients with maloccluded teeth.

Methodology: Analytical cross-sectional study was conducted at Dental hospital of Institute of dentistry, CMH, Lahore Medical College, Lahore. Sample size was calculated as 330. Data was collected using purposive sampling technique. Patients of both genders between the ages of 3 to 11 years with maloccluded teeth were included.

Result: According to Modified Kuppaswamy socioeconomic scale rating, gender wise comparison was conducted using chi-square test. Out of 330 participants, 28 males and 17 females were between scores of 25-29, i.e. the upper class. 91 males and 105 females were between scores of 16-25, being in upper middle class. 40 males and 45 females were scored between 5-10, being in lower middle class while 1 male and 3 females were scored <5, being in poor class. An insignificant difference of 0.20 was observed between them. The difference was nonsignificant.

Conclusion: No gender wise difference was observed among patients with regards to dental caries in terms of socioeconomic status.

Keywords: Malocclusion, dental caries, socioeconomic status, oral hygiene

INTRODUCTION

Malocclusion has a very high prevalence around the world. In children, Malocclusion can have a prevalence ranging from 20% to 93%^{1,2}. The issue most commonly arises is that there is a very limited amount of studies conducted on the primary dentition, as more studies are focused and lean towards the permanent dentition³. However, even with the minimalistic data, available studies have shown that prevalence can be as high as 70-83% in three-year-old children⁴. The most common condition in these preschool children observed was the anterior open bite, overjet, and the presence of class II Malocclusion along with posterior crossbite^{4,5}. Studies also have suggested that the prevalence of Malocclusion, although high as 71%, remains equal in 3 and 11 years of age children, with an increase in deep bite between the primary and the incipient permanent dentition⁶. The prevalence of class I, II, and III Malocclusion was in 54.6%, 24.7%, and 6.01%, respectively, with the prevalence of class I and class III being higher in girls (48.8%) and (5.5) than in boys (44.6%), and (4.5%), however, both sharing the equal amount of prevalence in class II Malocclusion of (21.5%)⁷.

Various studies conducted have shown various trends in the prevalence of dental caries in children. This rate of different types of prevalence in different regions has a lot to do with socioeconomic status and the perception of oral hygiene among them. In 3-year-old Japanese children,

there was a prevalence of 14.7%⁸. This study also exhibited associations between parental occupation and income of families⁹. A study conducted in Saudi Arabia showed that the national prevalence of dental caries and its severity in children was 80% for primary dentition with a mean DMFT of 5, with 70% for children having permanent dentition had a mean DMFT of 3.5¹⁰. In children of the United States between the ages of 6-11, one in five children had dental caries, with higher prevalence in Hispanic children than non-Hispanic children¹¹. Several untreated dental caries is still common in preschool children in many countries¹².

Pakistan has shown relatively poor oral health trends. In rural areas, the total DMFT scores amongst 12-year-old children having the permanent dentition were 1.59, rising to 2.26 in 15-year-old children. The DMFT score of 12 years old was found to be low, but it's very alarming that 97% of the lesions are untreated¹³. Local studies conducted in various Pakistan cities have found higher levels of DMFT scores ranging between 2.08-6.33 among primary school children, but in secondary- school children, the scores ranged from 0.8 to 1.14¹⁴. Fifty percent of children in Pakistan between the ages of 12-15 years had dental caries. However, the prevalence is still on the rise in Pakistan compared to the DMFT scores of children aged between 12-15 years in older findings¹⁵.

Compared to Pakistan, there is 37% prevalence of dental caries in adolescent children in the United States.¹¹ A study was conducted to assess the impact of dental caries on children and parents' quality of life. Children reported difficulty eating (55.5%), having trouble sleeping

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(40%), and avoided smiling because of the appearance of their teeth (27.3%)¹⁶. But no study has been cited which was conducted to assess the effect of socioeconomic status on frequency of dental caries among patients with maloccluded teeth.

Therefore, the study aimed to explore the effect of socioeconomic status on frequency of dental caries among patients with maloccluded teeth.

METHODOLOGY

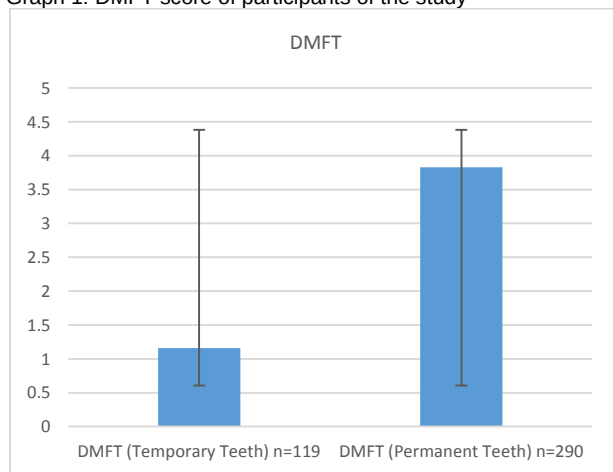
Analytical cross-sectional study was conducted at Dental hospital of Institute of dentistry, CMH, Lahore Medical College, Lahore after permission from Ethical Committee. Sample size was calculated as 330. Data was collected using purposive sampling technique. Patients of both genders between the ages of 3 to 11 years with maloccluded teeth were included in the study. Patients were examined on dental chairs using explorer and mouth mirror.

After taken the approval letter from Institutional Review Board, for data collection permission was taken from the medical superintendent of Institute of dentistry, CMH Lahore medical college. After screening of patients according to the inclusion/exclusion criteria of study, consent forms were get signed by the parents and data was collected. To record the DMFT score using DMFT index, patients with dental caries and having mal-occluded teeth were examined. Modified Kuppaswamy Scale (MKSS)¹⁷ was used to collect information to determine whether socioeconomic status associated with dental caries in children with mal-occluded teeth or not. Data was entered and analyzed in SPSS version 23.0. DMFT score was calculated as mean $\pm$ standard deviation whereas Chi-square test was used to compare frequency of caries with respect to socio-economic status.

RESULTS

The mean frequency and standard deviation index of Decayed, Missing, Filled Teeth (DMFT) among study participants was 1.16 ± 1.25 for temporary teeth while 3.83 ± 3.20 for permanent teeth.

Graph 1: DMFT score of participants of the study



Regarding Modified Kuppaswamy socioeconomic scale rating of patients, a score of 26-29 was observed in 45 (13.6%) of patients, while 196 (59.4%) were between scores of 16-25, while 85 (25.8%) were between scores of 11-15 while 4 (1.2%) were between scores of 5-10.

Table1: Modified Kuppaswamy socioeconomic scale rating of participants (n=330)

MKSS scale	Score range	Frequency
Upper	26-29	45(13.6%)
Upper Middle	16-25	196(59.4%)
Lower Middle	11-15	85(25.8%)
Upper Lower	5-10	4(1.2%)
Lower	<5	0(0.0%)

According to Modified Kuppaswamy socioeconomic scale rating, gender wise comparison was conducted using chi-square test. Out of 330 participants, 28 males and 17 females were between scores of 25-29, i.e. the upper class. 91 males and 105 females were between scores of 16-25, being in upper middle class. 40 males and 45 females were scored between 5-10, being in lower middle class while 1 male and 3 females were scored <5, being in poor class. An insignificant difference of 0.20 was observed between them. The difference was nonsignificant.

Table 2: Association of Modified Kuppaswamy socioeconomic scale according to gender

MKSS Scale	Males (n=160)	Females (n=170)
25-29	28	17
16-25	91	105
5-10	40	45
<5	1	3

P value 0.20

DISCUSSION

Socio-economic status is regarded as a combined measure of education, occupation, economic status, etc. It is vital to understand that accessibility, acceptance and affordability of the available health care facilities are also equally important in determining the burden of a disease. The matrix of socioeconomics has substantially changed over the past decade, resulting in reduction in the people living below the line of poverty¹⁸.

According to the results of our study, the mean DMFT in permanent teeth of children was 3.83 ± 3.20 amongst 290 children, being substantially higher than the reported DMFT of permanent teeth of children aged 12 years living in rural areas of Pakistan. The score significantly rose to 2.26 among 15 years old children, rising over 8.5 in adults aged between 35-44 years and even higher, i.e. about 19 among 65 and older individuals.

However, researchers have observed that DMFT score in 12 years old is relatively lower, yet it is important to note that in the same age group, above 97% of dental caries are left untreated, leading to higher incidences of complications in older age¹⁹.

Attribution to such might be because of neglected oral hygiene practices by children, coupled with unaffordability of proper hygiene products by their parents due to socioeconomic problems. Therefore, the population of children age group suffering from oral health problems such as dental caries tends to be due to vast number of

causes especially in developing countries such as Pakistan where majority of the population lives below the normal standard of living. As a result, the children of our population require greater attention to tackle the issues of poor oral health or hygiene²⁰.

A Pakistani research on prevalence of dental caries among pre-school children observed rates of 51% with an overall DMFT score of 2.08 ± 2.97 . Dental caries was observed to be positive in 509(50.9%) out of 1000 pre-school children²¹.

CONCLUSION

No gender wise difference was observed among patients with regards to dental caries in terms of socioeconomic status.

Conflict of interest: Nil

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