Original Article

Dentition Status of Tea Garden Workers in Sylhet

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Abstract:

Background: Tea manufacturing is the largest labor-based industry in Bangladesh. Dental health problems due to the poor oral health status of the tea workers are considered an emerging health problem. **Methods:** This study cross-sectional study was designed to assess the dentition status of the 372 tea garden workers. Dentition status was measured by using 'DMFT index score'. **Results:** The mean age of the workers was 35.2 ± 8.3 years and one-third was from the age groups 28-37 years. Three-fourths of the workers (76.3%) had decayed teeth, 42.8% had missing teeth and fewer (5.9%) had filled teeth. The mean DMFT was found 3.15 ± 3.481. The mean numbers of decayed missing and filled teeth per person were observed at 2.15 ± 2.473, 0.97 ± 1.629 and 0.13 ± 0.621 respectively. The highest DMFT was found in the 48-57 years group (6.64 ± 4.382) and the mean decayed teeth were also highest in this group (3.94 ± 3.464). The mean of decayed, missing and filled teeth observed in income group <5,000 taka were 2.24 ± 2.541, 1.01 ± 1.676 and 0.14 ± 0.645. Most of the workers' dental health status was found poor (45.2%). The levels of dental health status was significant with the worker's education, monthly family income, type of dental cleaning aids, frequency of daily tooth cleaning, use of smokeless tobacco, use of pan-supari, alcohol consumption and visit a dentist ($p<0.05$). **Conclusion:** The study findings reveal that the dental health status was poor among the tea workers. It is indeed to provide basic dental healthcare facilities in their health settings.

Keywords: Dentition status, Tea workers, Sylhet, Bangladesh

Introduction:

Tea is a leading agro-industry in Bangladesh, which contributes enormously to the national economy.[1] The tea workers are considered a cornered, minority group of people from different tribal ethnic origins.[2] The ethnic or racial factors are causes various type of health and environmental problems, which influences their quality of life.[3] In addition, they are suffering from poverty, negligence, deprivation, socioeconomic insecurity, cultural taboos and senile diseases.[4]

Healthcare facilities are one of the important basic human rights, which are not sufficiently provided among the tea garden population.[5] Unawareness regarding health and hygiene makes them more vulnerable to health hazards including many dental problems.[6] Their knowledge about a healthy lifestyle is also very poor.[7,8] Dental health problems such as dental caries, periodontitis, and loss of teeth are most prevalent among them due to poor oral health status and the use of different types of smokeless tobacco and alcohol consumption.[9,10] Workers had a common complaint that inadequate healthcare facilities and logistic support including dental health facilities in the garden. Frequently they face problems in getting dental health services from outside, cause the treatment cost is so high for them in contrast to their economic condition.[11,12] Poor oral health may provoke the risk of critical outcomes like root infection, oropharyngeal carcinoma etc. among the older and immune-compromised groups.[10]

'Global Strategy for the prevention and control of non-communicable diseases' by the World Health Organization (WHO) adopts a new approach to the prevention and control of oral diseases, particularly in low and middle-income countries. To diagnoses the risk factors, evaluating

preventive activities in the community and oral health promotion by a strong surveillance system should be established.[13]

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Methods:

Study design and settings

This study was designed and implemented as a cross-sectional study to assess the dentition (teeth) status of tea garden workers. The study was done from January to December of 2018 in the purposively selected tea garden named Premnagar tea garden located in Moulvibazar district, Bangladesh.

Data collection procedures

The participants were conveniently selected 372 adults, and aged ≥18 years working in tea garden irrespective of male and female during the interview time. A pre-tested semi-structured questionnaire was used for data collection through face-to-face interviews after obtaining informed written consent from each participant. Dentition status was measured by 'DMFT index score' which is used to measure the status of permanent teeth and the measurement of the intensity of dental caries and proportion of tooth loss due to caries and the measurement of teeth affected by caries. DMFT score equals the sum of the average number of decayed teeth per person plus the average number of missing teeth due to caries per person plus the average number of filled teeth per person. Satisfactory dental health status means DMFT <2 and poor dental health status means DMFT >2.

Data analysis

The questionnaire was checked and cleaned after the completion of data collection. All data were computed and analyzed through 'Statistical Package for the Social Sciences' (SPSS) software version 23. 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 chart.

Ethical aspects

An assurance of confidentiality and secrecy of the information was given to all interviewed workers. The study was validated by the 'Institutional Review Board' (IRB) of the National Institute of Preventive and Social Medicine (NIPSOM), Dhaka 1212, Bangladesh. (NIPSOM/IRB/2018/471)

Results

Socio-economic outlines of the tea garden workers
Table 1 outlines the socio-economic characteristics of the tea garden workers. The mean age of the workers was 35.2±8.3 years and one-third was from the age groups 28-37 years. The majorities of the respondents were females (53.0%) and married (91.9%). About two-thirds of the workers (62.1%) were illiterate. The majority (92.0%) of families' average monthly income was below 5,000 taka with a mean income of 4120.2±872.6 taka.

Table 1: Socio-economic outlines of the respondents (n=372)

Outlines	n (%)
Age groups (years)	
18-27	104(28.0)
28-37	126(33.9)
38-47	75(20.2)
48-57	67(18.0)
Mean±SD	35.2±8.3
Gender	
Male	174(47.0)
Female	198(53.0)
Marital status	
Married	342(91.9)
Unmarried	20(5.45)
Others	10(3.7)
Educational level	
Illiterate	231(62.1)
Primary	120(32.3)
Secondary and above	21(5.6)
Monthly family income (Taka)	
1,000-5,000	344(92.0)
5,001-10,000	28(8.0)
Mean±SD	4120.2±872.6

Factors related to oral health and the utilization of dental health services

Table 2 describes the factors related to oral health and the utilization of dental health services of the respondents. Most of the workers were cleaning their teeth daily morning (96.5%) and used toothbrushes (65.6%). The majorities of the workers were correspondingly smokeless tobacco users (66.7%) and pan-supari users (73.0%). On the contrary, one-fifth were smokers (22.0%) and less than one-tenth (8.3%) were alcohol users. More than half of the respondents (56.0%) had any sort of dental problem and among them, 42.1% suffered from toothache. More than three-fourths of the workers (77.0%) never visited the dentist for dental problems and only less than one-fourth (23.0%) visited a dentist. There was no dental problems treatment facility the tea garden health facilities and the garden authorities never arranged any dental health campaign for the workers.

Dentition status of tea garden workers

Table 3 depicts the dentition status of tea garden workers. Three-fourths of the workers (76.3%) had decayed teeth and one-fourth (23.7%) had no decayed teeth. Most of the workers (57.2%) had no missing teeth and the rest (42.8%) had missing teeth. The majority of the workers (94.1%) had no filled tooth and the rest (5.9%) had filled teeth.

Mean of DT, MT, FT and DMFT by socio-economic outlines

Table 4 demonstrates the mean of DT, MT, FT and DMFT by socio-economic outlines of the tea garden workers. The mean DMFT of the respondents was found 3.15±3.481. The mean numbers of decayed missing and filled teeth per person were observed at 2.15±2.473, 0.97±1.629 and 0.13±0.621 respectively. There was a remarkable mean difference between the age groups were the lowest DMFT (0.98±1.448) in the 18-27 years group and the highest in the 48-57 years group (6.64±4.382). The mean decayed teeth were also lowest in the 18-27 years age group (0.90±1.048) and highest in the 48-57 years age group (3.94±3.464). The mean of decayed, missing and filled teeth observed in income groups 1,000-5,000 taka were 2.24±2.541, 1.01±1.676 and 0.14±0.645 respectively; wherein 5,001-10,000 taka monthly income groups the mean no of decayed missing filled teeth were 1.07±.813, 0.39±.629 and 0.00±0.000 respectively. There was a remarkable mean difference between DT, MT and FT in the above two income groups of the workers.

Table 2: Factors related to oral health and the utilization of dental health services (n=372)

Factors		n (%)
Factors related to oral hygiene practices		
Dental cleaning aids used	Toothbrush	244(65.6)
	Fingers	128(34.4)
Daily tooth cleaning times	One time (morning)	359(96.5)
	Two times (morning and evening)	13(3.5)
Factors related to oral health status		
Use of smokeless tobacco	Yes	248(66.7)
	No	124(33.3)
Chewing of pan-supari	Yes	272(73.0)
	No	100(27.0)
Active smoking status	Yes	80(22.0)
	No	292(78.0)
Regular alcohol consumption	Yes	31(8.3)
	No	341(91.7)
Utilization of dental health services		
Presence of dental problems	Yes	209(56.0)
	No	163(44.0)
Presence of dental ache (n=209)	Yes	88(42.1)
	No	121(57.9)
Visited to a dentist	Yes	85(23.0)
	No	287(77.0)
Reasons not to visit a dentist (n=287)	Financial problems	262(91.3)
	Busy with works	59(20.6)
	*Multiple responses	
Arrangement of dental health campaign	Yes	0(0.0)
	No	372(100)
Availability of dental treatment in the health facility	Yes	0(0.0)
	No	372(100)

Table 3: Dentition status of tea garden workers (n=372)

Dentition status	n (%)
Number of decayed teeth per mouth	
0	88(23.7)
1-2	175(47.0)
>2	109(29.3)
Number of missing tooth per mouth	
0	213(57.2)
1-2	113(30.4)
>2	46(12.4)
Number of filled teeth per mouth	
0	350(94.1)
1-2	16(4.3)
>2	6(1.6)

Table 4: Mean of DT, MT, FT and DMFT by socioeconomic outlines (n=372)

|		Decayed teeth	Missing teeth	Filled teeth	DMFT
Age groups (years)					
18-27		0.90±1.048	0.13±0.516	0.19±0.966	0.98±1.448
28-37		1.66±1.717	0.84±1.183	0.05±0.214	2.54±2.474
38-47	Mean±SD	3.12±2.646	0.99±1.370	4.08±3.344	4.08±3.344
48-57		3.94±3.464	2.48±2.507	0.22±0.573	6.64±4.382
Total		**2.15±2.473**	**0.97±1.629**	**0.13±0.621**	**3.15±3.481**
Monthly family income (Taka)					
1,000-5,000		2.24±2.541	1.01±1.676	0.14±0.645	3.30±3.564
5,001-10,000	Mean±SD	1.07±0.813	0.39±0.629	0.00±0.000	1.39±1.315
Total		**2.15±2.473**	**0.97±1.629**	**0.13±0.621**	**3.15±3.481**
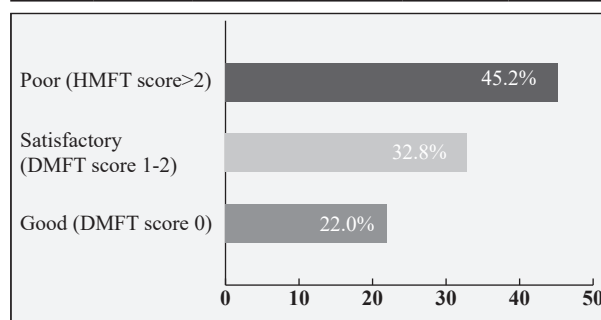
Figure 1: Levels of dental health status by DMFT scores (n=372)

Figure 1 illumines the levels of dental health status by DMFT scores of workers. Nearly half of the workers' (45.2%) dental health status was poor and only one-fifth of their (22.0%) status was good.

Table 5 interprets the statistical association of factors related to the socioeconomic, factors related to oral health

and utilization of dental health services of the tea garden workers with the level of dental health status. The level of dental health status was found statistically significant with the worker's educational status (p=0.027) and average monthly family income (p=0.006). The level of dental health status was also statistically significant with the type of dental cleaning aids (p=0.016), frequency of daily tooth cleaning (p=0.019), use of smokeless tobacco (p=0.031), use of pan-supari (p=0.029), alcohol consumption (p=0.023) and visited a dentist (p=0.041).

Table 5: Association of different factors with the dental health status of the tea garden workers (n=372)

	Levels of dental health status				χ2 value	p-value
	Good	**Satisfactory**	**Poor**	**Total**		
	n(%)	n(%)	n(%)	n(%)		
A. Socio-economic factors						
Age groups (years)						
18-27	51(49.0)	43(41.3)	10(9.6)	104(100)	†28.750	0.086
28-37	27(21.4)	43(34.1)	56(44.4)	126(100)		
38-47	4(5.3)	23(30.7)	48(64.0)	75(100)		
48-57	2(3.0)	12(17.9)	53(79.2)	67(100)		
Educational level						
Illiterate	28(12.1)	59(25.5)	144(62.3)	231(100)	†83.917	* 0.027
Primary	48(40.0)	49(40.8)	60(19.2)	120(100)		
Secondary and above	8(38.1)	13(61.9)	0(0.0)	21(100)		
Monthly family income (Taka)						
1,000-5,000	78(22.7)	103(29.9)	163(47.4)	344(100)	15.758	*0.006
5,001-10,000	6(21.4)	18(64.3)	4(14.3)	28(100)		
B. Factors related to oral health and the utilization of dental health services						
Dental cleaning aids used						
Toothbrush	68(27.9)	106(43.4)	70(28.7)	244(100)	†8.237	* 0.016
Finger	16(12.5)	15(11.7)	97(75.8)	128(100)		
Daily tooth cleaning times						
One time	78(21.7)	115(32.0)	166(46.2)	359(100)	8.237	*0.019
Two times	6(46.2)	6(46.2)	1(7.7)	13(100)		
Use of smokeless tobacco						
Yes	38(15.3)	79(31.9)	131(52.8)	248(100)	27.883	*0.031
No	46(37.1)	42(33.9)	36(29.0)	124(100)		
Chewing of pan-supari						
Yes	47(17.3)	81(29.8)	144(52.9)	272(100)	29.542	*0.029
No	37(37.0)	40(40.0)	23(23.0)	100(100)		
Regular alcohol consumption						
Yes	0(0.0)	6(19.4)	25(80.6)	31(100)	†19.070	*‡0.023
No	84(24.6)	115(33.8)	142(41.6)	341(100)		
Visited to a dentist						
Yes	0(0.0)	77(90.6))	8(9.4)	85(100)	†94.222	* 0.041
No	84(29.3)	113(32.5)	90(31.4)	287(100)		

*Statistically significant value Fisher exact test value

Discussion

The children, adolescents and older population are the most vulnerable groups in the tea garden areas due to the scarcity of basic human needs, particularly healthcare facilities.[14] As deprived, under-served, exploited and alienated groups their health status including dental health status is poor.[15]

The mean age of the workers was 35.2±8.3 years and one-third was from the age groups 28-37 years; which is nearly similar to these studies in Sylhet, Bangladesh[14,16,17],

Iran[10] and India1[9,19]. The illiterate rate was 62.1%, which is much higher than the national adult illiteracy rate.[20] The mean monthly family income was 4120.2±872.6 taka, representing their very low socioeconomic status.

The study revealed that most of the workers were cleaning their teeth daily morning (96.5%) and used toothbrushes (65.6%). These findings are similar to the studies.[10,21,22] The majority of the workers were correspondingly smokeless tobacco users (66.7%) and pan-supari users (73.0%). On the contrary, one-fifth were smokers (22.0%) and less than one-tenth (8.3%) were alcohol users. These findings are similar to the studies in different tea gardens.[23,24] More than half of the respondents (56.0%) had any sort of dental problem and among them, 42.1% suffered from toothache. More than three-fourths of the workers (77.0%) never visited the dentist for dental problems and only less than one-fourth (23.0%) visited a dentist. There was no dental problems treatment facility the tea garden health facilities and the garden authorities never arranged any dental health campaign for the workers.

The findings regarding the dentition status of tea garden workers were three-fourths of the workers (76.3%) had decayed teeth, 42.8% had missing teeth and fewer (5.9%) had filled teeth. Almost similar observations are found in the studies.[23-7] The mean numbers of decayed missing and filled teeth per person were observed at 2.15±2.473, 0.97±1.629 and 0.13±0.621 respectively. The highest DMFT was found in the 48-57 years group (6.64±4.382) and the mean decayed teeth were also highest in this group (3.94±3.464). The mean of decayed, missing and filled teeth observed in income group <5,000 taka were 2.24±2.541, 1.01±1.676 and 0.14±0.645 respectively. There was a remarkable mean difference between DT, MT and FT in the above two income groups of the workers. This difference in DMFT in the different communities might be due to food intake habits, low sugar intake, fluoride consumption, oral hygiene practice and availability of treatment facilities. But in the regional aspect the DMFT was nearly similar.[27-9]

Regarding the levels of dental health status by DMFT scores, nearly half of the workers' (45.2%) dental health status was poor and only one-fifth of their (22.0%) status was good. The levels of dental health status was significant with the worker's educational and monthly family income (p<0.05). The levels of dental health status was also significant with the type of dental cleaning aids, frequency of daily tooth cleaning, use of smokeless tobacco, use of pan-supari, alcohol consumption and visited dentist (p<0.05). The levels of dental health status is most prevalent in the illiterate group (62.3%), monthly income of less than 5,000 taka (47.4%), finger users as cleaning aids (75.8%), cleaned teeth daily once (46.2%), smokeless tobacco users (52.8%), pan-supari users (52.9%), alcohol consumers (80.6%) and those who never visit a dentist (31.4%).

Conclusion

The study confirms that the dental health status was poor among the workers. It is due to low literacy rate, poor economic condition, lack of social protection and health education. To improve the dental health status of tea garden workers needed to focus on oral health promotion programs, oral health education programs as well as awareness buildup of tea garden workers. The authorities should establish and strengthen the healthcare facilities with basic dental treatment facilities in the tea garden.

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