
Prevalence of Dental Caries in Relation to Dietary Habits and Oral Hygiene in An Outpatient Population of a Dental Hospital

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Abstract: The aim of the study is to determine the prevalence of Dental Caries in relation to dietary habits and oral hygiene in the outpatient population. Dental caries is the most prevalent of Dental diseases. It has a very high morbidity potential that brought this disease to the main focus of the oral health professional. The prevalence of dental caries has long been considered as an important task for the dental health profession. The problem related with dental caries leads to a decrease in the quality of life of the affected individuals. Data was collected from the patients visited Dental college in a time period of June 2019 - March 2020 and calculation was done. The reports included the age group, gender of the patient with ID and name. Records of each case were examined and tabulation was done in excel sheets followed by statistical analysis using SPSS software in IBM. The results was observed as graphs and charts from the data exported to SPSS. From this we obtained that male predilection was more when compared to female (53.6% :46.4%). High caries severity in adults aged 46 - 50 years (22.2%). Within the limitation of the study; high caries severity in adults aged 46-50 years in which was associated with individual characteristics and it is statistically insignificant ($p > 0.005$). Male are affected predominantly more than females.

Keywords: Dental caries; Oral Health; Dietary Habits; Socioeconomic Status.

INTRODUCTION

Oral health is a vital part of general well being. Despite huge efforts to increase awareness of oral health on a world scale, dental caries and disease of periodontium continue to plague many populations around the world (Hobdell *et al.*, 2003)(Sridharan *et al.*, 2019a). Oral diseases such as Dental Caries, periodontal disease or tooth loss may affect general health and will decrease life quality. The health care expenses will increase due to the morbidity of dental caries and become a financial burden to families and societies which are of concern (Kumar *et al.*, 2016)(Gifrina Jayaraj, Ramani, *et al.*, 2015).

Dental caries is a crippling affliction of the oral cavity which causes destruction of the hard parts of a tooth by the interaction of bacteria and fermentable carbohydrates (Ndiaye, 2010; World Health Organization, 2015). Dental caries on the rise have become a major public health problem worldwide, nearly 60-90% of children and about 100% of adults have dental cavities, often leading to pain and discomfort (World Health Organization, 2012)(G. Jayaraj *et al.*, 2015; Shree *et al.*, 2019). This leads to a decrease in the quality of life of the affected individuals and high economic costs for equally individuals and society, with disparities related to well known issues of socioeconomic, immigration, lack of preventive efforts and dietary changes (Bagramian, Garcia-Godoy and Volpe, 2009; Viveka *et al.*, 2016)(Thangaraj *et al.*, 2016)

Recent epidemiological reports suggest that there is a resurgence in the scourge of dental caries, in the developed countries (Marthaler, 2004; Naito *et al.*, 2006). In these developing countries, however, studies have consistently shown that the burden of oral diseases such as caries and periodontal diseases is increasing (Lewis and Ismail, 1995). Viruses have been great tutors of cancer biology helping researchers to uncouple many significant pathways and identifying many therapeutic targets. (Gifrina Jayaraj, Sherlin, *et al.*, 2015; Gheena and Ezhilarasan, 2019a). Progressive deposition of calcified masses originating from the root may increase the susceptibility of pulp stone formation (Swathy, Gheena and Varsha, 2015). Multinucleated giant cells, epithelioid cells, and macrophages and its derivatives are the most characteristic histological features that dictate the granuloma feature (Kumar *et al.*, 2015)

Dental caries is age related and literature suggests that caries incidence has three peaks. At about age 7 years for coronal decay of the primary dentition; at about 14 years for coronal decay of the permanent dentition; and about age of 30 - 40 years for root surface decay(Touger-Decker and van Loveren, 2003; Nguyen *et al.*, 2010)(Lewis and Ismail, 1995; Touger-Decker and van Loveren, 2003).Bacterial plaque has been implicated in the etiopathology of dental caries and periodontal diseases (Chakraborty *et al.*, 2014) It is believed that good oral hygiene practices will to some extent help in the control of these major oral diseases(Nguyen *et al.*, 2010)(Touger-Decker and van Loveren, 2003).Before effective strategies for oral health care and prevention could be designed, epidemiological data on major oral diseases is most necessary(Arighbede, Dosumu and Shaba, 2011; Urzua *et al.*, 2012).

The world health organization (WHO) recommends epidemiological studies on 35 - 44 years and 65 - 74 years age groups due to their relevance in describing and analysing the cumulative damage of caries on people's oral health over the years(Petersen, 2005)(Jangid *et al.*, 2015; Sridharan, Ramani and Patankar, 2017) Information from these adult population groups is also used to generate evidence on final outcomes of dental care delivered to people during their entire life cycle(Yeung, 2014)(Zhang *et al.*, 2007).Brushing and flossing are practices to maintain good health along with regular dental visits(Premkumar *et al.*, 2014; Gupta and Ramani, 2016). Our team has rich experience in research and we have collaborated with numerous authors over various topics in the past decade (Deogade, Gupta and Ariga, 2018; Ezhilarasan, 2018; Ezhilarasan, Sokal and Najimi, 2018; Jeevanandan and Govindaraju, 2018; J *et al.*, 2018; Menon *et al.*, 2018; Prabakar *et al.*, 2018; Rajeshkumar *et al.*, 2018, 2019; Vishnu Prasad *et al.*, 2018; Wahab *et al.*, 2018; Dua *et al.*, 2019; Duraisamy *et al.*, 2019; Ezhilarasan, Apoorva and Ashok Vardhan, 2019; Gheena and Ezhilarasan, 2019b; Malli Sureshbabu *et al.*, 2019; Mehta *et al.*, 2019; Panchal, Jeevanandan and Subramanian, 2019; Rajendran *et al.*, 2019; Ramakrishnan, Dhanalakshmi and Subramanian, 2019; Sharma *et al.*, 2019; Varghese, Ramesh and Veeraiyan, 2019; Gomathi *et al.*, 2020; Samuel, Acharya and Rao, 2020)

This study was therefore designed to determine the prevalence of dental caries in relation to dietary habits and oral hygiene in the outpatient population.

MATERIALS AND METHOD

The study setting was basically a university setting because the available data with similar ethnicity was collected from a particular geographic location. The trends in other locations were not assessed in this study setting. Ethical approval was given by the university ethical committee. Case sheet was reviewed and cross verification done by another examiner to avoid errors. To minimise the sampling bias all available data was included and no sorting process was done.

Data was collected from patients who visited a Dental College in a time period of June 2019 - March 2020. The records like patient age, gender, caries status, treatment undergone were collected. These datas were entered in excel sheets and tabulated. Statistical test used was chi square test and the software used is Statistical Product and Service Solution (SPSS). Age, gender, socioeconomic status was considered as independent variables and Dental Caries , DMFT status was considered as dependent variables. Correlation and association which is a descriptive data analysis is the type of analysis carried out.

RESULT AND DISCUSSION

The results showed that in a total of 3350 sample sizes, male predilection was more when compared to female (53.6% : 46.4%). High caries severity in adults aged 46 - 50 years (22.2%).shows that the highest percentage of participants with evidence of caries in male was about (1795 participants 53.6%) and females were (1565 participants 46.4%).

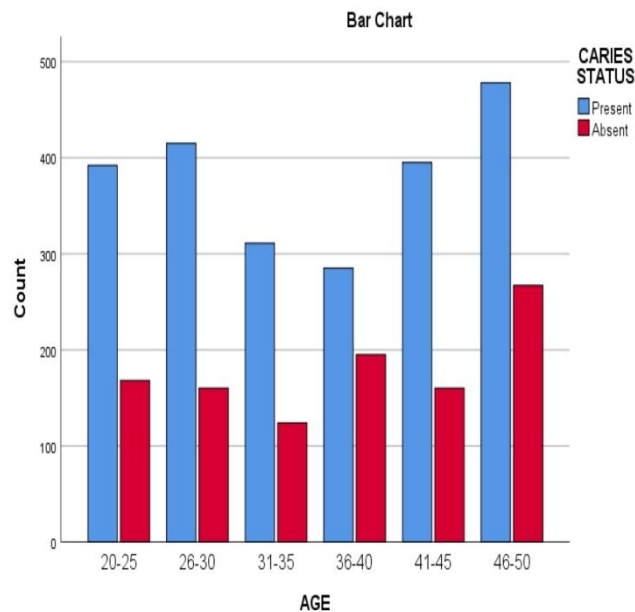


Fig.1: Bar chart depicting the frequency of age group and association with caries status. X axis represents the frequency of age group and Y axis represents the number of patients with caries status. Blue colour denotes caries is present and red colour denotes caries is absent. This graph shows that that age group 46 - 50 years has high caries severity when compared to other age groups. However, this is not statistically significant (Pearson chi square value - 32.057; $p > 0.005$).

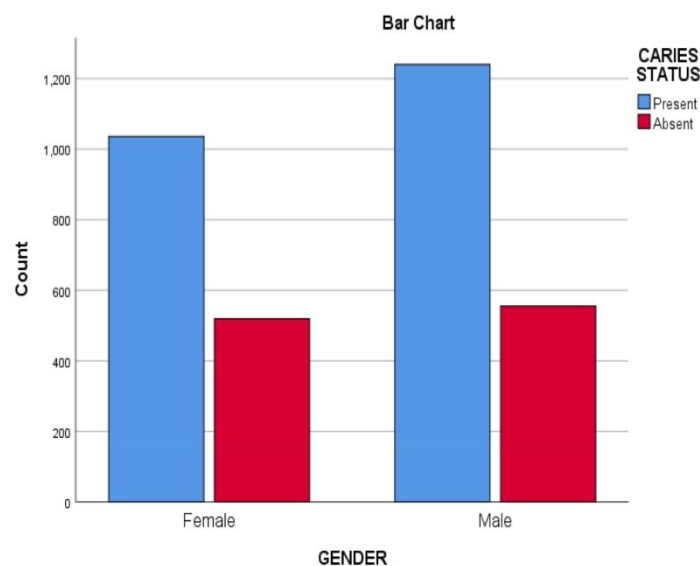


Fig.2: Bar chart depicting the frequency of gender and association with caries status. X axis represents the frequency of gender and Y axis represents the number of patients with caries status. Blue colour denotes caries is present and red colour denotes caries is absent. This graph shows that male is predominantly affected more than females. Statistical association reveals statistically significant association implying males are highly prevalent to dental caries (Pearson chi square value - 2.309; $p < 0.005$).

Many Epidemiological studies regarding the prevalence of impacted maxillary canine have given a vast amount of information on the different types of malocclusion. Different results have been obtained by different authors showing a wide range of variety.

Study by Simon M Costa et al ...(Costa, Vasconcelos and Abreu, 2013) showed that among 360 patients; Age groups of 42 - 48 years were mostly affected with dental caries (32.1%).Depicts that male is predominantly affected with 58% When compared to females with 42%. In the correlation of gender and caries status it showed statistically significant association ($p < 0.05$) which states that the males are highly prevalent to dental caries. The overall consensus agrees this concordance with the world's literature (Figure 2).

Study by Blerim Kamberi et al ... (Kamberi *et al.*, 2016) showed that among 9387 patients reported that the highest percentage of participants diagnosed with caries was 18 - 36 years (42.2%). Patients diagnosed with caries was 69.9% and without caries were 30.4%. In the correlation of age and caries status it showed statistically insignificant association ($P > 0.05$). Hence the previous literature consensus with the present study (Figure 1).

Study by M Ajayi Deborah et al., showed that among 3,458 patients reported that the highest percentage of participants diagnosed with caries with 36 - 42 years (51%). Patients diagnosed with caries was 72% and without caries were 28%. The correlation between gender and caries status showed statistically significant association ($P < 0.005$) which states that the male are highly prevalent to dental caries. The overall consensus agrees this concordance with the world's literature (Figure 2). Our institution is passionate about high quality evidence based research and has excelled in various fields ((Pc, Marimuthu and Devadoss, 2018; Ramesh *et al.*, 2018; Vijayashree Priyadharsini, Smiline Girija and Paramasivam, 2018; Ezhilarasan, Apoorva and Ashok Vardhan, 2019; Ramadurai *et al.*, 2019; Sridharan *et al.*, 2019b; Vijayashree Priyadharsini, 2019; Chandrasekar *et al.*, 2020; Mathew *et al.*, 2020; R *et al.*, 2020; Samuel, 2021)

CONCLUSION

Within the limitation of the study high caries severity in adults aged between 46 - 50 years which was associated with individual characteristics. Males were affected predominantly than females with a statistically significant association ($p < 0.05$). The socioeconomic status of patients will determine the dental hygiene, dietary habits, education aspect and emotional support. Snacking in between meals predominantly containing unhealthy junk food with high carbohydrate content increased caries risk. Many campaigns and programmes need to be done in order to raise awareness. Health education on healthy eating habits can bring about behaviour changes. Further studies of dental health that cover more regions will help to identify public dental health problems, as an essential step in improving the general health status of the citizens of this country.

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