

## THE FREQUENCY OF CARIES IN SCHOOL GOING CHILDREN OF PESHAWAR

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### ABSTRACT

**Objectives:** To determine the frequency of dental caries, the gender distribution, the most commonly involved deciduous and permanent tooth in dental caries and to evaluate tooth brushing habits in school going children of Peshawar.

**Methodology:** This descriptive study consisted of 1000 children, aged between 6 to 14 years old. The information was gathered by taking a detailed history and clinical examination of the students and noted in a structured questionnaire. Brief biodata and oral hygiene levels were recorded in descriptive form while the carious teeth were recorded in tabulated form. Data was analyzed using SPSS 10.

**Results:** Out of a 1000 students, 642 (64.2%) had caries. The caries distribution was more in boys (54%) as compared to girls (46%), with male to female ratio 1:0.85. The highest prevalence of caries was found in 12 year old children (77%). Highest numbers of caries were found in first molar in both primary (262) and permanent dentition (188). Thirty eight percent children claimed to have brushed their teeth once daily and 11.5% did not brush their teeth at all.

**Conclusion:** Our study showed that there is a lack of awareness of oral hygiene and its importance has not been emphasized enough to the school going children.

**Keywords:** Dental caries, School going children, Oral hygiene, Brushing habits.

### INTRODUCTION

Dental caries is defined as a "bacterial disease of calcified tissues of teeth characterized by demineralization of inorganic and destruction of organic substance of tooth.<sup>1</sup> Specific types of acid-producing bacteria cause tooth decay in presence of fermentable carbohydrates such as sucrose, fructose, and glucose.<sup>2</sup> If not treated, it can lead to pain, tooth loss, infection, and, in severe cases, death.<sup>3</sup> Various studies

have been conducted on the incidence of caries in children in different parts of the world and almost every study showed high incidence of caries.<sup>4</sup> The highest risk group is between 11-14 years of age.<sup>5</sup> These studies showed that caries occur in children soon after the eruption of the deciduous teeth and may continue to increase at a remarkable rate.<sup>6</sup>

Worldwide, most children and an estimated ninety percent of adults have experienced caries, with the disease most prevalent in Asian and Latin American countries and least prevalent in African countries.<sup>7</sup> In the United States, dental caries is the most common chronic childhood disease, being at least five times more common than asthma.<sup>8</sup> Among children in the United States and Europe, 20% endure dental caries.<sup>9</sup>

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Epidemiological data available on incidence of caries in Pakistan is scarce but shows increase in caries despite the many programs for its prevention. WHO global data (2003) has shown an increase in DMFT (Decayed, Missing, Filled teeth) of 12 year old Pakistani children from 0.9 to 1.38.<sup>10</sup>

The objectives of the study were to determine the frequency of dental caries, their gender distribution, and the most commonly involved deciduous and permanent tooth in dental caries and also to evaluate tooth brushing habits in school going children of Peshawar.

**METHODOLOGY**

The present survey was conducted at public sector schools in the urban areas of Peshawar from September 1<sup>st</sup> to November 1<sup>st</sup> 2009. The study population consisted of 6-14 years old children studying in selected public sector schools. A total of 1000 randomly selected children from five different schools were included in this study. The study was carried out in outdoor settings of schools without the facility of a dental unit. The information was gathered by taking a detailed history to know brushing habits followed by clinical examination of the student. Data was compiled in a structured questionnaire. Study protocol and the use of data for research was fully explained to the teachers to get fully informed and understood consent. Disposable tongue depressors were used to examine the oral cavity and a separate set of gloves were used for each student. A brief bio-data and the oral hygiene levels were recorded in a descriptive form while the carious teeth were recorded in a tabulated form by using FDI (Federation Dentaire Internationale) system. No further biochemical or radiological investigations were carried out. Data collected were analyzed by using SPSS version 10.

**RESULTS**

Overall out of 1000 school going children examined, 642 (64.2%) had caries (Figure 1) Caries percentage was higher in boys (54%) as compared to girls (46%) with male to female ratio of 1: 0.85. Highest caries rate was observed in 12 year old children (77%) followed by 8 year (71%), 7 year (70%), and 11 year old (68%). The details are given in Figure 2. In deciduous dentition, the highest number of 262 caries was found in 1<sup>st</sup> molars followed by 194 in 2<sup>nd</sup> molar, 124 in canines and 43 in incisors (Figure 3). In permanent dentition, more number of caries (188) was found in first molar, followed by 101 in premolars, 44 in second molar, 70 in incisors and lastly 29 in canine

(Figure 3). Regarding oral hygiene measures 382 children brushed their teeth once daily, 356 twice daily, 147 thrice daily and 115 did not brush their teeth at all (Figure 4).

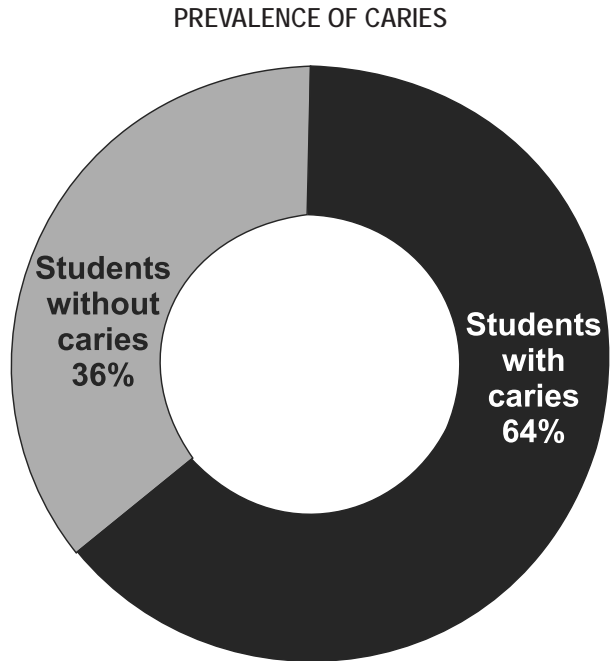


Fig. 1: n=1000

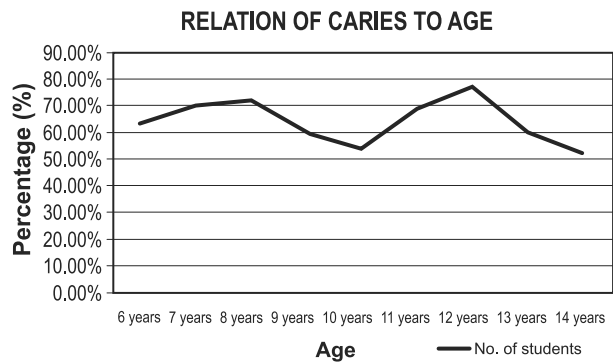


Fig. 2: n=1000

**DISCUSSION**

Today dental caries is one of the commonest problems in children world wide. Compared to other oral diseases, dental caries has been frequently recorded, despite most surveys indicating the prevalence of dental caries to be generally low and static. This masks the experience of certain deprived communities. According to a report by University of Michigan there is a global increase in dental caries that signals a pending public health crisis.<sup>11</sup>

**Most Commonly Involved Teeth in Dental Caries**

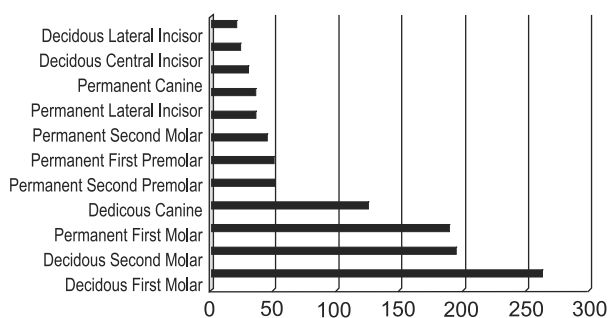


Fig. 3: n=1000

**Brushing Habits**

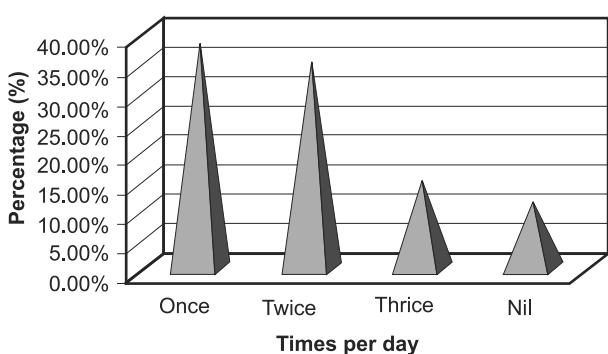


Fig. 4: n=1000

In the present study out of 1000 cases, 642 (64.2%) had dental caries. Similarly high prevalence (81.8%) was reported in a previous survey conducted in Lahore and Peshawar (Pakistan).<sup>12</sup> High prevalence was also found in surveys carried out in India<sup>13</sup> (46.75%) and China<sup>14</sup> (53%). However in Spain,<sup>15</sup> the reported incidence was 42.96% increasing from 33.58% at 4 years of age to 49.74% at 5 years. Similarly 32% incidence was reported in Manchester.<sup>16</sup> These studies reported low incidence as compared to the present study. Reasons for high prevalence of caries in this part of the world can be attributed to poverty, low literacy level, lack of awareness about oral hygiene on print/electronic media and awareness programs.

In this study, more boys than girls had caries with a ratio of 1:0.85. Similar results were reported in Texas<sup>17</sup> and Nigeria.<sup>18</sup> Other surveys conducted in Pakistan also showed prevalence of caries to be higher in boys.<sup>19,20</sup> The reason might be that boys are less concerned about oral hygiene than girls. According to a survey conducted in Japan,<sup>21</sup> it was found that girls had significantly high scores than boys for the desire to improve oral hygiene. However, literature shows that caries prevalence in both genders tend to be similar in later life.<sup>22</sup> This study showed that rela-

tion exists between caries and age. Caries prevalence was highest in 12 year old (77, 77%), followed by 8 year old (93, 71.5%), 7 year old (77, 70%), 11 year old (82, 68.33%), 6 year old (76, 63.33%) and lastly 14 year old children (47, 52.22%). This is in accordance with previous surveys conducted in Scotland<sup>23</sup> and Fiji.<sup>24</sup> Decline noted at 14 years may be due to awareness about oral hygiene at later age or increase in Ig A antibodies.<sup>25</sup>

In this study, the most commonly carious primary tooth was 1<sup>st</sup> molar 262(40.81%), followed by second molar 194(30.21%). This is in accordance with a survey conducted in West Indies.<sup>26</sup> Similarly according to survey in Sri Lanka, Primary first molars were the most affected teeth with 86.7% of the boys and 68.1% of the girls.<sup>27</sup> This may be due to early eruption and late shedding of the first deciduous molar and their involvement in masticatory function. Among the permanent teeth, 1<sup>st</sup> molar was most carious 188(29.28%) while least carious tooth was canine 29(4.52%). Similar results were reported in a survey in Punjab and Peshawar where 67.4% incidence of caries was reported in first molar.<sup>12</sup>

No correlation of brushing habits to dental caries was found but the general maintenance of oral hygiene observed in children was not satisfactory. Three hundred and eighty two (38.2%) children brushed their teeth once daily, while 115 (11.5%) did not brush their teeth at all. A survey conducted in Cambodia<sup>28</sup> reported that 44% of 6 year old and 22% of 12 year old children had never brushed their teeth. However, the level of awareness and maintenance of oral hygiene is increasing. A survey conducted in Israel<sup>29</sup> reported that 84% of children brush their teeth once or twice daily with low caries incidence. The prevalence of caries in children in this part of the world is increasing, which is alarming and requires long term planning.

**CONCLUSIONS AND RECOMENDATIONS**

1. The frequency of caries in school going children of Peshawar is high.
2. The posterior teeth are more commonly involved with dental caries.
3. There is a lack of interest in children regarding brushing their teeth.

From the present survey, it is clear that it is important to initiate proper awareness programs to overcome this problem at both government and domestic levels. Parents and children should be educated about the importance of primary dentition and adequate care

of oral hygiene. Also there is a need for proper attractive advertisement programs and government policies to overcome this problem.

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