PREVALENCE OF DENTAL CARIES AMONG ADOLESCENT VISITING DENTAL COLLEGE OVER A PERIOD TWO YEAR

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ABSTRACT:

Dental caries(DC) is one of the most prevalent oral diseases of health concern often affecting adolescents.Dental caries is a biofilm mediated,diet modulated, multifactorial, non communicable,dynamic disease resulting in net mineral loss of hard fissure of the oral cavity. It is determined by biological, physiological, behavioural and environmental factors of an individual. As a consequence a carious lesion is produced. People of all ages are affected by dental caries.Adolescents are individuals between 10-19 years old and proven to have a high caries experience. The aim of this study is to evaluate the incidence of Dental caries among 10-19 years old patients visiting Saveetha Dental college between june 2019-april 2020. A total of 5445 patients data was analysed from their case records and analysed for incidence among gender,correlation with age.It was found that out of 5445 patients,3021 patients(73%) were male and 2412 patients(25%) were female and 2 patients(2%) were transgenders.Patients of the age group of 13-19 years had more incidence and the age group of 14-15 year old had least incidence. Within the limitations of this study it can be concluded that male patients have more DC than female patients among the 10-19 years age group in an outpatient population of a Dental College.

KEYWORDS: Adolescents, Dental caries, Prevalence, Teeth.

INTRODUCTION:

Dental caries is a widely prevalent disease worldwide. According to Global oral health data bank, prevalence varies from 49-83% across different countries (Chakraborthy *et al.*, 2014; Marin *et al.*, 2016). Irrespective of age,it has shown a negative impact on health related quality of life(Chakraborthy *et al.*, 2014).Data suggests that there has been a decline in the prevalence of DC worldwide but has been at markedly different parts in high/middle/low income countries(Sherlin *et al.*, 2010) while there has been a greater decline in the high income countries which could majorly be attributed to the use of fluorides and established preventive programs while in few middle and low income countries,there has been a less or inverse decline because of increasing consumption of sugar and carbohydrates(Premkumar *et al.*, 2014).Delivery of effective patient care,health services management,public health and health policy making are dependant on credible data(Reddy *et al.*, 2012).The world health organization has advocated epidemiology surveys to be undertaken every 5 years to monitor the changing patterns of oral diseases to create a global health data bank.(Marin *et al.*, 2016; Sridharan, Ramani and Patankar, 2017)

According to the WHO,adolescents are individuals aged between 10-19 years.(Viveka *et al.*, 2016)The American academy of pediatrics divides adolescence into 3 stages: early adolescence(10-14 years), middle

adolescence (15-17 years) and Late adolescence (18,19 years). Late is very important period for oral health because individuals personality,diet- related changes**,**oral hygiene behaviors,motivation are formed during period(Sridharan, Ramani and Patankar, 2017) Behaviors and attitudes formed during adolescence last into adulthood.(Sridharan *et al.*, 2019)

DC among adolescents is mainly explored in age groups younger than 15 years. Epidemiological information about caries experience in older adolescent groups is scarce because these adolescents are frequently omitted from oral health survey reports. To our knowledge there is a paucity of literature on caries experience among 18/19 year olds. This age group is important because after studying the prevalence of dental caries,it will be possible to improve dental screening,treatment and prevention strategies.(Hema Shree *et al.*, 2019)

Despite the amount of changes occuring during adolescents that can affect oral health,relative to early childhood,there has been relatively little study of caries in adolescents(*Website*, no date; Viveka *et al.*, 2016).The most recent US. NHAMES found that 50% of 12-15 year old and 67% of 16-19 year olds had caries experience.Factors associated with risk for caries in adolescents have been identified in cross sectional studies.(Yim, 1961; Lee *et al.*, 2020)These studies identified lower socio- economic status, daily consumption of sugary drinks,not eating breakfast and infrequent tooth brushing as few risk factors associated with caries (Jayaraj *et al.*, 2015; Swathy, Gheena and Varsha, 2015; Sridharan *et al.*, 2019), but one such study of 13-year old in finland found the previous caries experience and incidence caries,as well as sucrose consumption were associated with caries incidence.(Yim, 1961)

The aim of the present study is to determine the prevalence of DC in adolescents visiting Saveetha Dental College.

MATERIALS AND METHODS:

This study examined the records of patients from June 2019- March 2020 who underwent treatment at Saveetha Dental College and Hospitals. This study is a University based and a single centered study. Ethical approval was obtained from the Institutional Ethics Committee. The main advantage of this type of study is less expensive, easy data collection and can be obtained from immediately but the drawback of this type of study is mainly they have geographical limitations and involve people of isolated populations. A non probability sampling method was done. This study population included patients who were diagnosed with dental caries of any extent. The total sample size present was 5445 patients and the case sheet has been verified with photographic methods. Data was collected from Dental Information Archiving Software (DIAS) which was used to identify patients who were diagnosed with dental caries. Relevant data such as gender, age, number of teeth with DC were collected and recorded. Repeated patient records and incomplete records were excluded. Data was verified by an external reviewer. Data was recorded in Microsoft Excel and later exported to IBM SPSS (version 20.0 Chicago USA) and subjected to statistical analysis. Chi square test was employed with a level of significance set at $p < 0.05$.correlation of age,gender was done and the result was obtained.

RESULTS AND DISCUSSION:

Over a period of 10 months 5445 patients between the age 10-19 were diagnosed with Dental caries. Among 10-19 year old patients, 10.5% patients were 10 years old, 9.2% patients were 11 years, 9.4% patients were 12 years old, 10.6% patients were 13 years old, 7.7% patients were 14 years old, 6.8% patients were 15 years old, 8.2% patients were 16 years old, 10.5% patients were 17 years old, 11.3% patients were 18 years old and 15.3% patients were 19 years old. It is seen that the presence of DC is most common in 19 year olds followed by 18 and 13 year olds compared to patients of other ages(figure 1). Figure 2 shows out of 5445 patients,3021 were male, 2412 were female, 2 were transgenders(1%), meaning male have the highest incidence of dental caries presence. Chi square analysis was done and

correlation between age, gender and number of patients with dental caries was charted which showed there is no significant correlation (pearson's chi square test-54.93, df-13 p value -4)($p>0.05$).

Epidemiology studies on Dental caries in individuals in the age groups 15-19 years are scarce according to systematic review,a fact also reported by other authors.(Jayaraj *et al.*, 2015)), Articles that identified relationships among adolescents /caries/access to dental services are even rarer.(Jayaraj *et al.*, 2015; Sridharan *et al.*, 2019) The decreased caries incidence among adolescents in developed countries was attributed 65% to the improvement in social economic condition whereas only 3% was attributed to provision of dental care (Jangid *et al.*, 2015).Several studies have reported the relationship between caries disease and social economic determinants as well as dental care service(Gheena and Ezhilarasan, 2019).Such studies reported 14% relationship attributed to provision of dental care,(Thangaraj *et al.*, 2016)(Sherlin *et al.*, 2015)

In this study it was seen that 73% of patients were male showing that male are more affected than female patients. Also it showed that age is not positively correlated to incidence of caries. In this study, patient of 13,18,19 years had most incidence of caries, while patient of age 15,14,16 years had least incidence. This can be due to various causes like lifestyle change, puberty, hormonal imbalance, nutritional status**,** etc..

Further studies can be done to include more criteria like site**,** socioeconomic causes, parental involvement, nutrition etc.. to provide much accurate results.

CONCLUSION:

Within the limitations of the study, male patients had more prevalence of dental carie sthan the female patients.Patients around 17-19 years had more prevalence of dental caries than the other age groups.

ACKNOWLEDGEMENTS:

We the authors of the manuscript, would like to thank and acknowledge Saveetha university, SIMATS for the permission for the usage of facilities and the retrieval of the records pertaining to the study.

AUTHOR CONTRIBUTIONS:

All the authors contributed to the conception, designing and documenting of the research.

CONFLICT OF INTEREST:

This research project is self funded and is not sponsored or aided by any third party. There is no conflict of interest.

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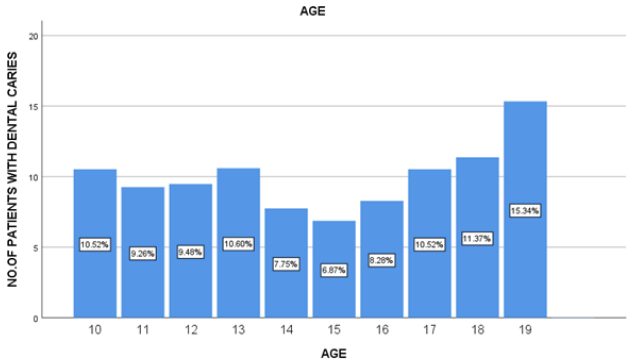

Figure 1:Bar graph shows the distribution of the number of patients with dental caries in different aged patients. In this graph, X-axis represents the ages of patients from 10-19(adolescents) and Y axis represents the total number of patients who were diagnosed with dental caries. 10.5% patients were 10 years old, 9.2% patients were 11 years, 9.4% patients were 12 years old, 10.6% patients were 13 years old, 7.7% patients were 14 years old, 6.8% patients were 15 years old, 8.2% patients were 16 years old, 10.5%

patients were 17 years old, 11.3% patients were 18 years old and 15.3% patients were 19 years old. Graph shows that presence of DC is most common in 19 year olds followed by 18 and 13 year olds compared to patients of other ages.

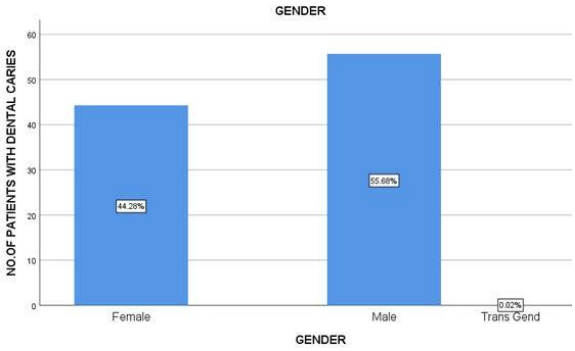

Figure 2: Bar graph shows the distribution of the number of patients with dental caries gender wise. In this graph, the X-axis represents the gender of the patient and Y axis represents the total number of patients who were diagnosed with dental caries. There are 55.6% male patients, 44.2% female patients and 0.02% transgender patient. Graph shows that presence of DC is most common in male patients compared to female and transgender patients,

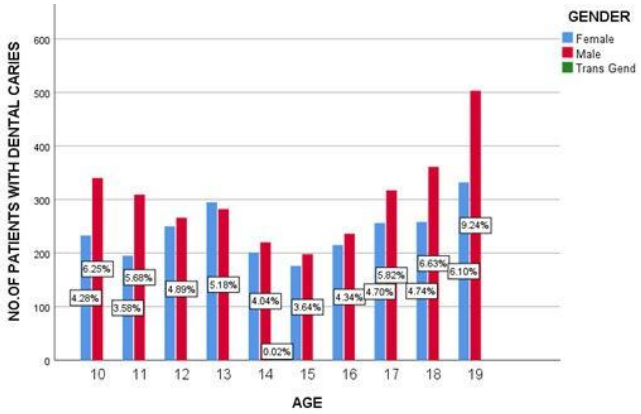

Figure 3: This clustered bar graph represents the association between the number of patients diagnosed with DC in different ages(10-19) stacked gender wise.In this graph blue colour represents the females, red colour represents the males and green color represents transgenders. In 10 year old patients there are 4.2% females and 6.2% male patients, in 11 year old patients there are 3.5% females and 5.68% male patients, there are 3.9% female and 4.8% male patients in 12 year old patients, 6% females and 5.1% male 13 year old patients, 3.5% female, 0.02% transgenders and 4% male patients who are 14 years old, in 15 year old patients there are 3% female and 3.6% male patients, 3.9% female and 4.3% male patients in 16 year old patients, there 4.7% females and 5.8% male patients who are 17 year old, 4.7% female ad 6.6% female patients who are 18 years old and 6.1% female and 9.2% male patients who are 19 year old. A chi square analysis was done to assess between the gender , age and prevalence of the lesion (chi square-54.93, df-13 p value -4)($p>0.05$) shows no significant correlation between the gender, age and number of patients with DC.