

# Prevalence of Dental Caries and Their Associated Risk Factors in Tertiary Care Hospital

FARZEEN KHAN<sup>1</sup>, ZIA UL AIN SABIHA<sup>2</sup>, JUNAID AHMED<sup>3</sup>, SAJIDA GUL<sup>3</sup>, AMINA AJMAL<sup>4</sup>, ABDUL AHAD KHURSHID<sup>5</sup>

<sup>1</sup>Assistant Professor, Department of Community and Preventive Dentistry, Peshawar Dental College, Peshawar

<sup>2</sup>Assistant Professor, Department of Community Medicine, Peshawar Medical College, Peshawar

<sup>3</sup>Department of Dental Materials, Khyber Medical University, Peshawar

<sup>4</sup>Department of Community Dentistry, Khyber Medical University, Peshawar

<sup>5</sup>Department of Oral Biology, Khyber Medical University, Peshawar

Correspondence to: Farzeen Khan, Email: [farzeen.khan7@gmail.com](mailto:farzeen.khan7@gmail.com)

## ABSTRACT

**Background:** Oral health is an important part of overall health and wellbeing. Among different oral disorders, dental caries seems to afflict a vast number of people throughout the world, especially in developing countries like Pakistan. The aim of our study was to assess the prevalence of dental caries and their associated risk factors in tertiary care hospital

**Methodology:** This cross-sectional study was carried out at the Dentil unit of Khyber Teaching Hospital, Peshawar for duration of one year from January, 2021 to December, 2021. All the factors associated with the dental caries were documented on a pre-designed Performa. Data analysis was carried out by using IBM SPSS version 24.

**Results:** In this study, 300 subjects were included. There were 174 (58%) males and females were 126 (42%). The prevalence of dental caries in our subjects was 53%. In this study, 261 (87%) subjects were observed to clean their teeth. Majority of the subjects 180 (60%) clean their teeth daily. The majority of the participants 225 (75%) use tooth brush for cleaning teeth. Sweets were consumed once a day by 210 (70%) participants. Most of the subjects (92%) did not clean their teeth after consuming sweets. Consumption of carbonated drink was observed in 180 (60%) subjects. In our study, 270 (90%) of the subjects have decayed teeth with mean Decayed Missing and Filled Teeth (DMFT) score of 3.59.

**Conclusion:** Our study concludes that dental caries is highly prevalent in our population. Poor oral hygiene practices were observed in our study. Most of the participants were observed to clean their teeth just once a day. Poor dietary habit like high use of carbonated drinks was also observed in our study.

**Keywords:** Prevalence; Dental caries; Risk factors, Khyber Pakhtoonkhwa

## INTRODUCTION

Oral health is an important part of overall health and welfare. In different oral disorders, dental caries seems to afflict a vast number of people throughout the world, despite massive efforts to promote awareness, and the trend is continuing on the rise<sup>1</sup>. Dental caries is a condition that has been known since primordial times. Everyone can be affected, regardless of race, age, sex, or financial background. Dental caries management today is heavily reliant on risk assessment, thus it is critical to map out the frequency of the disease in any particular community<sup>1-4</sup>. Dental caries is still a big concern in practically every nation, according to the World Health Organization. Dental caries is defined in a variety of ways<sup>5</sup>, it is, though, widely acknowledged as a complex condition caused by connections between fermentable sugars, acidogenic bacteria, and a variety of host variables, including saliva<sup>6</sup>. Caries is mostly caused by the acidification of dietary carbohydrates, which are fermented by bacteria in the mouth and on the teeth's surfaces. In normal saliva and plaque, potentially cariogenic bacteria are often detected in trace amounts. On the other hand, there will be a rise in acid-tolerant bacteria in certain environmental and biological problems, like increased intake of fermentable carbohydrates and low pH situations<sup>8,9</sup>.

Caries in the teeth is a well-known health hazard. Carious lesions that go untreated may be unpleasant and cause functional limitations and impairment<sup>10,11</sup>. Although dental caries is mainly avoidable, it is a common

occurrence among adults, impacting over 35% of the global population and ranking it the most common health problem worldwide<sup>12</sup>. Dental caries, in combination with periodontal disorders, is a common cause of tooth loss and, in certain instances, edentulous, which results in significant functional limitations and impairment<sup>13,14</sup>. Thus, dental cavities have long been a global health problem. It not only affects oral health, but it also has a negative impact on life quality and general health, especially in low-income nations<sup>15</sup>. Dental caries affects 60–90% children, according to the report of World Health Organization<sup>16</sup>. Dental caries afflict people of all ages; however children are more impacted than adults. According to our knowledge, no studies on the prevalence of dental caries in our region have been conducted; therefore, this study was conducted to assess the frequency of dental caries and their risk factors at tertiary care hospital.

## MATERIALS AND METHODS

This cross-sectional study was carried out at the dentil unit of Khyber Teaching Hospital, Peshawar. The duration of study was one year from January, 2021 to December, 2021. Proper approval to the study was given by the institutional ethical and research committee. A total of 300 subjects were included in this research work. The inclusion criteria for our study was all the patients of both the sex having age more than 12 years with ≥16 permanent teeth in oral cavity whereas exclusion criteria was patients with physical and mental disability. From all

the subjects, informed consent was taken. Status of dental carries was noted by using Decayed Missing and Filled Teeth (DMFT) index according to WHO guidelines<sup>17</sup>. All the factors associated with the dental carries like sex, age, use of brushing, frequency of brushing, tools used for brushing, use of sweets, brushing frequency after sweet and frequency of consumption of carbonated drink were documented on a pre-designed Performa. Dental explorer, mirror and proper illumination were used for clinical examination of all the subjects. In a chart of DMFT, Decayed, missing and filled teeth were documented. All the data analysis was carried out by using IBM SPSS version 24.

**RESULTS**

In this study, out of total 300 subjects, there were 174 (58%) males and females were 126 (42%)(Figure 1). The mean (±SD) age was 36.11 (12.2) in this research work. The prevalence of dental carries in our subjects was 53% (n=159/300) (Figure 2). Prevalence of dental carries was higher (41.5%, n=66/159) in females as compared to males (50.3%, n=80/159) (Figure 3). Based on the responses of the subjects, 261 (87%) subjects cleaned their teeth. Majority of the subjects (60%, n=180) in our study, clean their teeth on daily basis. Most of the participants (75%, n=225) use tooth brush while only 60 (20%) participants use miswak as a cleaning tool for teeth. Sweets were consumed once a day by 210 (70%) participants while 45 (15%) subjects consume no sweets. Majority of the subjects (92%) did not clean their teeth after consuming sweets. Consumption of carbonated drink was observed in 180 (60%) subjects while 120 (40%) did not consume any carbonated drink. (Table 1) Decayed, missing and filled teeth observed in our subjects were 270 (90%), 105 (35%) and 30 (10%) respectively. Our finding shows that majority (90%) of the subjects in our study have decayed teeth with mean DMFT score of 3.59(Figure 4).

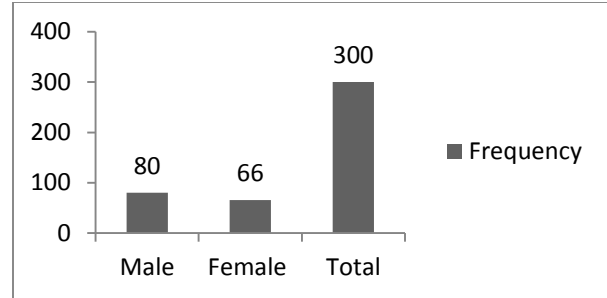


Figure 3: Gender wise prevalence of dental carries

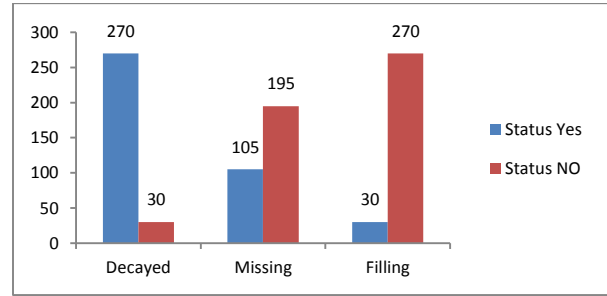


Figure 4: Frequency of decayed, missing and filling teeth

Table 1: Factors associated with the dental carries

Risk factors	Sub-category	Frequency (%)
Cleaning of teeth	Yes	261 (87%)
	No	39 (13%)
Frequency of brushing	once	180 (60%)
	Twice	24 (8%)
	More than twice	6 (2%)
	None	90 (30%)
Tools used for brushing	Tooth brush	225 (75%)s
	Miswak	60 (20%)
	Others	15 (5%)
Use of sweets	Once	210 (70%)
	Twice	21 (7%)
	More than twice	24 (8%)
	None	45 (15%)
Brushing frequency after sweet	Yes	24 (8%)
	No	276 (92%)
Consumption of carbonated drink	Yes	180 (60%)
	No	120 (40%)

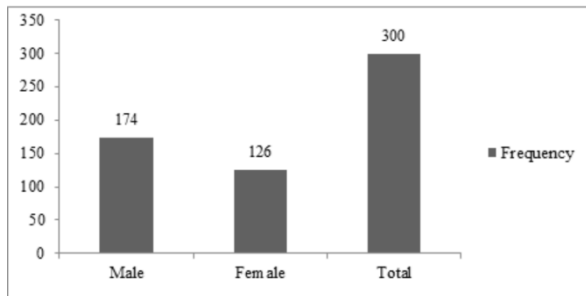


Figure 1: Gender wise distribution of subjects

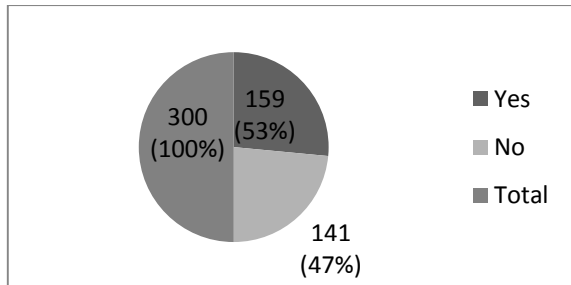


Figure 2: Prevalence of dental carries

**DISCUSSION**

Dental caries is a common and widespread illness, particularly in underdeveloped nations. Oral hygiene, cleaning practices, and eating habits are all biological and societal risk factors for dental caries. Epidemiological studies are necessary to ascertain the prevalence of these risk variables and so to give the best possible screening and management. The prevalence of dental carries in our subjects was 53%. In light of the biological effects and financial cost of treating the condition in a low-budget health sector, this proportion is extremely significant. Similar prevalence of dental carries was reported in two studies done in India, in which they reported 53% and 54% prevalence of dental carries<sup>18, 19</sup>. Similarities in culture, eating habits, and socio demographic features may have contributed to the similarity in occurrence of dental carries. The prevalence of dental carries varies in different cities of Pakistan. The reported prevalence of dental carries in Lahore, Karachi, Peshawar

and Hyderabad was 40.5%, 51%, 88.6% and 90% respectively<sup>20-22</sup>. This difference might be due to variation in the dietary habits of the residents of different cities.

People's lives and well-being are greatly influenced by their oral health habits and practices<sup>23</sup>. Based on the responses of the subjects, 87% subjects cleaned their teeth. Majority of the subjects (60%) in our study, clean their teeth on daily basis. These findings are similar with the study done by Prakash et al. who reported that majority of their participants (70%) clean their teeth once daily while 29.4% cleaned their teeth twice daily<sup>24</sup>. Most of the participants (75%) use tooth brush while only 20% participants use miswak as a cleaning tool for teeth in our study. In accordance with our study, another study reported comparable results<sup>25</sup>. Poor oral hygiene habits might be caused by inadequate oral health awareness initiatives in our culture. In our study, sweets were consumed once a day by 70% participants while 15% subjects consume no sweets. These findings are contrary to the results of previous study who reported that majority of their study subjects use sweets more than twice daily<sup>26</sup>. In one of the previous study, 77% subjects were observed to consume sweets once a day but no association was found with the prevalence of dental carries.<sup>27</sup> In our study, Consumption of carbonated drink was observed in 60% subjects while 40% did not consume any carbonated drink. In accordance with our findings, another study reported that 58.4% of the study subjects use carbonated drink<sup>27</sup>.

Decayed, missing and filled teeth observed in our subjects were 90%, 35% and 10% respectively. Our finding shows that majority (90%) of the subjects in our study have decayed teeth with mean DMFT score of 3.59. These findings are similar with the study carried out in Mexico who reported mean DMFT of 3.48<sup>28</sup>. A previous study done in Karachi reported comparative prevalence of dental carries in rural and urban population. The mean DMFT in rural and urban population was 4.93 and 4.95 respectively, which is not in accordance with our results.<sup>29</sup> For improved oral health, it is vital to be aware of dental problems. Better education and measures may assist to lower the occurrence of dental problems.

## CONCLUSION

Our study concludes that dental carries is highly prevalent in our population. Poor oral hygiene practices were observed in our study. Most of the participants were observed to clean their teeth just once a day. Poor dietary habit like high use of carbonated drinks was also observed in our study. People should be educated about oral health problems to reduce the high prevalence of dental carries.

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