Occurrence of Periodontitis and Associated Factors among Young Adults

Research Article

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Abstract

Objective: The present study was conducted to assess the occurrence of periodontitis and associated factors among young adults attending Hospital Universiti Sains Malaysia Dental Clinic (HUSM).

Materials and Methods: This study involved the retrieval of secondary data from the patient's dental record of 99 patients from 1st January 2017 until 31st December 2017 at HUSM Dental Clinic. The Basic Periodontal Examination (BPE) score of the patients during dental visit was recorded. Patients' personal data including sociodemographic data (age, sex, ethnicity, education level and working status), smoking status and systemic disease were retrieved to find out the association with periodontitis. The data was entered and analyzed using Statistical Package for Social Science (SPSS) version 24.0 software.

Results: The results showed that the prevalence of periodontitis among young adults was 17.2% with minimum age of 21 and mean age of 28.53. Correlation value of age and periodontitis was 0.206. There was an association between smoking and periodontitis with a p-value of 0.044. Sex, ethnicity, education level, working status and systemic disease were found significantly not related with periodontitis with a p-value >0.05 respectively.

Conclusion: The prevalence of periodontitis among young adults was 17.2% and it was associated with age and smoking.

Keywords: Periodontitis; Young Adults; Age; Smoking.

Introduction

Periodontal disease is one of the two major dental diseases which have high prevalence rates worldwide, the other being caries [1].It can be mainly classified into two types; gingivitis and periodontitis. Gingivitis is the gingival inflammation which is reversible and it is not associated with loss of attachment or bone loss [2]. When the inflammation involves the tooth supporting periodontium-loss, it is term periodontitis where it is characterized by clinical attachment loss due to destruction of the periodontal ligament and loss of adjacent supporting bone [3].

In United States, attention were given to the periodontal health of the nations, a study conducted showed 47% of adults had periodontitisand 47% of adults had the similar problems shown in a three-year study conducted in the following year [4]. In Sri Lanka, the periodontal disease status for ages 35-44 years and 65-74 years with periodontal disease of all severity were 89.9% and 98.1% respectively. 82.23% of adults in France were found to have peri-

odontal pocket, with 10.21% was greater than 5mm [5]. In Malaysia, oral health survey was carried out in 1990, 2000 and 2010 with the results of 92.8%, 90.2%, and 94% of dentate adults reported to have periodontal diseases respectively; and to look into details, severe periodontal disease increased from 6% in 1990 to 18.2% in 2010 [6].

Age showed a positive association with periodontitis with increasing prevalence as the age increases, showing 8.2% difference in 30 years of age difference [5]. Smoking were one of the two major risk factors of periodontitis, other being diabetes [7]. Smokers were significantly proved to have more pockets ≥ 4 mm than non-smokers [8].

At present, there is high prevalence of periodontal condition exists in the adult which needed attention to arrest the progression of disease, preserving the dentition in the state of health and to prevent recurrence of periodontitis [9]. Usually, epidemiological studies are primarily concentrated on adolescents, adults and el-

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derly population. Unfortunately, no information is available for the young adults. The plausible reason for this lack of information comes from the fact that early studies presented results which suggested little or no periodontal destruction before the age of 30 years.

Therefore, this study was conducted to determine to prevalence of periodontitis in young adults and find its association with their sociodemographic background.

Methodology

This was a cross sectional study that involved secondary data collection of the patients who visited HUSM Dental Clinic for dental treatment. The source population comprised the dental records of adult patient age range from 18 to 34 years old who attended HUSM Dental Clinic from 1st January 2017 until 31st December 2017. From dental records, patient's sociodemographic data (age, sex, ethnicity, education level and working status), smoking status, systemic disease and BPE score were obtained and filled in.

Sample Size Estimation

The parameter under interest of this study was single proportion, which was the occurrence of periodontitis, the sample size was calculated using the formula:

$$n = \frac{1.96^2 \times P(1-P)}{\Delta^2}$$

Anticipated population proportion (P) = 40.63% (0.40)
Level of significance = 5% (0.05)
Absolute precision = ±10%

So, the expected minimum sample size required was 93. A dropout of 10% was included, therefore, the sample needed for collection of data was 103.

Sampling Method

The sampling method of this study was systemic sampling. All dental records of adult patient age range from 18 to 34 years old HUSM Dental Clinic were selected and screened using inclusion and exclusion criteria. Selected records were numbered from one (1) to N (N was the total selected records). Sampling interval (k) was determined by using the formula,

sampling interval, $k^{th} \dfrac{N(total\ selected\ records)}{n(sample\ size)}$

A number between one and k^{th} was selected randomly (random start). Then, every kth dental records was selected reaching sample size.

Proposed Data Analysis

Data was entered and analyzed using Statistical Package for Social Science (SPSS) version 24.0 software. For descriptive analysis, numerical data were presented using mean (SD) or median (IQR) depending on their normality distribution and categorical data were presented using frequency (%). For assessing the factor associated with periodontitis, linear regression was used and p-value

was set at 0.05 for numerical and chi-square used for categorical variables.

Ethical clearence was obtained from the Research Ethics and Committee (Human), Universiti Sains Malaysia (USM/JEPeM). All information was kept confidential and only accessible to researchers and only group information was reported and published.

Results

Table 1 showed descriptive data of sociodemographic characteristics and smoking status of study subjects. The mean age of subjects was 26.39. More than half of the subjects comprisedfemales (55.6%). 84% of the subjects were Malays. More than 60% of the respondents had completed tertiary education. 52.5% of the subjects were currently not working. 86.9% of the subjects were non-smokers.

Table 2 showed the descriptive characteristic of oral and general health status. 82.8% of the subjects had a basic periodontal examination (BPE) of 2.84.8% of the subjects had no known medical illnesses.

Table 3 showed the periodontal condition of study subjects. More than 82% of the subjects did not have periodontitis.

Table 4 showed the descriptive characteristics of periodontal condition in patients with periodontitis. The minimum age of the patients with periodontitis was 21 years and the mean age was 28.53. Table 5 showed the association between periodontitis and age of study subjects. The Pearson correlation of 0.206 showed that age and periodontitis were weakly associated.

Table 6 showed the factors associated with periodontitis. Of all the factors, only smoking was significantly related with periodontitis with a p-value of 0.044. Smokers had almost three times greater probability of having established periodontitis compared to non-smokers.

Discussion

The prevalence of periodontitis among young adults attending HUSM Dental Clinic was reported to be 17.2%. Similarly, the study that was carried out in Brazil by Susin et al. (2005) reported that 17.4% of young adults had severe form of periodontitis with probing depth ≥5mm [10]. However, a direct comparison of the present results with previous surveys performed was not feasible because these studies were either based in the CPITN methodology [11] or used specific samples. According to the study conducted, age and periodontitis were weakly correlated, with a Pearson correlation value of 0.206. This result matched the previous studies stating periodontal disease increases in severity in older age groups [12]. Another study showed a similar weak correlation of age and periodontitis, with a correlation value of 0.251, meaning that the severity of periodontal disease increases with age [11]. In the study conducted, smokers had almost 3 times greater probabilities than non-smokers of having established periodontitis. Similar result was reported from another study conducted showed patients with moderate to advanced periodontitis who were referred to a periodontal practice had 2.6 times the odds

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Table 1. Descriptive Data of Sociodemographic Characteristics and Smoking Status of Study Subjects (N=99).

Variables	Mean (SD)	Frequency (Percentage, %)
Age	26.39 (4.746)	-
Sex		
Male	-	44 (44.4)
Female	-	55 (55.6)
Ethnicity		
Malay	-	84 (84.8)
Chinese	-	10 (10.1)
Indian	-	5 (5.1)
Education Level		
No formal education	-	1 (1.0)
Secondary education	-	37 (37.4)
Tertiary education	-	61 (61.6)
Working Status		
Yes	-	47 (47.5)
No	-	52 (52.5)
Smoking Status		
Yes	-	13 (13.1)
No	-	86 (86.9)

Table 2. Descriptive Characteristic of Oral and General Health Status (N=99).

Variables	Frequency (Percentage, %)
Basic Periodontal Examination (BPE) Score	
2 and below	82 (82.8)
3 and 3*	12 (12.1)
4 and 4*	5 (5.1)
Medical Illness	
Yes	15 (15.2)
No	84 (84.8)
Types of Medical Illness	
Allergic rhinitis	1 (1.0)
Asthma	3 (3.0)
Bipolar type 2	1 (1.0)
Brugada Syndrome	1 (1.0)
Diabetes Mellitus	2 (2.0)
Gastritis	1 (1.0)
Hyperlipidemia	1 (1.0)
Hypertension	1 (1.0)
Myocardial Infarction	1 (1.0)
Rheumatoid heart disease	1 (1.0)
Sinusitis	1 (1.0)
Thoracolumbar Scoliosis	1 (1.0)

*Furcation involvement

of a smoking history compared to patients in the general practice who had no history of periodontitis [13]. Such an increase in the risk of periodontitis could be due to the effect of tobacco on the immune system by inhibiting chemotactic and phagocytic functions of polymorphonuclear leukocytes, decreasing antibody production and predisposing gingival tissues to infections [14]. Results from the first United States National Health and Nutrition Examination Survey (NHANES I) demonstrated that, after adjusting for oral hygiene and other confounding variables, they still had greater periodontal destruction than former, or never

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Table 3. Periodontal Condition of Study Subjects (N=99).

Variables	Frequency (Percentage, %)
Periodontitis	
Yes	17 (17.2)
No	82 (82.8)

Table 4. Descriptive Characteristics of Periodontal Condition in Periodontitis Patient (n=17).

Minimum Age	21
Mean Age (mean / SD)	28.53 (4.230)

Table 5. Association between Periodontitis and Age of Study Subjects (N=99).

Dependent Variable	Independent Variable	Pearson correlation	p-value
Age	Periodontitis	0.206	0.041

Table 6. Factors Associated with Periodontitis (N=99).

Variables	Odd Ratio	Pearson Chi-Square	df	p-value
Sex	1.136	0.057	1	0.812
Ethnicity	-	1.121	2	0.736
Education status	-	4.873	1	0.172
Working Status	1.737	1.06	1	0.303
Smoking Status	3.854	4.769	1	0.044
Medical Illness	3	3.247	1	0.128

smokers [15]. This showed smokers having established periodontitis was found to be independent of other variables.

In the current study findings, it had been shown that there was little correlation between sex and periodontitis which in contrast to Shiau et al., (2010), sex exhibited a significant association with prevalence, reflecting a 9% difference between males and females (37.4% versus 28.1%, respectively) [16]. Education and working statuses had shown that there was little correlation between socioeconomic statuses and periodontitis. Conventional wisdom postulates a pathogenetic sequence with socioeconomic factors as initial step leading to health characteristics following a social gradient. The higher the social position, the better the health [17]. Periodontal diseases were more frequent and severe among individuals of low socio-economic status. However, current knowledge of socioeconomic risk factors influencing periodontal health was mainly based on cross sectional data and in such studies, when adjusted for diabetes or smoking, socioeconomic factors lost their significance in multivariate analyses supporting the findings of the current study [18, 19]. The difference in different studies could be due to the differences in variation of educational level, where more highly-educated individuals had a stronger commitment and better knowledge of taking care of oral hygiene, compared to those of the lower educational level. Poverty could also be a factor, causing the inability to obtain medical or dental assistance. Other than that, the current study findings had shown that there was little correlation between medical illnesses and periodontitis. A review of the literature by Kinane and Chestnutt (1997) found considerable evidence to suggest that diabetes and periodontitis had a direct relationship [20]. Also, a study by Slade et al., (2000) had identified edentulism and periodontal disease as two oral

conditions associated with an increased systemic inflammatory response within the US population [21]. However, severe periodontal disease, which occurs in approximately 14% of the US adult population (National Institute of Dental Research, 1987), was rarely considered in the medical assessment of patients' systemic health status, supporting the findings of the current study.

The difference in the different studies could be due to the fact that the subjects comprises of individuals of different inclusion criteria and there could be a difference in the sample size of different studies.

Conclusion

The prevalence of periodontitis among young adults was 17.2% and it was associated with smoking and weakly associated with age.

These act as a baseline information to formulate a holistic healthcare to the patients at young age, so that there is a possibility the prevalence of periodontal disease will be lesser during adulthood.

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