Pattern of Dental Plaque Distribution and Cigarette Smoking

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ABSTRACT
Objective: To measure the incidence rate with distribution of dental plaque intraorally and its relationship with cigarette smoking habits in Pakistan population.

Place and Duration of Study: This study was carried out from January to June 2018 at the Lahore.

Material and Methods: The size of the study was consisted of 400 adults who were given free dental check-up. These patients visited Outdoor Patient Department. Eight denition sites were examined in order to find out the existence of dental plaque accumulation in patients. The questionnaire recorded the data relating to behaviour and demographic including different dimension of smoking habits. Main findings: consecutive sampling was performed by us for collection of information and participants were divided in group on the basis of smoking habit (Cigarette smokers were 200 and non-smokers were 200), accumulated sites of dental plaque were examined by the risk element e.g., smoking habit, years, number of cigarette and type of cigarette.

Results: Smoking is considered to be connected with the accumulation of dental plaque, mainly it is prominent on the lower anterior lingual tooth surface of cigarette smokers and on the upper buccal surface of non-smokers is highly affected.

Conclusion: Many accumulated sites with dental plaque was found in connection with degree, duration and type of cigarette.

Key Words: Dental Plaque Accumulation, Smoking Habit, Intra-Oral Distribution

INTRODUCTION

“Dental plaque is considered to be a complex, metabolically interconnected, highly organized bacterial system consisting of dense masses of microorganisms, streptococci similar to streptococcosmutans, fixed in an inter-microbial matrix. A thin layer of fenestrated pellicle, which is an organic bacteria free film, deposits on the tooth surfaces within two hours after the teeth are brushed”. The findings of numerous studies have recommended “a strong relationship between soft plaque and dental caries, gingivitis and periodontitis”. The results of the earlier studies suggest that apart from genetic and constitutional factors, tobacco plays a pivotal rate in the occurrence of dental plaque accumulation association with periodontal diseases in different population”. It has been explored by numerous researchers “the distribution of dental plaque in human associated with smoking”. Our best fact, “the potentially influential role of the type of cigarettes smoked has not been investigated. Furthermore, the association is the above-mentioned factors with distribution of plaque pattern are still a question mark for researchers”. The object of this study was to find connection between the selected scale of contact to smoking and dental plaque accumulated and inspection of the intra oral sharing of dental plaque design as per the status of the cigarette smoking among the adult patients of Lahore.

MATERIALS AND METHODS

Participant Selection: Healthy individuals were selected. They brush their teeth twice a day. All individuals were having full arch teeth. They were between 18 to 35 years of age. Sampling method accepted was consecutive.

Consent: Every individual participating in the study gave written consent. The object and extent of this research was explained and informed to all the participants. Before collection of data, written consent forms were completed with signatures by the chosen individuals of the study. The data was collected from the questionnaire of every single individual after getting satisfied from the signing consent forms. The information included in the questionnaire was age, sex, habit of cigarette smoking, type, duration, past history, reason and methods how they are keeping oral health. Cigarette smoking was in the cigarette smokers whereas non-smokers did not smoke. All the assessments were conducted by an experienced dental surgeon. The study is double blind because nobody knows about the hypothesis. Dentitions were divided into 8 divisions such as lower labial, lingual posterior and lingual anterior, buccal likewise in upper as well. The size of the sample was 400 individuals out of them 200 were cigarette smokers and on the upper buccal surface of non-smoker infants were 200, accumulated sites of dental plaque were examined by the risk element e.g., smoking habit, years, number of cigarette and type of cigarette.
smokers and 200 were non-cigarette smokers and they were examined in this study. There were 3104 areas which were examined in cigarette smokers. Every selected area was examined to identify the dental plaque deposition. According to current criteria the dental plaque must be present in more than 2/3rd of the crown. On the other the numbera were nominated by us.

**Statistical Analysis:** SPSS version 21.0 was used for performing statistical analysis. Quantitative variable for instance age, cigarette quantity was mentioned in mean. Chi Square was used for analysing between cigarette smokers and non-cigarette smokers. Value of P =/<0.5 was important.

**Inclusion & Exclusion Criteria:** Healthy adult will be considered included in the study who have no sign and symptom of systemic disease and also have no history of paan, betel nut etc. A standard selection method of individuals with regard to maintaining oral health was that having the habit of brushing teeth twice a day. Individuals were excluded from the study who were having history and systemic illness sign for instance diabetes etc. and history of periodontitis. Individuals who were having clinical sign of oral cancer or history of radiation were also excluded from the study.

**Ethical Considerations:** Every individual gave the written informed consent and Research & Ethics Department accepted the study.

**RESULTS**

In the current research there were 200 cigarette smokers and 200 non-cigarette smokers. There were 3104 areas which were analysed in the participants for dental plaque. In cigarette smoker group there were 53 areas affected whereas in non-cigarette smokers’ group there were 48 affected areas. Division of dental plaque in oral cavity was according to the habit of cigarette smoking: Accumulation of dental plaque in cigarette smokers was mainly established in the lower lingual anterior site whereas the accumulation of dental plaque in non-cigarette smokers was in the upper buccal area.

Division of dental plaque in oral cavity was according to the duration of cigarette smoking: The current research has drawn the conclusion that duration and plaque disposition is directly proproportion to each other (=17.64, p<0.001). Division of dental plaque in oral cavity was according to the number of cigarettes smoking each day: Mild smoker is an individual who smoke 10 or less than 10 cigarettes daily. Heavy smoker is an individual who is smoking 10 or more than 10 cigarettes daily. The findings of the current study have revealed that dental plaque disposition may get affected by the use of more cigarettes. Division of dental plaque in oral cavity was according to the type of smoking cigarette: The current research has revealed that individuals who are smoking cigarette without using filter have more accumulation of dental plaque whereas individuals using filter has less accumulation of dental plaque.

**DISCUSSION**

As per the result this is basic study examining the association of smoking with dental plaque division in oral cavity in the target. Earlier reports have been confirmed by the findings of this current research, “suggesting the existence of a dose-response relationship between exposure to cigarette smoking and the occurrence of deposition of dental plaque in oral cavity both when exposure is measured in relevance to the frequency and duration of cigarette smoking”. The current study has stated that “the pattern of dental plaque differed between cigarette smokers and non cigarette smokers, with smokers presenting most regularly with dental plaque on the lower anterior lingual tooth surface, on the other hand, non cigarette smokers presented most frequently with dental plaque on the upper buccal tooth surface”. The findings are consistent with the earlier results “reported for a Swedish population and US population but deviates from the results of other studies in which there was no association between smoking and distribution of dental plaque accumulation”. Moreover, a significant statistically connection (p < 0.001) was found between smoking of cigarette with duration & number of oral cavity areas included by plaque disposition. “The highest number of plaque accumulation oral tooth surface was observed in subjects smoking for maximum like more than 14 years (about 11%). On the other hand, the least number of accumulations of dental plaque tooth surfaces were noticed in individual cigarette smoking between 5 to 9 years and less than 5 years (3.5%)”. The fact has been emphasised that increase of cigarette smoking duration badly affects the individual’s status of oral hygiene. “Cigarettes with filter were introduced to reduce the adverse effects of conventional cigarette
smoking. To the best of our knowledge none of the previous studies have investigated the association between type of cigarette (filtered / non-filtered) smoked and accumulation of plaque in oral cavity. Our study showed a statistically significant difference between the level of plaque accumulated by filtered and non-filtered cigarettes. Numerous elements have been suggested to play a role in the increase in plaque accumulation in relevance to cigarette smoking. Although most of the studies emphasize that lower oxygen tension in the periodontal pocket of smokers favor the growth of anaerobic bacteria, thus, the quality of microbial flora. In addition to that, various studies have shown alteration of host immune response by cigarette smoking. Therefore, the collective effect of these elements may indirectly increase plaque disposition in individual smoking cigarette.

CONCLUSION

Regularly more disposition of dental plaque has been shown by the cigarette smokers as compared to non-cigarette smokers and the connection stated that it is the effect of dose response. Disposition of dental plaque in individuals smoking cigarette is found very frequently on the lower anterior lingual site whereas individuals smoking cigarette without using filter and are heavy smokers are more frequently affected.

Reference


