Original Article

Periodontal Disease Risk Assessment in Relation to Frequency of Tooth Brushing

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ABSTRACT

Objective: This study aims to analyze the co-relation between frequencies of tooth brushing as a periodontal risk assessment tool in a population.

Study Design: Randomizes controlled trial (RCT)

Place and Duration of Study: This study was conducted at the Fauji foundation hospital among dental students and patients from February to September 2019.

Materials and Methods: This study involves 310 participants over a span of three months duration. Data was collected by administering the study questionnaire including 14 items assessing risk factors for periodontal disease as well as their oral hygiene habits. Descriptive statistics were used for data summarization and presentation.

Results: Results showed that approximately 42.3% of study participants claimed to brush twice daily and 52.6% once daily. Mean age of the participants was 22.1 years with majority of them females constituting 77.7%. Of the 310 subjects, 48.23% had a history of bleeding gums while 18.1% had swollen gums. Furthermore, 61% of the subjects reported brushing for less than 2 minutes duration. 77% participants of population were of upper middle socioeconomic status.

Conclusion: This study indicated a clear correlation found between risk of developing periodontal disease and frequency of tooth brushing. It is suggested that some form of preventive oral hygiene programs be embarked on where emphasis is placed on regular and higher frequency of tooth brushing.

Key Words: Periodontal disease, Oral hygiene, Risk factors, Tooth brushing.

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INTRODUCTION

Periodontal disease is a chronic inflammatory disease of periodontium associated with the loss of tooth supporting structures. Besides certain known risk factors involved, oral hygiene practices particularly tooth brushing has shown to be the most neglected risk factor in the severity and progression of this disease.

Prevalence of the periodontal disease varies differently in different regions of the world[1,2]. There have been few researches for assessing prevalence of periodontal diseases in Pakistan[3,4].

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This study was planned to assess the prevalence of disease in a small population of Twin cities of Pakistan. Poor oral hygiene habits have a relationship with the prevalence of inflammatory periodontal diseases. Prevention of the development and progression of periodontal disease is greatly related to the maintenance of healthy gingiva, through proper oral hygiene habits and regular professional dental care. Therefore, irregular or inadequate tooth brushing program, results in plaque accumulation, which have been associated with gingival inflammation that may progress to periodontitis which is one of the major sources of tooth loss.

Periodontitis is the commonest of oral disease, showing global prevalence of 11.2%[5]. Being a multifactorial disease, it has numerous risk factors including Diabetes Mellitus, Stress, Smoking, Genetics and most significantly poor oral hygiene[6,7]. Maintaining proper oral hygiene is of prime importance in prevention of periodontal diseases. Various studies have been conducted to establish a relationship between frequency of tooth brushing and the prevalence of inflammatory periodontal disease[8-11]. However, no worldwide consensus has yet been established. Therefore, this study aims to determine if the frequency of tooth brushing, at a rate of once, twice or thrice daily, shows

any relationship with the prevalence of periodontal disease, by conducting a cross-sectional survey.

The knowledge of oral hygiene is considered essential for wellness-related behavior. The oral health is now recognized as equally important in association to general health. Maintaining proper oral hygiene is of primary importance in the prevention of dental caries and periodontal diseases. Toothbrushes and toothpastes are the most widely used oral hygiene aids. Although using a tooth brush significantly improves the level of oral hygiene, there are many other contributing factors such as dental flossing and mouth rinsing.

MATERIALS AND METHODS

A descriptive cross-sectional questionnaire survey was done among the patients visiting dental department of Foundation University Medical College Islamabad. A sample size of 310 individuals having the background knowledge of periodontal diseases was selected. Data collection was done with the help of Questionnaire with 14 questions. The first part of the questionnaire was about demographic data of the participants including name, age, gender, education and socio economic status. The second part was about oral hygiene measures like frequency of brushing, duration of brushing, any other oral hygiene measures and presence of any oral pathology. The third part was based on the questions specifically related to the periodontal risk assessment. After approval from the "Ethical review committee, Foundation University Medical College Islamabad", informed verbal consent was obtained from the participants who wished to participate in the study voluntarily and those who did not want to participate were excluded from the study. Selection of sample size was done with purposive sampling. Data was firstly entered into MS Excel and statistically analyzed by using SPSS (21.0).

RESULTS

Results showed that approximately 42.3% of study participants claimed to brush twice daily and 52.6% once daily. Mean age of the participants was 22.1 years with majority of them females constituting 77.7%.

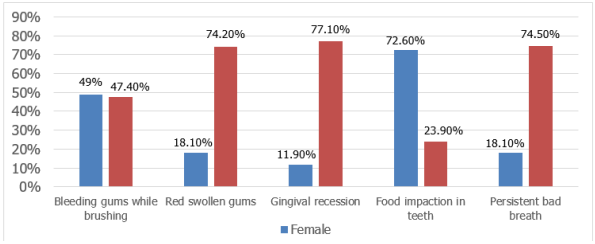

Figure No.1: Signs of gingival diseases noticed among participants

Of the 310 subjects, 48.23% had a history of bleeding gums while 18.1% had swollen gums. Furthermore, 61% of the subjects reported brushing for less than 2 minutes duration. 77% participants of population were of upper middle socioeconomic status.

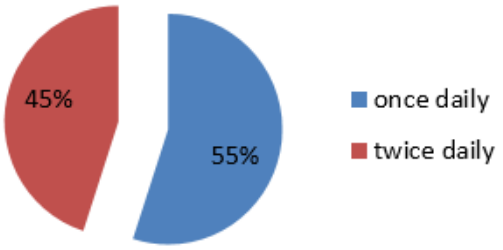

Figure No.2: Frequency of tooth brushing per day

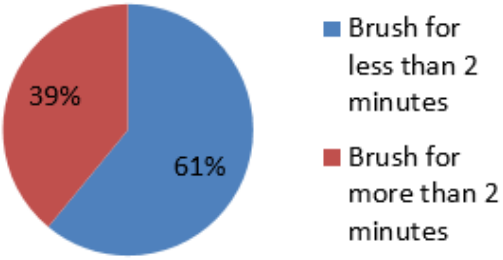

Figure No.3: Duration of brushing

DISCUSSION

The current study was conducted in order to assess the risk of periodontal diseases in relation to frequency of brushing among some population of twin cities of Pakistan. The study clearly indicated that poor oral hygiene results in increased risk of development and progression of periodontal diseases when compared to other studie[6,7,12]. The collected data would help in assessing the concern of general public towards oral hygiene maintenance and periodontal diseases. Mechanical plaque removal with a manual tooth brush is the primary method for oral hygiene maintenance[13].

In our study the estimated percentage of brushing frequency was 4 times more in females than males and was in accordance with a study carried out by Farsi et al[14]. The percentage of patients with bleeding gums was almost equal in both the genders with a mere difference of 0.2% in contrast to a study carried out among undergraduate students from King Saud University, College of Dentistry where gingival bleeding was more in females as compared to the males [15] [Fig.1]. Bad breath is a common feature of poor oral hygiene [16] and that was clearly evident in this study with a higher ration in male than female as reported in another study[17]. According to the results of our study gingival recession was encountered in 77% male and 12 % female, a higher number of males might be accredited to poor oral Hygiene maintenance and incorporating the habit of smoking as there is a positive relationship between gingival recession and smoking[18]. The

significant relationship between gingival recession and smoking in our study is in consistent with study done by Muller et al[19]

This study has indicated that the frequency of tooth brushing in a day has a relationship with the prevalence of inflammatory periodontal diseases. The group of subjects (45%) that brushes twice daily had a higher proportion of prevention of periodontal diseases than the group (55%) that brushes once daily [Fig.2] and is in accordance with the study carried out by Akhionbare et al[9]. Daily tooth brushing is the primary way for individuals to remove plaque and control plaque-related diseases such as gingivitis and cavities. In our study 61% of the participants reported that they spend less than 2 minutes on brushing whereas 31 % of the participants spent more than 2 minutes [Fig.3]. Oral health experts generally recommend at least two minutes of brushing with the right technique, but the average brushing time in the general population is close to 45 seconds[20].

In view of the results of our study, it is suggested that some form of preventive oral hygiene programs be embarked on, where emphasis is placed on regular and higher frequency of tooth brushing specially in population with low socioeconomic status and low education levels, to decrease the prevalence of periodontal diseases in our population. This will greatly increase general population oral health status.

The study being a cross sectional study, has its limitations because it gathers information about exposure and outcome at a specific period of time. Therefore there is a difficulty in establishing a temporal relation between them. Further studies should be conducted for understanding certain other risk factors associated with periodontal diseases. Foreseeing the bad effects of periodontal diseases on oral and general health, the prevention of diseases should be included in National health Programs.

CONCLUSION

Poor oral hygiene increase the risk of development and progression of periodontal diseases. Decreased frequency of brushing leads to increase risk of development of periodontal diseases.

Author's Contribution:

Concept & Design of Study:	Batool Zara
Drafting:	Fareeha Naz, Hussam Siddiki
Data Analysis:	Farah Farhan, Adil Umer Durrani, Fizza Sahar Anwar
Revisiting Critically:	Batool Zara, Fareeha Naz
Final Approval of version:	Batool Zara

Conflict of Interest: The study has no conflict of interest to declare by any author.

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