

Prevalence and severity of periodontal diseases among Nepalese adults - a hospital based study

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ABSTRACT

Objective

The present study was undertaken to determine the prevalence of periodontal diseases among adults visiting the dental department of a hospital based in Jorpati.

Methods

Four hundred and seventeen patients were randomly taken from a dental hospital situated in Jorpati during the time period of March 2013 to August 2013. All patients visiting the dental department who fulfilled the inclusion criteria were included in the study. The data included patients overall information along with their chief complaint, gingival bleeding on probing (BOP), probing depth (PD), frequency of brushing, adverse habits and the diagnosis of the patients examined.

Results

We found that 52.5% suffered from gingivitis and 47.5% suffered from periodontitis. Also 28.3% suffered from localized and 18% suffered from generalized form of periodontitis. There was no statistically significant difference in the gender when the prevalence of periodontal disease was compared. 51.4% of male and 44.4% of female was seen to be affected with periodontitis. Also habits like smoking and intake of smokeless tobacco was seen to be associated with periodontitis. Regarding the age group more number of patients in the age group of >50 years were seen to be suffering from periodontitis (84.3%) as compared to age group of ≤35 years (25.9%).

Conclusion

There is high prevalence of periodontitis and gingivitis in the studied population. Periodontitis was seen to be more prevalent as age advanced which can be attributed mainly to untreated gingivitis. However, no significant difference was seen in the prevalence of periodontitis with respect to gender.

Key words: Gingivitis, Nepal, periodontitis, prevalence

INTRODUCTION

Epidemiology is the study of the distribution and determinants of health-related states or events in specified populations and the application of this study to control health problems. Basically the purpose of epidemiology is to apply the knowledge gained from studies to "promote, protect and restore health".¹

Gingivitis is a non-destructive periodontal disease. Periodontitis is a group of inflammatory diseases affecting the supporting tissues of the tooth.¹ The American Academy of Periodontology (AAP) has classified periodontitis into aggressive periodontitis (AgP), chronic periodontitis (CP) and periodontitis as a manifestation of systemic diseases.² Both AgP and CP have a multifactorial etiology with dental plaque as the initiating factor.³

The prevalence of periodontal diseases varies in different regions of the world and there are indications that they may be more prevalent in developing than in developed countries.^{4,5}

Epidemiological studies that have been performed in many parts of the world indicate that periodontal diseases of varying severity are of nearly universal in adolescents. The prevalence of gingivitis is virtually 100% in a population with no oral hygiene and declines with improved oral hygiene.⁶ The prevalence of periodontitis has been reported by the World Health Organization (WHO) which showed a prevalence of severe periodontitis in around 8-10% of the Population.⁷

Periodontal diseases have potential effects on a wide range of systemic conditions like coronary heart disease (CHD), atherosclerosis, myocardial /cerebral infarction, stroke, diabetes mellitus, preterm /low birth-weight (LBW) baby, chronic obstructive pulmonary disease, acute respiratory infections and so on.⁸

A very limited number of epidemiological studies have been carried out to determine the prevalence of oral

diseases in Nepal. We have done our study in Jorpati which is a very large village in Kathmandu District in the Bagmati Zone of central Nepal.

MATERIALS AND METHODS

This is a hospital based study where all patients visiting the department of Oral Medicine and Radiology, in a dental hospital situated in Jorpati were taken during the time period of March 2013 to August 2013. Informed consents was obtained from the participants prior to the commencement of the study. Total number of patients examined was 417. For each participant, full mouth periodontal examination was performed and recorded on a special examination form. The clinical examinations were carried out using a sterilized Williams's periodontal probe and mouth mirror, under artificial illumination of dental chair. Face mask and examination gloves were worn by the examiner to prevent cross-infection.

The examination form included patients' general information along with their purpose of dental visit, gingival bleeding on probing (BOP), probing depth (PD), frequency of brushing, adverse habits and the diagnosis of the patients examined. Full mouth pocket depth was probed for the diagnosis of periodontal disease. Statistical analysis was performed using SPSS version 17.0 and test for association was performed using Pearson's Chi-square test.

RESULTS

Among the patients examined, 44.6% were male whereas 55.4% were female. The frequency of the age group was 52.8% in the age group of ≤ 35 years, 25.9% in the age group of 35-50 years and 21.3% in the age group of > 50 years. Out of the total patients examined, 47.5% suffered from periodontitis whereas 52.5% suffered from gingivitis. On asking for the

purpose of their visit to the Dental hospital, 15.6% came for routine dental visit, 35.5% came due to some kind of pain, 11.8% had complains of stains or deposits in teeth, 28.1% came with periodontal related problems like bleeding/swollen gums whereas 9.1% had other reasons (Fig. 1). In our study 68.8% brushed once daily whereas 29.5% brushed twice daily whereas 1.7% brushed occasionally (Fig. 2). Out of these, 28.3% suffered from localized periodontitis, 18.0% from generalized gingivitis and 0.2% from Aggressive periodontitis, 13.4% also had gingival enlargement due to some underlying systemic conditions (Fig. 3). Among the adverse habits, 13.9% were smokers, 6% consumed smokeless tobacco and 5.3% consumed both (Fig. 4). Although not statistically significant, both

males and females equally suffered from various types of periodontal disease (Table 1).

The prevalence of gingivitis was higher among patients of age group of ≤ 30 years (74.1%) as compared to that of other age groups. However, in the age group of more than 50 years, more people (84.3%) suffered from periodontitis (Table 1). Among the age group of ≤ 35 years, 21.4% suffered from localized form whereas 3.2% suffered from generalized form of periodontitis as compared to 37.1% of >50 years old group who suffered from localized form and 47.2% who suffered from generalized form of periodontitis. ($p < 0.005$) (Table 2). All of patients who used smokeless tobacco and 84.5% of the smokers suffered from various forms of periodontitis (Table 1).

Table 1 Prevalence of Gingivitis and Periodontitis with various factors

Age	Gingivitis (%)	Periodontitis (%)	P value
≤ 35	163 (74.1%)	57 (25.9%)	0.000
35-50	42 (38.9%)	66 (61.1%)	
>50	14 (15.7%)	75 (84.3%)	
Gender			0.158
Male	90 (48.6%)	95 (51.4%)	
Female	129 (55.6%)	103 (44.4%)	
Brushing habits			0.000
Once	139 (48.4%)	148 (51.6%)	
Twice	80 (65%)	43 (35%)	
occasional	0 (0%)	7 (100%)	
Adverse habits			0.000
None	207 (66.3%)	105 (33.7%)	
Smoker	9 (15.5%)	49 (84.5%)	
Smokeless tobacco	0 (0%)	25 (100%)	
Both	3 (13.6%)	19 (86.4%)	
Medical history			0.000
None	207 (62.2%)	126 (37.8%)	
Diabetes	0 (0%)	13 (100%)	
Hypertension	2 (6.1%)	31 (93.9%)	
Both	0 (0%)	21 (100%)	
Others	10 (58.8%)	7 (41.2%)	

Table 2 Prevalence of various forms of periodontal disease with age

Age (years)	Chronic gingivitis	Localised periodontitis	Generalized periodontitis	Aggressive periodontitis	Gingival enlargement	P value
≤35	121 (55%)	47 (21.4%)	7 (3.2%)	1 (0.5%)	44 (20%)	0.000
35-50	38 (35.2%)	38 (35.2%)	26 (24.1%)	0 (0%)	6 (5.6%)	
>50	8 (9%)	33 (37.1%)	42 (47.2%)	0 (0%)	6 (6.7%)	

Fig. 1: Frequency for purpose of dental visit

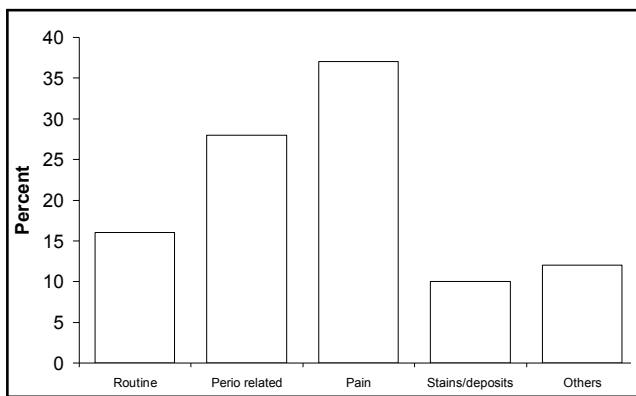


Fig. 4: Frequency of adverse habits

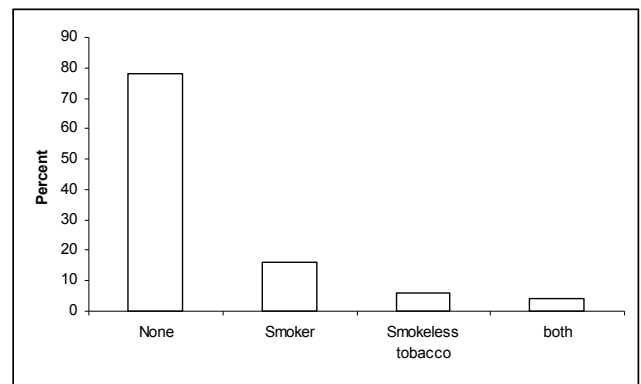


Fig. 2: Frequency of brushing habits

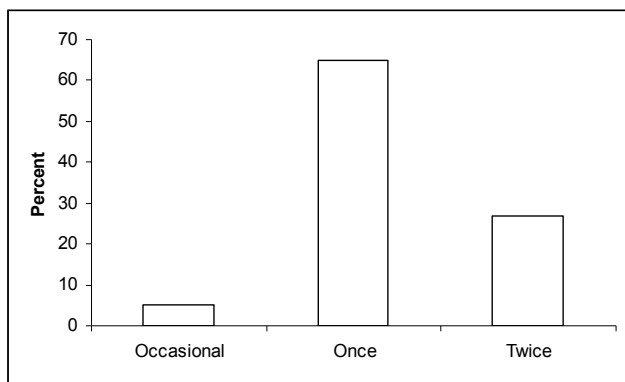
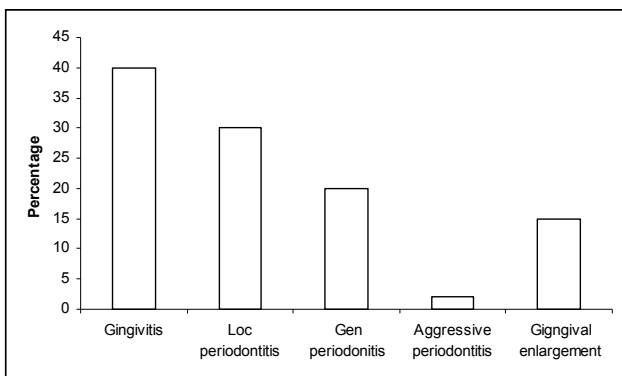


Fig. 3: Frequency of various forms of periodontal disease



DISCUSSIONS

In our study, the prevalence of periodontitis was 47.5% and of gingivitis was 52.5% among which 28.3% suffered from localized form and 18% suffered from generalized form of periodontitis. The remaining 0.2% had aggressive periodontitis and 13.4% had gingival enlargements (Fig, 2). Naseem Shah⁹ in his report for the National Commission on Macroeconomics observed more advanced periodontal disease affecting 40–45% of the population of India. Arvidson-Bufano¹⁰ found shallow pockets in 34% of the urban slum group and in 42% of the rural group, in a survey done in Central and Western Bangladesh. GPI Singh¹¹ in his prevalence study done in Ludhiana and found that the urban subjects had more prevalence of moderate and severe periodontitis than rural subjects. Md. Zahid Hossain et l.¹² had done a year long study in which

gingivitis cases were found to be 63.2% and periodontitis was 36.8% which was concurrent with the findings of our study where the prevalence of periodontitis was 47.5%. Ababneh¹³ et al. concluded in his study that 76% had gingivitis, 2.2% had AgP and 5.5% had CP. In his study the prevalence of periodontitis increased with age, which was similar to what was observed in our study. His study also showed periodontitis to be more frequent among males as compared to females. In our study, although not statistically significant, more females suffered from gingivitis (55.6%) as compared to males (48.6%). As shown in table 1, 51.4% of males suffered from periodontitis as compared with 44.4% of females. ($p>0.005$).

Among the age group of ≤ 35 years, 21.4% suffered from localized form whereas 3.2% suffered from generalized form of periodontitis as compared to 37.1% of >50 years old group who suffered from localized form and 47.2% who suffered from generalized form of periodontitis. ($p<0.005$) David J¹⁴ et al in 2011 in his study done among adults in Nepal showed periodontal pocket 4 to 5 mm was predominantly seen among illiterates and those with primary or unfinished secondary school education (PSE) and those who used non-fluoridated dentifrice. Periodontal pocket of 6 mm was observed among illiterates and those with PSE and those who used non-fluoridated dentifrice. His study also showed that chewing betel nut had a protective effect with regard to calculus formation.

Regarding the adverse habits in our study, all of patients who used smokeless tobacco and 84.5% of those who smoked suffered from various forms of periodontitis. Habits like smoking and tobacco chewing was shown to be a significant risk factor for periodontal diseases.^{14,15} Smoking may alter neutrophil chemotaxis,

phagocytosis and oxidative burst. It can also increase secretion of tumor necrosis factor alpha, prostaglandin E2, neutrophil collagenase and elastase in gingival crevicular fluid.^{1,16}

Regarding the purpose of the visit to the dental hospital majority of them (35.5%) visited due to some kind of pain, whereas only 15.6% came for routine dental check up (Fig. 1). Similar results were seen in a study done by Humagain M¹⁷ in which he showed that only 20% were regular dental attendees. Also he reported that only 35.1% of the study sample brushes their teeth at least twice daily while 64.9% reported regular brushing once daily which was similar to our study which showed that 68.8% brushed once daily whereas 29.5% brushed twice daily (Fig 3).

CONCLUSION

Untreated periodontitis results in tooth loss in many cases. Also it has been proved that there is a risk of preterm low birth weight babies, coronary artery diseases, diabetes, rheumatoid arthritis, etc. associated with the inflammatory mediators of periodontitis hence greater effort should be made in providing periodontal health and educating about it to the people of Nepal.⁸

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