



INTERNATIONAL JOURNAL OF RESEARCH IN PHARMACEUTICAL SCIENCES

Published by JK Welfare & Pharmascope Foundation

Journal Home Page: <https://ijrps.com>

Association between Gender and Prevalence of Pit and Fissure Caries among Patients Visiting Private Dental College - A Retrospective study

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Article History:

Received on: 12 Aug 2020

Revised on: 14 Sep 2020

Accepted on: 15 Sep 2020

Keywords:

Occlusal Pit and Fissure caries,
Gender,
Prevalence,
Association

ABSTRACT

Oral health contributes to personal well being and overall quality of life of an individual. Adequate knowledge regarding oral health is mandatory as it is directly related to general health, so the Aim of our study was to determine the association between Gender and Prevalence of Pit and Fissure caries among the patients visiting Private Dental College. A retrospective study was conducted among the patients visiting private dental colleges using their case records in the electronic information management system. The subjects were selected randomly from the digital data entry and the data required was collected. The records were collected from the month of June 2019 to March 2020, with a total of 24,525 case sheets were retrieved. Age of the patients was categorized into 18 to 25 years, 26 to 35 years and 36 to 45 years. Case sheets which recorded Class 1 occlusal pit and fissure caries and gender of the patients were used for data analysis. Descriptive statistics, chi-square statistical tests were conducted using the SPSS software version 23.0. In our sample, 60.4% of males had 7-12 occlusal pit and fissure caries, and 58.3% had 4-6 Occlusal Pit and Fissure caries followed by 58.4% had 0-3 occlusal pit and Fissure caries. Comparatively the females had a lesser number of occlusal Pit and Fissure caries, and there was no statistically significant association between gender and occlusal pit and fissure caries ($P < 0.05$) in our study. In conclusion, the prevalence of occlusal Pit and Fissure caries was higher among males compared to females with the highest distribution in the age group of 18 to 25 years.

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ISSN: 0975-7538

DOI: <https://doi.org/10.26452/ijrps.v11iSPL3.2985>

Production and Hosted by

IJRPS | <https://ijrps.com>

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INTRODUCTION

In developing countries like India mass disaster in terms of mortality and morbidity occurs due to use of tobacco (Kannan *et al.*, 2017) oral cavity is prone for many diseases like Dental caries (Prabakar *et al.*, 2016, 2018b; Mohapatra *et al.*, 2019) is a lifetime disease, and the highest priority risk group is school children. Early childhood caries (ECC) (Samuel *et al.*, 2020), fluorosis (Kumar and Vijayalakshmi, 2017) pit and fissures (Prabakar *et al.*, 2018a; Khatri *et al.*, 2019; Prabakar *et al.*, 2018c) are approximately eight times more vulnerable than the smooth surface caries lesion. *S. mutans* is a primary colonizer and is considered the primary etiologic agent for caries development (Mathew *et al.*, 2020). So the

Dentists should be aware of the benefits of the phytochemicals and should be able to advise patients on how their nutrition can improve their overall quality of life (Pavithra and Jayashri, 2019). The oral health status also depends on the diet we consume day to day (Kumar and Preethi, 2017; Pratha and Prabakar, 2019) Malnutrition and tobacco (Harini and Leelavathi, 2019) usage in oral cancer patients leads to poor response to treatment and reduced quality of life (Neralla et al., 2019).

In the most recent decade, the World Health Organization (WHO) has devoted unique observations regarding oral wellbeing and pervasiveness and reason for oral infections, in particular dental caries, periodontal sickness and most as of late oral malignancy (Petersen, 2003). The danger of advancement of oral ailment, in particular dental caries is emphatically related with way of life propensities and cleanliness. Improving the wellbeing of life style incorporates rare sugar utilization, successful tooth brushing two times every day, day by day utilization of dental floss and visiting a dental specialist consistently to forestall and distinguish oral ailment in a beginning phase (Petersen, 2003; Kumar and Preethi, 2017; Okullo et al., 2004). The rate of dental caries has declined in certain countries, anyway it is still profoundly predominant. It has been indicated that the conveyance of dental caries isn't homogeneous inside a populace and a little extent of youngsters have a high caries index, while most children are caries free (Fejerskov, 2004).

In spite of the fact that the overall caries rate has diminished in most industrialized countries, the rate of pit and fissure caries compared to smooth surface caries has increased considerably (Kannan et al., 2017; Feigal and Donly, 2006). Making pit and fissure to contribute in certain countries the most weak destinations raising the total DMFT. As per the National Center for Health Statistics in the USA (Centers for Disease Control and Prevention, 1993).

Individual tooth surfaces have limitlessly various susceptibilities to caries, with the pit and fissure surface the most powerless and the smooth (labial and lingual) surface the least defenseless (Chestnutt et al., 1996; Hannigan et al., 2000) different age gatherings and populaces display distinct caries prevalence rates, perception of which could give a helpful engaging proportion of caries powerlessness in tooth surface (Hannigan et al., 2000). The viability of fissure sealant in forestalling caries on occlusal Pit and Fissure of children has been very much recorded (Welbury et al., 2004; Beauchamp et al., 2009). The utilization of pit and fissure sealants is troublesome in open oral wellbeing programs

with restricted assets, specific those in low salary nations. In this situation, recognizing the person with higher caries hazard is of foremost significance. Hence, the aim of this study was to assess the distribution of pit and fissure caries among various age groups and its distribution based on gender among patients visiting a dental institution in Chennai city.

MATERIALS AND METHODS

Study setting

The present retrospective study was conducted rigorously evaluating 24,525 patient records between the age groups 18 to 25 years, 26 to 35 years and 36 to 45 years by retrieving the data of those who visited saveetha dental college and hospital between the month of June 2019 to March 2020.

Ethical clearance

The ethical clearance was obtained from the Institutional Review Board (IRB) of Saveetha University, Chennai. The informed consent was obtained from the patient at the time of screening procedure that the data might be used for propagating scientific research.

Screening

The screening for each subject included a detailed record of patient demographic details such as name, age, gender, mobile number residential location, oral health status, oral hygiene practice. Any patient with chronic systemic disease that affects oral health were excluded.

Examiner Calibration

Each patient were assessed by each single well trained examiner (interns, postgraduate students) at the time of screening

Statistical analysis

Data was entered into Microsoft Excel spreadsheet and analysis was done using statistical package for social science (SPSS) version 23.0. Descriptive statistics were used for data summarization and presentation. Chi-square test associations were used for the analysis of association between the study variables and the level of statistical significance was set at a value of $p < 0.05$.

RESULTS AND DISCUSSION

Data from study participants clearly revealed that almost all the participants had occlusal pit and fissure caries either with a minimum number of teeth affected or with a maximum number of teeth involved, irrespective of the age. The distribution of study population based on their age is shown in

Figure 1. Age of the patient was categorized into Group 1 (18-25 years) Group 2 (26-35 years), Group 3 (36 to 45 years) for statistical purposes. Most of the participants were in the age group 26 -35 years (39.6%), followed by 18 to 25 years (30.8%) and 36 to 45 years (29.5%). Distribution of study population based on gender is presented in Figure 2. Most of the participants were male with 58.4% and females (41.5%). Most of the study participants fall under the category of 0-3 number of pit and fissure caries (98.9%), 0.9 % had 4-6 number of occlusal pit and fissure caries and a minimum of 0.1 % had 7 to 12 occlusal pit and fissure caries. The distribution of study population based on number of occlusion pit and fissure caries is presented in Figure 3. The distribution of Class I Caries (occlusal pit and fissure) based on age is given in Figure 4. Most of the participants of Group 1 category (18 to 25 years) had highest percentage of 4-6 occlusal pit and fissure caries (50.2 %), followed by 48.8%, who had 7 to 12 occlusal pit and fissure caries and only 30.7% had 0-3 number of occlusal pit and fissure caries. Group 2 category (26-35 years), 34.9% had 7 to 12 number of occlusal pit and fissure caries, followed by 39.6% had 0-3 number of occlusal pit and fissure caries and 38.5% had 4-6 number. Group 3 category (36 to 45 years), the occlusal pit and fissure caries of 0-3, 4-6, 7-12, number of teeth among individuals were 29.7%, 11.3%, 16.3% respectively. A statistical significant association was found between age and occlusal pit and fissure caries ($P=0.000$). The highest number of prevalence was seen among males of age group 60.4% had 7 to 12 number of occlusal pit and fissure caries followed by 58.4% had 0-3 and 58.4% had 4-6 number of occlusal pit and fissure caries. Among females, 39.5% had 7 to 12 number of pit and fissure caries, followed by 41.6% had 4 to 6 and 41.6% had 0-3 number of occlusal pit and fissure caries though participants with a high number of occlusal pit and fissure were among men with 60.5% had 7 to 12 number of pit and fissure caries, followed by 58.4% had 4 to 6 and 58.4% had 0-3 number of occlusal pit and fissure caries. However, there was no significant association between gender and prevalence of occlusal pit and fissure caries in our study sample ($P= 0.963$)

In a study by Loesche and Stratton, the quantity of microbes on the occlusal fissures is an appropriate indicator of the quantity of carcinogenic microorganisms in the mouth. It has been demonstrated that caries occurs in the region encompassing the fissure entrance, as opposed to the base of the fissure (Loesche and Straffon, 1979; Zero et al., 2009; Petrović et al., 2006). The finding of extensive pit and fissure caries in males oppose the finding of

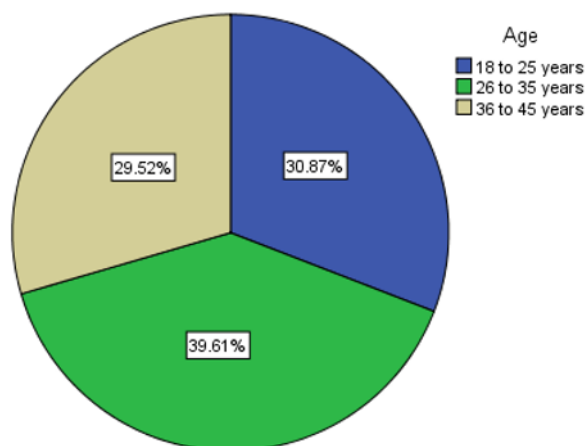


Figure 1: The pie diagram shows the distribution of age among the study populations

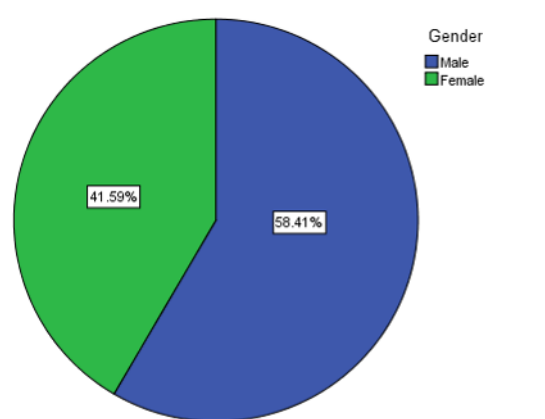


Figure 2: The pie chart shows the distribution of gender among the study population

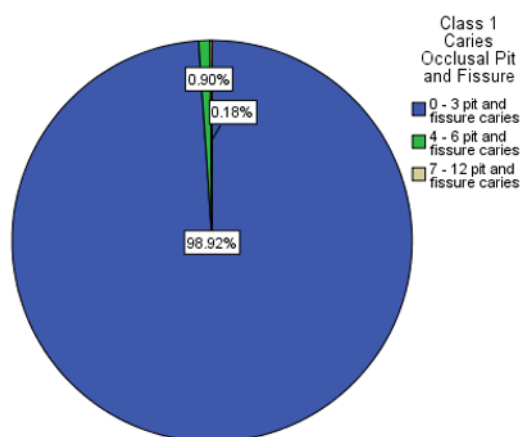


Figure 3: The pie chart shows the distribution of the number of occlusal pit and fissure caries among the study population

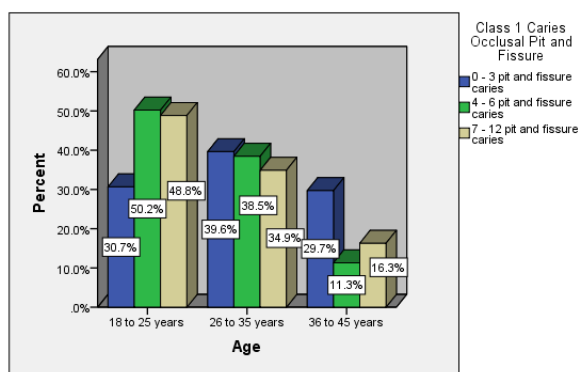


Figure 4: The cluster bar chart shows the association of Class I Caries (occlusal pit and fissure) with age group among the study population

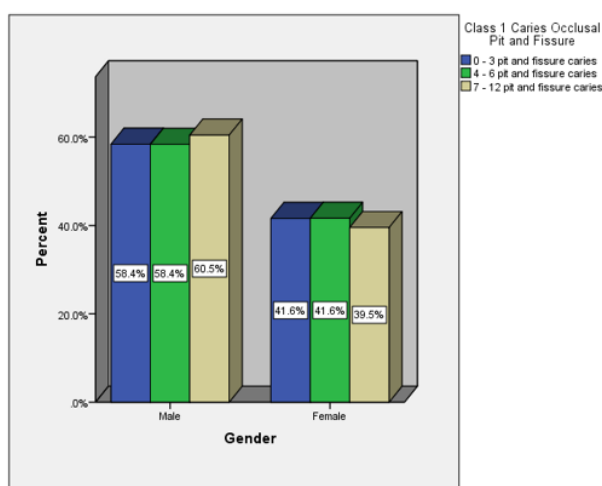


Figure 5: The cluster bar chart shows the association of class 1 caries (occlusal pit and fissure) based on genders among the study population

another study stating more occlusal fissure caries were observed in women than in men (Petrović *et al.*, 2006; Doméjean *et al.*, 2017). Numerous variables influence the predominance of caries on teeth surface in both genders and these incorporate training, income, way of life, and so on. Nonetheless, permanent teeth erupt prior in females than in men and are presented to chance of caries for a more drawn out timeframe, henceforth further examination is important to clarify the findings of our investigation. Towards prevention of occlusal caries, fissure sealants are the best bet, and prior the application the more viable they are. Studies have demonstrated that fissure sealants applied both in clinical and in schools, are profoundly powerful in forestalling dental caries, reducing caries in pit and fissure up to 60% for 2 to 5 years after its execution (Antunes *et al.*, 2003). The utilization of pit and fissure sealants would be a decent choice for chil-

dren with profound fissures, at medium or high danger for caries (Lin *et al.*, 2001; Truman *et al.*, 2002; Wang *et al.*, 2012).

In Figure 1, Blue color represents the age group 18 to 25 years which constitute 30.87% followed by green colour which represents participants of age group 26 -35 years which constitute 39.6% and grey color represents the age group of 36 to 45 years which constitute 29.52%. In Figure 2, Blue color represents males of 58.41% and green colour represents females of 41.59%.

In Figure 3, Blue color represents 0-3 number pit and fissure caries which constitute 98.92% followed by green color which represents patients with 4-6 number pit and fissure caries which constitute 0.9% and grey color represents 7 -12 number of pit and fissure caries which constitute 0.1%.

In Figure 4, X-axis represents the age groups of the patients in years and Y-axis represents the percentage of pit and fissure caries among different age groups. Among the age group 18-25 years, green colour represents maximum patients with 4-6 number pit and fissure caries which constitute 50.2%. Among the age group 26-35 years, blue color represents maximum patients with 0-3 number pit and fissure caries which constitute 39.6% and among the age group 36-45 years, blue color represents maximum patients with 0-3 number pit and fissure caries which constitute 29.7%. Based on chi-square association, statistically significant association was found between age and occlusal pit and fissure caries (Pearson's $\chi^2=59.64$; p value=0.000)

In Figure 5, X-axis represents the gender of the patients and Y-axis represents the percentage of pit and fissure caries across the gender. In males, the maximum number of patients had 7-12 pit and fissure caries which constitute 60.5% and among females the maximum number of patients had 0-3 and 4-6 number of pit and fissure caries which constitute 41.6% in each. Based on chi-square association, there was no statistically significant association found between gender and occlusal pit and fissure caries (Pearson's $\chi^2=0.075$; p value=0.963)

CONCLUSION

The degree of caries prevalence in this examination uncovers the requirement for development as far essential counteraction intervention is concerned. The foundation of a more focused on a preventive program with better and more successful oral wellbeing instruction is fundamental, remembering sociodemographic viewpoints, with an extraordinary spotlight on teenagers and acquainted with

a lower financial status. The utilization of fissure sealants ought to be supplemented with oral well-being training, all together for young people and their family to acclimatize sufficient oral cleanliness propensities and comprehend the requirement for ordinary dental arrangement for essential avoidance and early finding of oral sickness. General wellbeing projects could consolidate the assessment of fissure morphology to distinguish youngsters at high caries hazard. Dental specialists ought to know about the significance of crevice life structures and select the most fitting preventive technique for the patients. There are certain limitations in the present study which attributes to the study design.

Conflict of Interest

The authors declare that they have no conflict of interest for this study.

Funding Support

The authors declare that they have no funding support for this study.

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