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DENTAL CARIES PREVALENCE AND ORAL HEALTH STATUS IN 3 TO 15 YEARS OLD SCHOOL STUDENTS IN ABBOTTABAD CITY, PAKISTAN: AN ASSESSMENT SURVEY

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ABSTRACT

Objectives: To assess the score of dental caries and status of dental hygiene practices in school-going children aged 3-15 years.

Materials and Methods: This study was performed on school-going children of ages 3 to 15 years in Abbottabad City, via a cross-sectional study. Data were collected during the 'Dental Awareness Programme' from different schools in Abbottabad. Caries score of DMFT/dmft index and orthodontic treatment need were observed and recorded. Also, questions about oral hygiene practices were asked like frequencies of tooth brushing & sugary diet intake from school children and a written record was maintained on structured survey form. Gathered data was import in IBM-SPSS file version 21. Descriptive statistics were used to verify the standard deviation and arithmetic mean of all variables and the comparison between variables like, Caries score; intake of sugary diet daily, age & different school were made and presented in tables & figures.

Results: This research study shows high number of Caries cases 69.4% (Mean= 2.76, SD= 2.738, n= 634). A higher score was observed and recorded for the D-component in the total DMFT score; however habit of daily tooth brushing and maximum intake of sugary diet were found common among all the school-going children.

Conclusion: A high number of caries-affected cases were found, in this study, among school-going children and that is a critical oral health state. Children themselves are negligent towards their needs for good oral health and necessary professional care. Increased DMFT scores of 'mostly decayed' and 'less filled' teeth were founded. It was recorded that tooth brushing by children is not correctly performed, mechanically. Also, children were found to eat a sugary diet daily. The value of a "preventive approach" can lead to the good oral hygiene of children.

Key words: Caries, evaluation, occurrence, prevalence, oral hygiene, school students

INTRODUCTION

The health of our mouth is a crucial part of the systematic health of an individual.¹ It has "tough projections like social, psychologic and also biological, for the reason of leaving aesthetical as well as

communicational impacts, because the quality of life is mainly associated with the oral hygiene". Globally, Caries has been considered a highly prevalent dental disease, characterised by a demineralisation process that affects the mineralised dental tissues. A number of studies have shown that the caries occurrence is due to pathetic dietary habits, poor oral hygiene habits, and diverse social class.²⁻⁴ Uncured Caries in the secondary dentition is the most common health issue as per Global Burden of Disease (GBD, 2017). According to WHO, more than 530 million children

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are suffering from Caries in the deciduous dentition.⁵ globally, Caries is the peak present time disease, therefore, is considered a major public health problem, children have almost 60-90% of dental cavities.⁶ consequently Caries is more common as five or seven times more than other crucial syndromes just like “seasonal allergies” or “asthma”.⁷

Early childhood the caries problems are associated with discomfort due to pain, difficulty while eating, loss of tooth/teeth, and deferred language development ultimately, in the long run, it may compromise the quality of life of a child. Caries is a preventable disease if addressed at an early age, for example, by oral health education and target on primary prevention as control of bacterial activities by proper tooth brushing, directing the child to decrease daily consumption of refined sugars, and strengthening tooth structure by using fluoride to resist of teeth to caries development.⁸⁻¹⁰ Dental Caries cases have been declined because of good oral hygiene awareness & practices as well as provision of quality dental services in the developed nations.¹¹

Responding to the possible addition in the cases of Caries in less privileged populations, many scientists have very well suggested that oral health and prevention programmes can be planned, enforced, and marked for those at a greater danger of tooth-decay.¹² For all practical purposes, educational institutes like Schools may be the primary hubs to efficaciously applying extensive programmes of preventive healthcare because pupils of schools are quite well approachable.¹³

The present study was conceded out for assessing the prevalence of Caries, diagnosis of oral health conditions, as well as practices concerning oral-hygiene, in young school students, of the 3-15 year age bracket, for prompt referral as well as timely treatment. Also, highlighting factors like oral hygiene maintenance i.e. flossing, proper tooth brushing with fluoride paste, in addition to a restricted intake of sugary diet, help in lessening a load of decay, especially in the formative years of youths.

MATERIALS AND METHODS

Undertaking a descriptive study, cross-sectional research was conducted on young school students the ages 3 to 15 years in Abbottabad urban, via a survey

method. Non-probability convenient sampling technique was used. Data was collected during the ‘Dental Awareness Programme’ from different schools in Abbottabad i.e. The Educators, Alam Academy, Bait-ul-Ilm School, Dynamic International, and The City School. The oral screening was done and the data was recorded by well-trained dental surgeons from Abbottabad International Dental College. The kids were surveyed for the prevalence of Caries and the data was recorded using DMFT/dmft index as a tool, during oral screening dentition alignment was also observed and recorded as orthodontic treatment needs “yes/no” options. Also, face-to-face questions about daily tooth brushing and intake of sugary diet were asked and a written record was maintained. The children were examined for oral conditions and a proper diagnosis was made to refer the child for specific treatment. A written paper was sent to parents about their child’s oral health condition and further advised to follow the required treatment plan.

All the recorded data were imported in SPSS file to analyze by using IBM-SPSS version 21. Statistical data presented in form of ‘tables’ and ‘charts’ to present frequencies, arithmetic mean, standard deviation and comparison of this study variables.

RESULT

This study shows a 69.4% school children were diagnosed with carious teeth (440 out of 634 participants) in urban areas of Abbottabad. A higher score for Caries (dmft/DMFT = 372/189) was ascertained in the children of age sets of 3-6 years as well as 7-9 years which reveals that both the deciduous and mixed dentition were affected by the oral disease. [Figure: 1]

Highest scores (min=0, max=12) were recorded for the “D” Component of DMFT tool (Mean= 2.61/SD= 2.639). Hence, the scores for filled teeth and missing teeth were observed to be low comparatively. [Table: 1, A & B]

The results from this study give a clearer picture related to the fact that maximum participants did not avail of any dental services in the past. The maximum score of 12 for ‘decayed teeth’ was observed in ‘The City School’, ‘Alam Academy’, and ‘Bait-ul-Ilm School’, while a score below 12 for Caries fluctuated evenly in all five schools of Abbottabad City. [Figure: 2]

Also, results depending on the child’s daily habit of tooth brushing and intake of a sugary diet were recorded and it was found that the occurrence of Caries or presence of decayed teeth related with intake of sugars and faulty tooth brushing techniques. [Figure: 3]

Nevertheless, 16.1% of schoolchildren needed orthodontic treatments while 83.9% did not require the same. [Figure: 4]. However, children's oral health status was reported to their respective parents with the referral of ‘Abbottabad International Dental Hospital’ for further treatment and promotion of oral health and will be followed in the upcoming time.

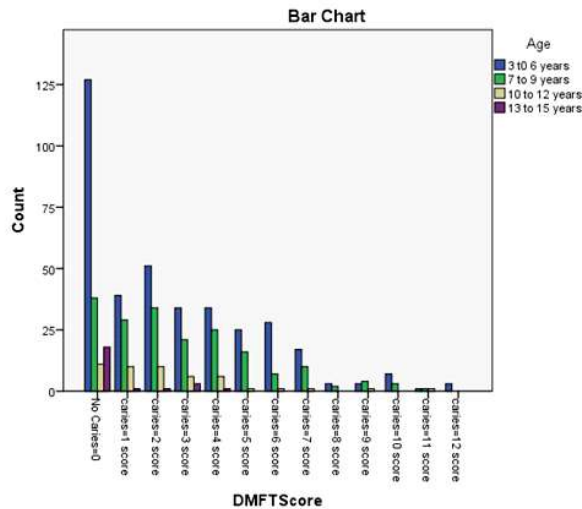


Fig 1: Bar chart illustrated the of DMFT/dmft score according to age groups, indicating a carious lesion commonly affected the school children of age sets: 3-6 as well as 7-9 years.

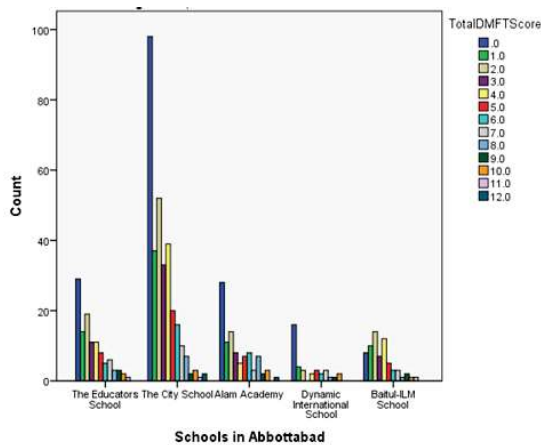


Fig 2: Bar chart representing a comparison between five schools of Abbottabad City and count of DMFT/dmft score

DISCUSSION

Generally, Oral fitness concerns are interconnected to healthier wellbeing. There are several grounds that aesthetic satisfaction and effective dentitions largely impact self-confidence, self-esteem, and socialization.² Caries is the most common of all oral diseases and one of the main health teething troubles, as also has been studied among the primary school youngsters. Consistent with WHO, the all-inclusive estimated caries rate is 2.3 million in permanent dentition, and over 530 million children suffer from this disease in the primary dentition.¹⁷ The main concern consists of the lack of information and knowledge of parents and their children regarding oral health needs and care.^{3,9,18,19}

This present research study has given data on the high occurrence of teeth caries among pupils of the school. For recording of Caries score, using the

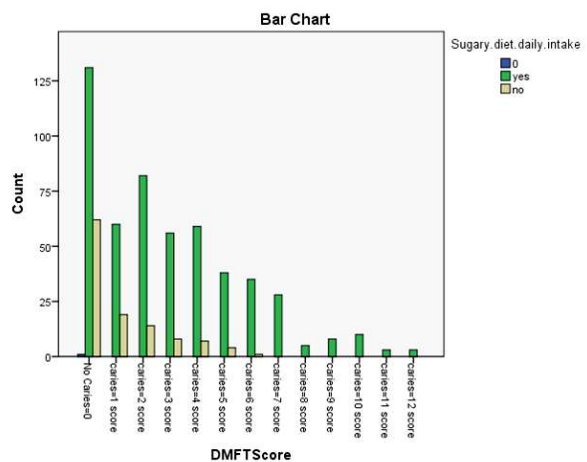


Fig 3: Comparison among the sugary diet intake and dental Caries Score.

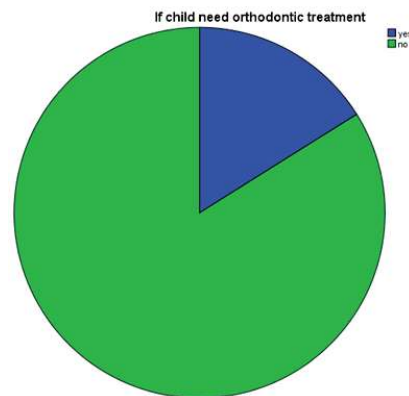


Fig 4: Pie chart illustrated 16.1% of children who need orthodontic treatment, while 83.9 % of children have aligned teeth.

Table 1: A, 440 school children out of 634 diagnosed with carious teeth. B, Highest score was recorded for the 'D Component' of DMFT tool for Caries

| A, DMFTScore | | | | | |
|-----------------------------|-----------------|-----------|---------|---------------|--------------------|
| | | Frequency | Percent | Valid Percent | Cumulative Percent |
| Valid | No Caries=0 | 194 | 30.6 | 30.6 | 30.6 |
| | caries=1 score | 79 | 12.4 | 12.5 | 43.1 |
| | caries=2 score | 96 | 15.1 | 15.1 | 58.2 |
| | caries=3 score | 64 | 10.1 | 10.1 | 68.3 |
| | caries=4 score | 66 | 10.4 | 10.4 | 78.7 |
| | caries=5 score | 42 | 6.6 | 6.6 | 85.3 |
| | caries=6 score | 36 | 5.7 | 5.7 | 91.0 |
| | caries=7 score | 28 | 4.4 | 4.4 | 95.4 |
| | caries=8 score | 5 | .8 | .8 | 96.2 |
| | caries=9 score | 8 | 1.3 | 1.3 | 97.5 |
| | caries=10 score | 10 | 1.6 | 1.6 | 99.1 |
| | caries=11 score | 3 | .5 | .5 | 99.5 |
| | caries=12 score | 3 | .5 | .5 | 100.0 |
| | Total | 634 | 99.8 | 100.0 | |
| Missing | System | 1 | .2 | | |
| Total | | 635 | 100.0 | | |
| B, Statistics (Descriptive) | | | | | |
| | N | Min | Max | A.M (Mean) | S.D (Std. Dev.) |
| Decayed | 654 | 0 | 12 | 2.61 | 2.639 |
| Missing | 654 | 0 | 3 | 0.05 | 0.309 |
| Filled | 654 | 0 | 8 | 0.10 | 0.596 |
| Total Score | 654 | 0 | 12 | 2.76 | 2.718 |
| Valid n (list-wise) | 654 | | | | |

DMFT index had been authenticated by Castro et al. as one of the most reliable methods for measurement of Caries.¹⁴ Most of the young children presented with decayed teeth rather than missing or filled teeth. The most decayed tooth number recorded was the first mandibular molar among the children presenting with mixed dentition. The results are same as the previous studies, suggesting either poor access to oral health services or low deployment owing to a lack of awareness of the necessity for the children's dental care.^{3,21}

The prevalence of dental decay was recovered to be 82.9% which is similar to a study carried out in Qatar where the prevalence of decayed dentition was recorded to be 85% in children of the almost same age group.⁷ Results obtained in these studies are much increased than the WHO criteria and that reveals, the data described in the same aged children in the technologically advanced nations are almost

equal. The results reported in the present research study are much higher than those found in other countries several studies for instance China, India, Malaysia, and Yemen.⁹ Also, the studies carried out in Lithuania (78.3%), Brazil (75%), Saudi Arabia (71.5%)¹³ and Kenya (37%) reported less prevalence of caries as compared to results obtained in the particular city of Pakistan. The difference maybe because of the diverse study population and the different socio-demographics, in these particular countries.⁶

In this study, highest scores (min=0, max=12) were recorded for the "D" Component of DMFT tool (Mean= 2.61/ SD= 2.639). The outcomes are in accordance with the results of a previously undertaken survey (Mean dmft= 2.23) in the deciduous dentition but low according to the studies done in Saudia Arabia (Mean= 5.38), Gulf State Countries (Mean= 5.13), and Arab League countries (4.34).¹⁵

Contemporarily, the maximum score for Caries

was observed in age groups of 3 to 6 and 7 to 9 years youngsters which reveals that both the deciduous and mixed dentition were affected by the oral disease. Another study with similar results reported the highest prevalence of decayed teeth in the age group of 5-7 years old.¹¹ Subsequently a study conducted by Kelay, S; Meta-analysis from 9 countries and prevalence of teeth caries had been found most in 5 to 15 years old children in 'Eastern Mediterranean Region'.¹⁶ One of the previous studies suggested that the Caries prevalence is high in deciduous dentition and with the increasing age of a child rate of caries becoming significantly decreased. Perhaps, this situation occurs because of a low level of awareness about oral health care and parental attitude like, 'the milk teeth are not important because they will exchangeable by permanent dentition'.⁹

This very research study also established that the prevalence of Caries or the presence of decayed teeth is a direct relation to faulty tooth brushing technique, frequency of tooth brushing⁴, and intake of sugary diet (like frequently consumption of sticky sugar-rich foods i.e chocolates and other).¹² Most of the children reported a habit of consuming sugars almost daily. The results are in agreement with a Nigerian study that showed, "the poor oral hygiene was a risk factor for processing tooth caries".⁴ The results are also compliant with previous studies that are pursued by Dawkins et al., Ditmyer et al., Gatou et al., Martins et al., Veiga et al., and Wulaerhan et al.⁹

Moreover, the parents' supervision of their child while brushing teeth, their assertive attitude, and knowledge about oral healthiness, are of utmost importance in young children for the maintenance of oral health. According to previous studies, the lack of parents' insisting on kids' daily cleansing of teeth was considerably related to the disease of decayed teeth.¹³

The deficiency of education programmes related to oral health has been importantly related to Caries. Likewise, findings have been reported in the studies conducted in Nepal and Bangladesh.¹³ However, it may be essential for educational institutions to establish an oral hygiene programme concentrated on the provision of dental care for young children. Oral health promotion plan of action must be aimed at increasing access to inexpensive toothbrushes, fluoridated dentifrices, parental awareness about oral

care, and the prominence of the primary teeth as well as supervision of children for proper tooth brushing techniques would also help in preventing caries.⁴ According to previous studies decayed teeth were less among research participants who had more caries disease awareness as opposed to those who were having inadequate acquaintance with the Caries.⁶

The present research study is limited because of the small sample size which may not infer for the large group. Health sectors must be proactive and organize oral health surveys on a grand scale for school youngsters so as to better plan for education as well as promotion of oral hygiene.

CONCLUSION

Conclusively, the results of this research study determined that the all-inclusive Caries prevalence amongst school kids was critical and affected by socio-demographic factors. Increased prevalence of caries disease 'mostly decayed' and 'less filled' teeth were found and revealed that participants never attended professional dental care. Hence it was also recorded that tooth brushing by children, daily, was performed but it interprets that they did not use to perform mechanically proper. Also, children were found to consume a sugary nutrition/diet commonly and mostly on a commonplace basis and that situation remained alarming on top.

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