Oral Hygiene Status and Dental Caries Experience Among Young Adults Reporting to A Private Dental Institution in Chennai - A Retrospective Analysis

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Abstract: Dental caries is a widespread chronic disease affecting billions of people worldwide. Dental caries can be an unfavourable sequelae of improper oral hygiene. Dental caries is regarded as mostly the disease of young age. Analysing a trend of dental caries experience and oral hygiene in young people would help in formulating and providing a comprehensive approach in treating this population. This retrospective cross sectional study is done among young adult patients of private dental hospital. Oral hygiene status and dental caries data was collected from patient records between June 2019 to March 2020. Collected data was entered in excel and exported to SPSS version 22 for software analysis. A chi square analysis was done and a p value < 0.05 was considered to be statistically significant. Total records included in the study were 303, belonging to the young adults category.Overall OHIS score among young adults was found to be fair (27%) in the 18-20 years age group,49% fair in the 23-25 years age group. Overall dental caries experience [DMFS,DMFT scores] was found to be 25% fair in the 18-20 years age group ,25% good in the 21-22 years age group, 50% fair in the 23-25 years age group.Within the limitations of current study, overall oral hygiene status was found to be fair and moderate risk of dental caries experience among young adults was seen.

Keywords: Adolescents, Dental caries risk, Out patients, Oral hygiene.

INTRODUCTION:

Dental caries have a significant effect on oral hygiene along with the lifestyle of people. Adolescence is the period in human life when the relationships between biological, behavioural, socio economic and psychological conditions have a strong effect on caries etiology (Pitts et al., 2006) (Li, 2011). Late adolescence is very important for oral health because an individual's personality, diet - related choices, oral hygiene behaviour and motivation formed during this period (Ceylan et al., 2004) . Behaviour and attitudes formed during adolescence usually last into adulthood (Faragó et al., 2012).Although dental caries in adolescent people decrease over the past two decades, the condition of carious teeth still contributes to various oral health problems (Karabekiroglu, Sener and Unlu, 2017). Many teens have no active caries , however a small percentage of adolescents may present with a high caries rate due to personal poor oral hygiene . It is important to maintain proper oral hygiene by taking healthy rich foods , avoiding highly rich cariogenic diet etc. Poor oral hygiene contributes to periodontal diseases (Roberts-Thomson and Stewart, 2008). As the growth process reaches completion, there is an increased demand for caloric requirements with an increase in ability to consume large amounts of protein and carbohydrates (Julihn, Barr Agholme and Modeer, 2008) (Bastos, Nomura and Peres, 2007). In the young adults age group, there is often a pattern of irregular meals , frequent snacking and consumption of higher amounts of junk food with corresponding decrease in consumption of healthy foods (Popkin, 2012) (Levin and Shenkman, 2004).

People are not aware about the effects of poor oral hygiene and its impact on their lifestyle. Regarding this various studies have been conducted and research studies were based on different geographical populations. A survey was taken among the Finland population regarding their oral health habits (Honkala et al., 1991). This study however collected dietary information alone and identified people who consume sugary drinks and frequency of tooth brushing as risk factors in oral health. It has been reported in India alone , studies suggest prevalence of dental caries range from 31.5% to 89% (Das et al., 2013).

Previously our team has conducted research on prevalence of caries in school children (Prabakar, John and Srisakthi, 2016) (Samuel, Acharya and Rao, 2020a) , in vitro studies (Kumar, Pradeep Kumar and

Vijayalakshmi, 2017) (Kumar, Pradeep Kumar and Preethi, 2017) (Kannan et al., 2017) (Pavithra, Preethi Pavithra and Jayashri, 2019) (Khatri et al., 2019) (Mohapatra et al., 2019) (Neralla et al., 2019) and comparison reviews/studies (Harini and Leelavathi, 2019) (Pratha, Ashwatha Pratha and Prabakar, 2019) (Prabakar, John, Arumugham, Kumar and Sakthi, 2018b) (Mebin George Mathew et al., 2020) (Prabakar, John, Arumugham, Kumar and Srisakthi, 2018) (Prabakar, John, Arumugham, Kumar and Sakthi, 2018a) over the past 5 years. 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, John, Arumugham, Kumar and Srisakthi, 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, 2019; 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, 2020b)
But retrospective studies on oral hygiene and dental caries experience among young adults was reported in few. Hence this study was conducted to assess the trend or pattern in oral hygiene and dental caries experience among young adults visiting a private dental institution in Chennai.

MATERIALS AND METHODS:
This was a retrospective study for which 86000 case records of saveetha dental college were analysed . Informed consent was obtained from patients during the time of treatment. Ethical approval obtained from the scientific review board of saveetha University.{SIHEC/2020/DIASDATA/0619-0320}.The data was collected from a period of June 2019-June 2020 and the data was constricted to sample size of 300, that includes patients with records such as OHIS,DMFT AND DMFS indices, apart from the basic demographic data. In case of doubt the photographs were used to cross check the data.All the data that we collected were segregated according to their age and categorised and added in excel sheets. This was then transferred to SPSS software for further analysis. The independent variable was age, gender and the dependent variable was OHIS,DMFT,DMFS. Chi square test was done to check the association and a p value of less than 0.05 was considered to be statistically significant.

RESULTS AND DISCUSSION:
Among the 300 patient records analysed, males (63.82%) were higher than females (36.18%).[Figure 1]. In geographic location distribution of the patients, Urban and peri urban population(72.09%) was higher than the rural population (27.91%), reporting to the hospital. [Figure 2].Among the three age groups, the majority of them had good (21.9%) and fair (25.5%) oral hygiene in the 23 - 25 years age group. Chi square test was done to check the association between age and oral hygiene status and it was found not to be statistically significant (p value - 0.778) [Figure 3]. Among the three age groups, the majority of them had low (25.58%) and moderate (18.27%) dental caries risk in the 23 - 25 years age group. Chi square test was done to check the association between age and DMFT scores and it was found not to be statistically significant (p value - 0.673)[Figure 4].
Among the three age groups, the majority of them had low (19.9%) and moderate (13.18%) dental caries risk in the 23 - 25 years age group. Chi square test was done to check the association between age and DMFS scores and it was found not to be statistically significant (p value - 0.558) [Figure 5]. Among males and females, males (33.22%) had fair oral hygiene and females (15.28%) also had fair oral hygiene. Chi square test was done to check the association between gender and oral hygiene status and it was found not to be statistically significant (p value - 0.338) [Figure 6].Dental caries risk was found to be moderate among 36.88% of males and moderate in 17.28% of females. Chi square test was done to check the association between gender and DMFT scores and it was found not to be statistically significant (p value - 0.555) [Figure 7].Dental caries risk was found to be moderate among 26.69% of males and moderate in 12.16% of females. Chi square test was done to check the association between gender and DMFS scores and it was found not to be statistically significant (p value - 0.227) [Figure 8] . Oral hygiene status was found to be good among 36.54% of the urban population and fair in 15.95% of rural population. Chi square test was done to check the association between geographic location and oral hygiene status and it was found not to be statistically significant (p value - 0.324) [Figure 9]. Dental caries experience was found to be moderate among 41.96% of urban population and moderate in 13.95% of rural population. Chi square test was done to check the association between geographic location and DMFT scores and it was found not to be statistically significant (p value - 0.442) [Figure 10].
In our study, males (63.82%) were higher than females (36.18%). This is similar to Kumar's study (Kumar and Thomas, 2017) where he stated that males(65%) were more in number than females (35%) among gender distribution of study subjects. Population wise , urban (72.09%) was higher than usual (27.91%). This is also similar to Kumar's study (Kumar and Thomas, 2017) reporting that urban (69%) and rural (31%) populations are distributed among study subjects. Oral hygiene status among age , gender and population was fair (58%) overall. This is opposed by Narayan (Narayan, 2015) where she stated that overall oral hygiene status was poor

(7.5%) among study subjects based on age, gender and population. Dental caries experience was poor (63%) among the 18-25 years age group.

This was reported by Mosha (Mosha et al., 1994) . In our study , dental caries experience was found to be fair (58%) among young patients. Gender wise, it shows males are found to have better personal oral hygiene than females. Age wise, 21-22 year old patients maintained good oral hygiene than 23-25 years age group. This is similar to Dash study (Dash et al., 2002) who stated that his study population aging 23-25 years showed good oral hygiene. This shows this particular age group cares their oral well. Population wise, Shrivastav (Shrivastav et al., 2018) reported in his study that oral hygiene status was poor(36%) among the Bharian population, which is a rural population. In our study, oral hygiene status was fair among the rural study population (28%) . This shows that rural people lack knowledge and don't care much about oral hygiene. Dental caries experience was poor (35%) among Urban Indian population according to Saravanan (Saravanan et al., 2008) .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; Ezhilarasan, Apoorva and Ashok Vardhan, 2019; Ramadurai et al., 2019; Sridharan et al., 2019; Vijayashree Priyadharsini, 2019; M. G. Mathew et al., 2020) In our study, dental caries experience was fair (31%) among the study subjects of rural population.

These findings of our current study might be limited due to smaller sample size and single source population. Hence future scope can include a larger study population in a house to house survey to get the exact baseline data, which would help in program planning and policy framework designing.

CONCLUSION:
Within the limitations of the current study, the overall oral hygiene status and dental caries experience was found to be fair among young adults, who visited the private dental Institution. Measures ranging from one on one health education and secondary preventive measures during patient visits, combined with community based activity would ensure comprehensive oral health care for this target population.

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AUTHOR CONTRIBUTIONS:
All authors have equal contribution in bringing out this research work.

CONFLICT OF INTEREST:
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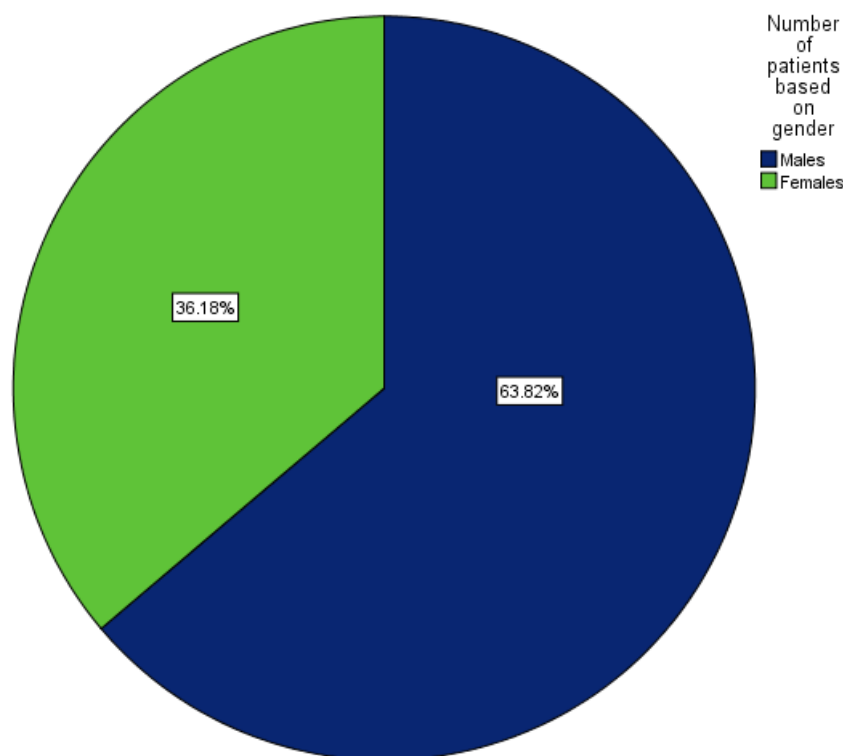
Figures

Fig.1: Pie chart represents distribution of number of patients based on gender. Among the study subjects, Males(blue) (63.82%) were higher than females(green) (36.18%).
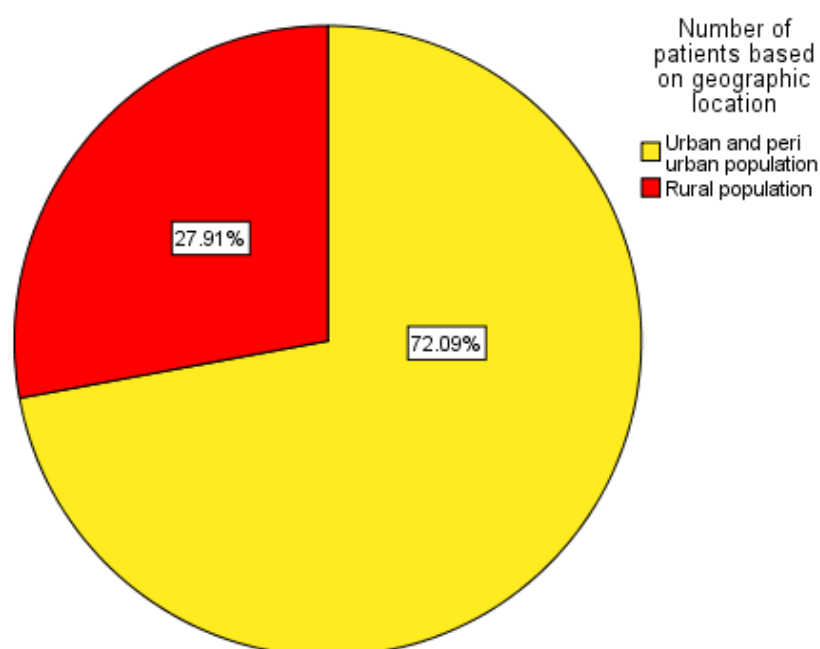
Fig.2: Pie chart represents distribution of number of patients based on geographic location. Urban and peri urban population(yellow) (72.09%) was higher than the rural population(red) (27.91%). Study population was categorised into peri urban, urban and rural based on the geographical area and address shared in the patient records.
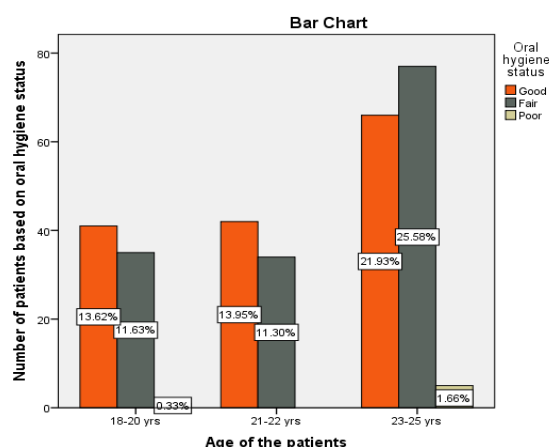

Fig.3 : Bar graph represents association between age of the patients and number of patients based on oral hygiene status(OHIS). X axis represents age of the patients and Y axis represents number of patients based on oral hygiene status. Among the three age groups, majority of them had good oral hygiene (orange) (21.9%) in the 23 - 25years age group. Chi square test was done to check the association between age and oral hygiene status and it was found not to be statistically significant (p value - 0.778)
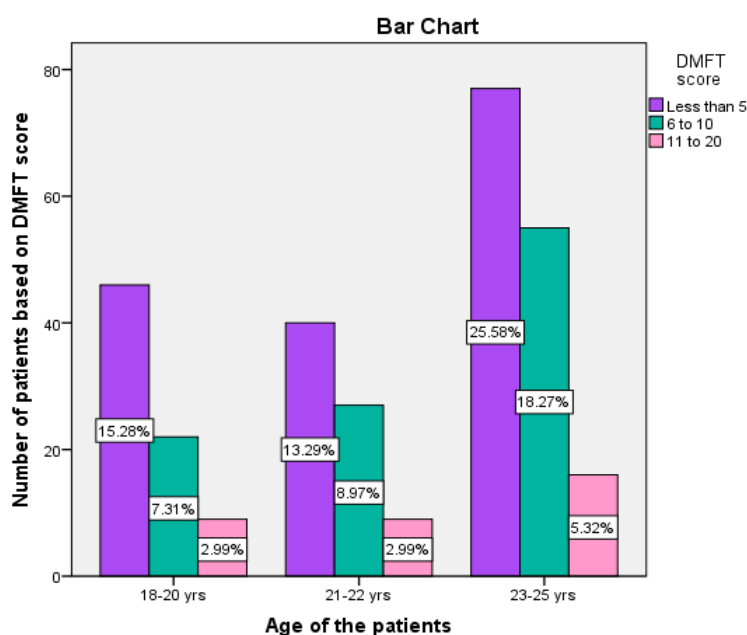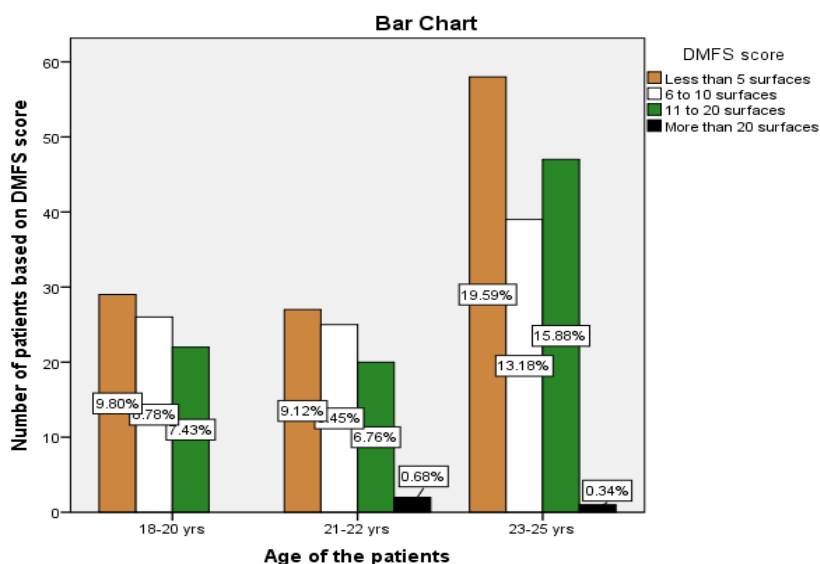
Fig.4 : Bar graph represents association of age of the patients with DMFT scores of the patients . X axis represents age of the patients and Y axis represents number of patients based on DMFT scores. Among the three age groups, the majority of them had low (purple) (25.58%) and moderate(cyan) (18.27%) dental caries risk in the 23 - 25 years age group. Chi square test was done to check the association between age and DMFT scores and it was found not to be statistically significant (p value - 0.673), proving that there is no significant difference in dental caries experience among the three age groups of young adults.

Fig.5 : Bar graph represents association between age of the patients and DMFS score of patients. X axis represents age of the patients and Y axis represents number of patients based on DMFS score. Among the three age groups, the majority of them had low (brown) (19.9%) and moderate (white) (13.18%) dental caries risk in the 23 - 25 years age group. Chi square test was done to check the association between age and DMFS scores and it was found not to be statistically significant (p value - 0.558),proving that there is no significant difference in dental caries experience among the three age groups of young adults.
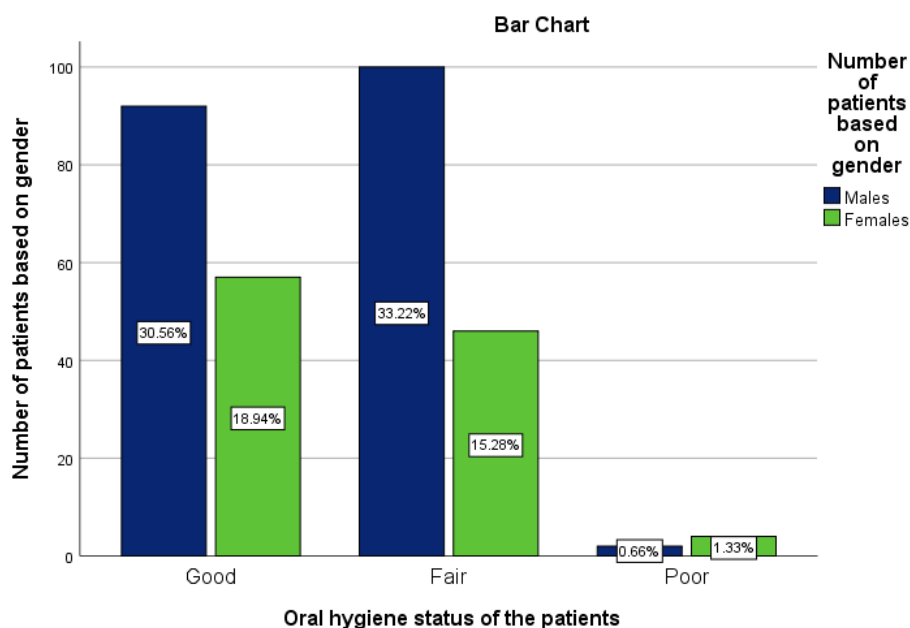
Fig.6 : Bar graph represents association between gender and oral hygiene status of the patients. X axis represents oral hygiene status of the patients and Y axis represents number of patients based on gender. Majority of males (blue), had fair(33.2%), and good (30.56%) oral hygiene when compared to females. Chi square test was done and it was found not to be statistically significant (p value - 0.338), proving that, even though a difference was observed between genders, it was not significant.
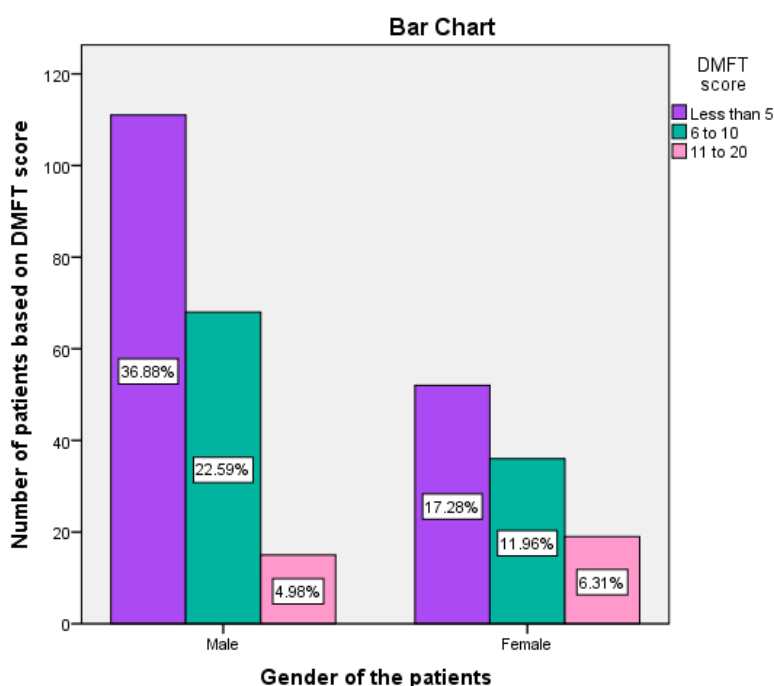
Fig.7 : Bar graph represents association of gender of the patients with DMFT scores. X axis represents gender of the patients and Y axis represents number of patients based on DMFT score. Majority of males (36.8%) were in the < 5 DMFT score category. Chi square test was done(p value - 0.555), and the association was not statistically significant, proving the difference observed regarding caries experience between genders were not significant.
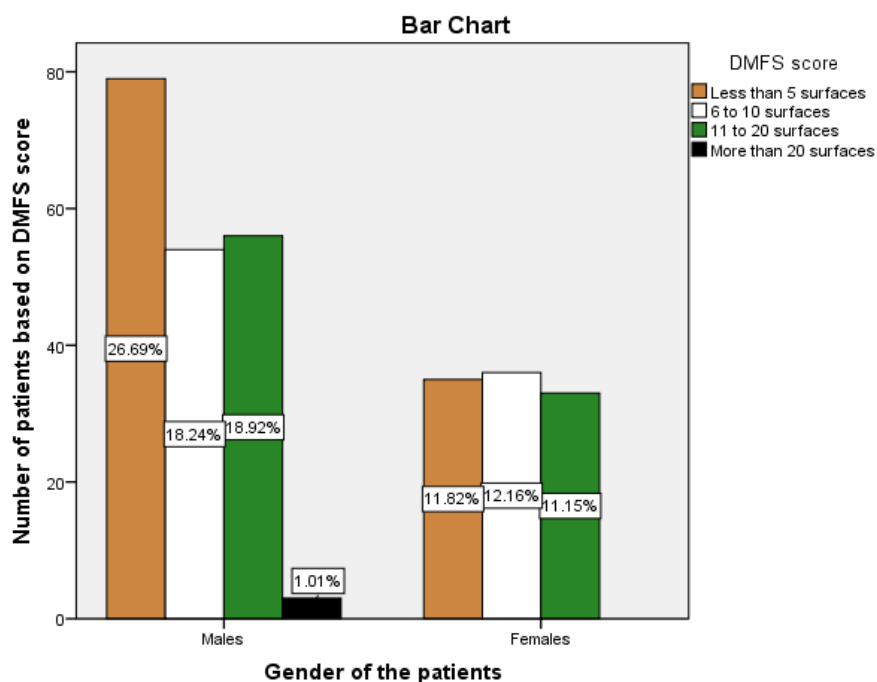
Fig.8 : Bar graph represents association of gender of the patients with number of with DMFS score. X axis represents gender of the patients and Y axis represents number of patients based on DMFS score. Majority of the males (26.69%) were in the < 5 surfaces involved category.Chi square test was done (p value - 0.227) and it was not statistically significant, proving the difference between genders in terms of surfaces involved was not significant.
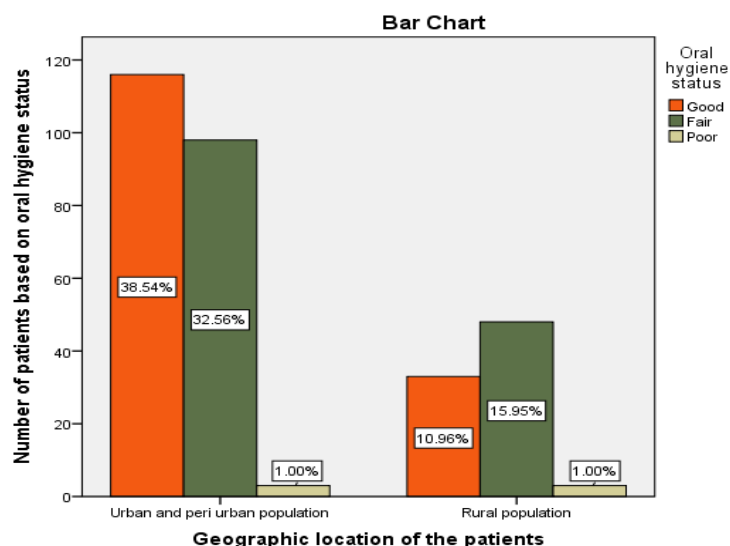

Fig.9 : Bar graph represents association of geographic location of the patients with oral hygiene status of patients. X axis represents geographic location of the patients and Y axis represents number of patients based on oral hygiene status .Oral hygiene status was found to be good(orange) among 36.54% of the urban and peri urban population and fair(grey) in 15.95% of rural population. Chi square test was done to check the association between geographic location and oral hygiene status and it was found not to be statistically significant (p value - 0.324), proving that urban and peri urban population had better awareness and oral hygiene when compared to rural population.
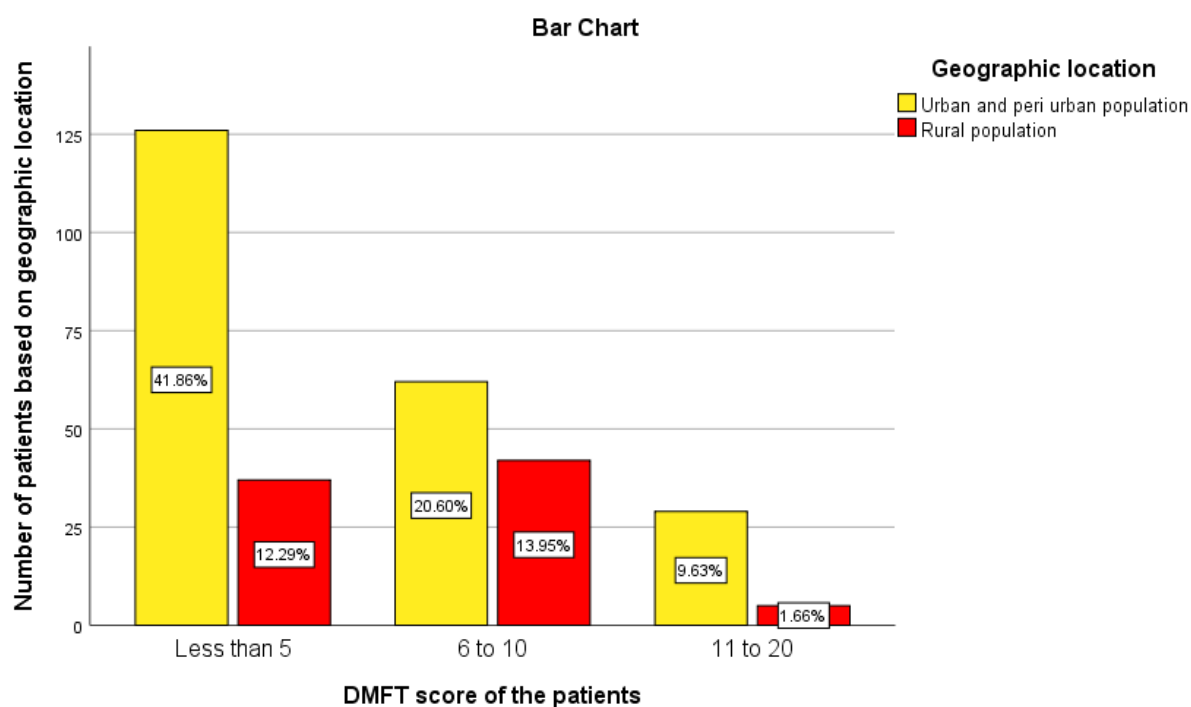
Fig.10 : Bar graph represents association between DMFT score of the patients and geographic location . X axis represents DMFT score of the patients and Y axis represents number of patients based on geographic location. Majority of the urban and peri urban (41.86%) were in the less than 5 DMFT category when compared to the rural population (12.29%),Chi square test was done (p value - 0.442), it was not statistically significant, proving that the observed difference based on geographical location is due to chance and not significant.