Original Article

Periodontal Status and Gingival Conditions of the Tea Workers

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Abstract

Background: *Periodontitis and gingivitis are prevalent chronic inflammatory diseases. The examination of the periodontal and gingival conditions is complex and requires a proficient dental healthcare provider to detect the patient's definite problems.* ***Methodology:*** *The study was designed as a cross-sectional study to assess the periodontal status and gingival conditions of the 372 tea workers in the purposively selected Premnagar tea garden located in Moulvibazar district, Sylhet 3200, Bangladesh. 'Community Periodontal Index' (CPI) was used to measure the periodontal status.* ***Results:*** *Most of the workers (38.2%) were from the age group ≥37 years and illiterates (62.1%). More than two-fourths (57.8%) had detected calculus during probing, one-fourth (25.3%) had a shallow pocket and only 11.6% had healthy periodontal status. The prevalence of poor periodontal status was 88.4%. Among the dental cleaning aids such as toothbrush users, 15.6% had healthy periodontal status, whereas the smokeless tobacco non-users (22.6%) and pan-supari non-chewers (75.0%) had healthy periodontal conditions. The level of periodontal status factors was statistically significant with age, educational qualification, and monthly household income ($p<0.05$) of the workers.* ***Conclusion:*** *The study warrants poor periodontal health status among the tea workers. It is essential to do the periodical assessment of the periodontal condition, risk factors analysis, and management complications by establishing dental health corners in tea garden health settings.*

Key words: Periodontal status, Gingivitis, Tea workers, Sylhet, Bangladesh.

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Introduction

Periodontal disease is a chronic inflammation that is initiated due to subgingival bacterial infection, which leads to tissue damage over a period[1-3]. It has many physiognomies, denotes highly infective, slowly progressive, recurrent, and non-resolving conditions[4,5]. Dental plaque-induced untreated gingivitis over a time develops periodontitis[6-8].

Periodontitis is always preceded by gingivitis[9]. The communal risk factors of this non-communicable disease are gender (male), stress, genetic factors, tobacco use, alcohol consumption, and poor oral hygiene practices[10,11]. Diabetes mellitus and metabolic disorders are also considered a high-risk factor for developing periodontal disease[13-17]. Poor oral hygiene practices and associated factors cause various dental problems, such as dental decay, periodontitis, and missing teeth[18,19]. These are affecting the work productivity of the tea workers[20]. Early assessment and diagnosis of periodontal disease are pliable to prevention, but it is a complex and challenging chore. It requires full mouth probing and bleeding on probing assessments, along with radiographic assessment[5].

It is widely documented that tea workers are leading low standard of social life; their literacy level and economic state are very poor. They are deprived of basic health needs, and they are unable to effort the cost of healthcare expenditure from private settings[21-23]. As a result, they suffered different types of oral and dental health problems including periodontal disease and gingivitis. The intention of the study was to provide information on the oral health status of tea workers that will help to be aware and aid to plan oral health promotion programs in that vulnerable group.

Materials and Methods

Study design and settings: This was a cross-sectional study conducted to assess the periodontal status and gingival conditions of the tea workers. The study commenced January to December of 2018 in the purposively selected tea garden named

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Premnagar tea garden located in Moulvibazar district, Sylhet 3200, Bangladesh.

Data collection: 372 adults participants aged ≥18 years working in tea garden were selected during the study period. A pre-tested semi-structured questionnaire was used for data collection through face-to-face interviews after obtaining informed written consent from each participant. The periodontal status of the oral cavity was measured by 'Community Periodontal Index' (CPI). Healthy periodontal health status means that the workers had healthy periodontium (score 0). Unhealthy periodontal health status means the workers had bleeding, calculus, shallow pocket, or deep pocket i.e., scores with 1,2,3,4 respectively.

Data analysis: The collected data were analyzed by using IBM SPSS v23. Descriptive statistics such as mean, standard deviation and percentile were computed for continuous variables of the participants. Chi-square and Fisher's exact test was used to assess the significance of associations between two nominal variables and a p-value of <0.05 at a 95% confidence interval was taken as significant. The results were presented in tables and charts.

Ethical approval: Participation was voluntary, and confidentiality was maintained by using an individual code number for each participant. The study was validated by the National Institute of Preventive and Social Medicine (NIPSOM), Dhaka 1212, Bangladesh. (NIPSOM/IRB/2018/471)

Results

Table-I represents the socio-demographic traits of the workers of Premnagar tea garden. A total of 372 workers were interviewed. Most of the workers (38.2%) were from the age group ≥37 years followed by 33.9% from the age group 28-37 years and 28.0% from the age group 18-27 years. Most of the workers were females (53.0%) and illiterates (62.1%). Nearly two-thirds of the families (61.8%) had ≤4 members and most of the families (92.0%) average monthly income were ≤5,000 taka.

Table-II shows the factors related to periodontal health status. Two-thirds of the workers (65.6%) used a toothbrush as a dental cleaning aid and the remaining one-third used fingers. Two-thirds of the workers (66.7%) used smokeless tobacco such as sadapata (91.9%) and jarda (51.6%). About three-fourths of the workers (73.0%) used pan-supari. Most of the workers (77.0%) never visited a Dentist due to financial problems (91.3%).

Figure-1 portrays the periodontal health status of the workers. During examinations, more than half (57.8%) had detected calculus during probing, one-fourth (25.3%) had a shallow pocket and only 11.6% had healthy periodontal status.

Figure-2 exposes the levels of the periodontal health status of the workers. About nine out of ten workers' periodontal health status was poor.

Table-I: Socio-demographic traits of the respondents (n=372)

Traits	Frequency	Percent
Age groups (years)		
18-27	104	28.0
28-37	126	33.9
≥37	142	38.2
Gender		
Male	174	47.0
Female	198	53.0
Religion		
Hindu	361	97.0
Muslim	11	3.0
Literacy status		
Illiterate	231	62.1
Literate	141	37.9
Numbers of family members		
≤4 persons	230	61.8
>4 persons	142	38.2
Monthly household income		
≤5,000 taka	344	92.0
>5,000 taka	28	8.0

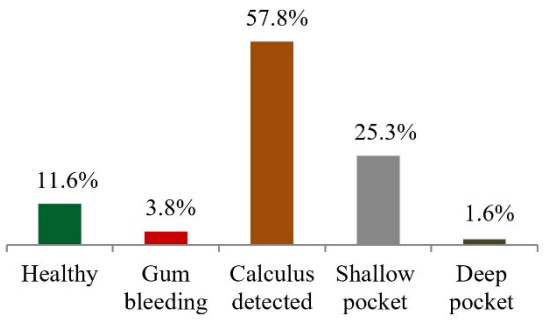

Figure-1: Periodontal health status of the workers (n=372)

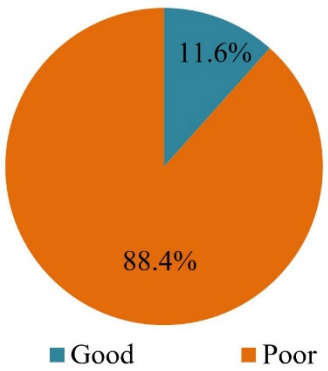

Figure-2: Level of periodontal health status (n=372)

Table-III describes the distribution of workers between periodontal status and gingival conditions. Among the dental cleaning aids such as toothbrush users, 15.6% had healthy periodontal status, whereas a few finger users (3.9%) had healthy periodontal health. Most of the smokeless tobacco non-users (22.6%) and pan-supari non-chewers (75.0%) had healthy periodontal status in contrast to users of 6.0% and 3.7% respectively. Table-IV construes the association of the level of periodontal status factors with the socio-demographic variables. The level of periodontal status factors was statistically significant with age (p=0.020), educational qualification (p=0.032) and monthly household income (p=0.018) of the workers.

Table-III: Distribution of workers between periodontal status and gingival conditions (n=372)

Factors	Healthy	Bleeding observed	Calculus detected	Shallow pocket (4-5mm)	Deep pocket (>6 mm)	Total
	n (%)	n (%)	n (%)	n (%)	n (%)	n (%)
Dental cleaning aids						
Toothbrush	38 (15.6)	12 (4.9)	152 (62.3)	40 (16.4)	2 (0.8)	244 (100)
Fingers	5 (3.9)	2 (1.6)	63 (49.2)	54 (42.2)	4 (3.1)	128 (100)
Smokeless tobacco using status						
User	15 (6.0)	12 (4.8)	145 (58.5)	70 (28.2)	6 (2.4)	248 (100)
Non-user	28 (22.6)	2 (1.6)	70 (56.5)	24 (19.4)	0 (0.0)	124 (100)
Pan-supari using status						
User	10 (3.7)	12 (4.4)	159 (58.5)	85 (31.3)	6 (2.2)	272 (100)
Non-user	30 (75.0)	2 (14.3)	55 (25.7)	13 (13.3)	0 (0.0)	100 (100)

Table-IV: Association of level of periodontal health status with socio-demographic traits (n=372)

Traits	Level of periodontal status			χ2 value	p-value
	Good	Poor	Total		
	n (%)	n (%)	n (%)		
Age groups (years)					
18-27	37 (35.6)	67 (64.4)	104 (100)	81.661†	0.020*
28-37	4 (3.2)	122 (96.8)	126 (100)		
≥37	2 (1.4)	140 (98.6)	142 (100)		
Gender					
Male	15 (8.6)	159 (91.4)	174 (100)	2.761	0.097
Female	28 (12.6)	170 (87.4)	198 (100)		
Educational qualification					
Illiterate	13 (5.6)	218 (94.4)	231 (100)	27.807 †	0.032*
Literate	26 (18.3)	115 (81.7)	141 (100)		
Monthly household income					
≤5,000 taka	71 (20.6)	273 (79.4)	344 (100)	23.142	0.018*
>5,000 taka	10 (35.7)	18 (64.3)	28 (100)		

*Statistically significant value †Fisher exact test

Discussion

Health is one of the most valuable monies which one can possess. Oral health is now recognized as equally important as general health. Oral diseases can be considered a public health problem due to their high prevalence and significant socioeconomic impact. The greatest burden of all diseases mostly affects the disadvantaged and socially demoted population.

In this study, we found most of the respondents were illiterate (62.1%) which was like the result of the study on tea workers 60% and better than the tea workers in the Chittagong district, where illiterate was 88%[24,25]. Education is important to maintain good oral health and hygiene. Most of the workers in our study were from the low-income group (92%) and most of the workers were from the 28-37 years age group (33.9%). On the other hand, in another study on tea workers 77% were from the low-income group (monthly income less than taka 5000), and the majority were from the 20-29 years age group which was almost like our study[25].

In the present study, the prevalence of periodontal disease among workers was 88.4% and among the males 91.4% and the females 87.4% which was nearly like the study where the prevalence of periodontal disease was 80.8% in females and 77.3% in males[26]. The prevalence of periodontal

disease was 97.51% and 97.4% among the workers[27,28]. The periodontal condition the same in this sub-continental region might be due to the same oral habits, tobacco use and low socioeconomic status of the population.

In our study, among the tea garden workers the percentage of gum bleeding was 3.8%, calculus was detected 57.8%, shallow periodontal pocket (4-5 mm) was detected 25.3% and a deep periodontal pocket was detected 1.6% in the clinical examination where 9.8% of gum bleeding was seen in the workers[26], 69% gum bleeding seen in low-income group people[29], shallow pocket 46.8%, deep pocket 33.6% found in the study workers[30], shallow pocket was found in 6.7% health workers[26]. Difference in prevalence of pocket and periodontal status might be due to different characteristics of the community in oral hygiene practices.

In this study, the periodontal pocket was detected in 16.4% of toothbrush users, whereas a pocket was detected in 42.2% of the workers who used a finger as tooth-cleaning aid. The non-smoking tobacco users' shallow pocket (4-5mm) was found in 28.2%, whereas a shallow pocket was detected in 58.5% of pan-supari users. Another study to assess the prevalence was found higher in the smokeless tobacco users[31].

Conclusion

The study warrants the healthcare needs of the tea workers. Their prevalence of periodontal status revealed poor due to the low level of oral hygiene and limited oral health care resources in the garden. A better mechanism should be developed to improve the services by routinely arrange of health education and health campaign program to increase the level of awareness of the workers. For early diagnosis and treatment of periodontal diseases, screening and proper healthcare facilities should be established in the garden health facilities.

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Competing interests

The authors declared no competing interests.

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