Orginal Article

Food Habit and Dental Caries among the Workers in a Selected Factory in Narayangonj

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ABSTRACT

Background: Dental caries is a common oral health problem in Bangladesh. The prevalence of these diseases is continuously increasing with changes in dietary habits and increased consumption of sugar containing food. This study was conducted among factory workers to estimate the prevalence of dental caries and to identify its associated factors.

Methods: A cross-sectional study was conducted among 210 randomly selected workers of an apparel labeling solutions factory in 2019. Data were collected by face-to face interview on sociodemographic factors, food habits and oral hygiene practices using a semi-structured questionnaire and analyzed using SPSS software program.

Results: Of the respondents, 92% were male, 80% were 25-35 years old. Everyone was literate having education of SSC (42%), HSC (44%). All the participants used to take cereals, 72% sweet and sugar containing food, 95% sweet drinks and 75% fast food. Nearly 84% had dental caries, 57% had moderate to severe DMFT. Only 23% had good oral hygiene index (OHI) and 57% had bad breath. The DMFT was found to be associated with habit of taking sweets & sugar containing food ($p = 0.001$) and fast food ($p= 0.008$), brushing frequency ($p<0.001$) and bad breath ($p<0.001$).

Conclusions: A remarkable proportion of the workers were suffering from dental caries and more than half of them had moderate to severe DMFT. The habit of consuming sweets and sugar containing food, fast food, low brushing frequency and bad breath were found to be positively associated with dental caries.

Keywords: Dental caries, food habits, oral hygiene and DMFT.

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Introduction

Dental caries is a major public health problem affecting 2.43 billion people globally in the year 2010 (1). It is the most widespread, non- communicable disease and prevalent condition included in the year 2015 Global burden of disease study (2). The prevalence of these diseases is continuously increasing with changes in dietary habits and increased consumption of sugar containing food. This study was conducted among the factory workers in Checkpoint Systems Bangladesh in Narayangonj to estimate the prevalence of dental caries and to identify its associated factors.

Dental caries is an ancient disease, and diet plays a central role in its development. In developing countries about 60-90% of the school children and about 95% adults have dental caries (3) Majority of dental caries remains untreated due to inappropriate, unaffordable, or unavailable dental health services (4). Dental caries is a multifactor disease which occurs due to demineralization of enamel and dentine (the hard tissues of the teeth) by organic acids formed by bacteria in dental plaque through the anaerobic metabolism of sugars derived from the diet (5). In developing countries, increasing the level of dental caries in poor workers has been observed during the past two decades (6-8). An increasing utilization of sweet containing foods in the developing countries, poor

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tooth brushing habits, poor oral hygiene and low level of awareness are some of the factors that increased the levels of dental caries (8-10). Studies conducted in different rural and urban populations in Bangladesh suggest that the prevalence of dental caries is increasing with age and workers belonging to the low-income group tend to develop dental caries higher than those belonging to higher income group (11). The objective of this study was to estimate the prevalence of dental caries and to identify its associated factors.

Methods and Materials

A cross-sectional study was conducted among 210 randomly selected workers age between 25-45 years of Checkpoint Systems Bangladesh Ltd during the period from Jan-December 2019. A pre-tested semi-structured questionnaire and a standard checklist were used to collect relevant data. Data collection was done by the researcher herself with the help of a factory medical assistant. Diagnosis of dental caries was made according to the criteria recommended by the WHO. Study populations were examined under an artificial light, using a dental mirror and a dental probe. After Checking, Coding & recoding, data were entered in SPSS. Data Cleaning was done by taking frequency table for all the variables. Data were analyzed and presented in tables and graphs. For association Chi-square test was done.

Results and discussion

A total 210 respondents were interviewed and examined to estimate the prevalence of dental caries and its associated factors including food habit among the selected factory workers of the total 80% belonged to 25-35 years age group and 20% belonged to 35-45 years which is in accordance with the study conducted by Mala Singh, Navin Anand Ingle and Navpreet Kaur (12). About 92% were male. The very nature of the job of the apparel labels and tags manufacturing factory itself requires mainly male workers. All of them were literate and nearly 44% (92) had HSC level education, 42% SSC and 12% had graduation and above education. As there are some recruitment criteria like SSC and HSC for production level and graduation and above for quality control level, all the respondents were educated. About 78% (164) participants' monthly income was 10000-20000 Taka while 19% (39) had 21000-30000 taka. All the participants had cereals food taking habit. Being the most common agricultural product rice is the staple food for most Bangladeshi people and it has been reflected in this study nearly 72% (152) had habit of taking sweet and sugar containing food (**Table 1**).

Table 1. Distribution of the respondents according to sweet and sugar containing food taking habit.

Sweet and sugar containing food taking habit	Frequency	Percent
Yes	152	72.4
No	58	27.4
Total	210	100

Almost 93% of participants had fish and meat taking habit, 95% had sweet drinks taking habit, 56% had fresh fruit taking habit, 89% had vegetable taking habit, and 75% had fast food taking habit. All the respondents had regular brushing habits, but 51% respondents used to brush their teeth once daily and 49% twice daily. About 98% of respondents used toothbrushes and 97% (205) used toothpaste.

The majority (77%) had bleeding on probing (Table 2), 57% had bad breath. Nearly 84% had dental caries, which is similar to that found in a study done among sugar factory workers in India (13) in which 261 (60.0%) subjects had dental caries. About 43% had mild DMFT and 57% moderate to severe DMFT. About 23% had good OHI, 67% fair and 10% poor OHI.

Table 2. Distribution of the respondents according to bleeding on probing

Bleeding on probing	Frequency	Percent
Yes	161	76.7
No	49	23.3
Total	210	100

About 64.5% of the respondents having habit of taking sweet and sugar containing food had moderate to severe DMFT and 35.5% had mild DMFT (Table 3). On the other hand, 37.9% of the respondents not having habit of taking sweets and sugar containing food had moderate to severe DMFT and 62.1% had mild DMFT. This difference is statistically significant ($p<0.001$). The same findings were recorded by Yabao RN (14) and Abbas HF (15). The direct relationship of intake of sweets and sugar containing food and incidence of dental caries has been proved by Gustaffson in the Vipeholm study (16).

Table 3. Relationship between Sweets and sugar containing food taking habit and DMFT.

Sweets and sugar containing food taking habit	DMFT		Chi-square	P value
	Mild	Moderate to severe		
Yes	54 35.5%	98 64.5%	12.07	0.001
No	36 62.1%	22 37.9%		
Total	90 42.9%	120 57.1%		

About 72.8% of the respondents who brush their teeth once daily had moderate to severe DMFT and 27.2% had mild DMFT. On the other hand, 42.1% of the respondents who brush their teeth twice daily had moderate to severe DMFT and 57.9% had mild DMFT. This difference is statistically significant ($p < 0.001$) (Table 4). Similar finding was found in a study on clinical relevance of tooth brushing in relation to dental caries among children in Spain (17).

Table 4: relationship between brushing frequency and DMFT

Brushing frequency	DMFT		Chi-square	*P value*
	Mild	Moderate to severe		
Once daily regularly	28 27.2%	75 72.8%	20.27	<0.001
Twice daily regularly	62 57.9%	45 42.1%		
Total	90 42.9%	120 57.1%		

About 76% of the respondents had bad breath related to moderate to severe DMFT and 24% had mild DMFT. On the other hand, 31.5% of the respondents who did not have bad breath related to moderate to severe DMFT and 68.5% related to mild DMFT and this difference is statistically significant ($p<0.001$). However, is difficult to say whether bad breath is the cause or effect of dental caries.

Conclusions

A remarkable proportion of the workers were suffering from dental caries and more than half of them had moderate to severe DMFT. The habit of consuming sweets and sugar containing food, fast food, brushing frequency and bad breath were found to be positively associated with dental caries.

Declaration

Authors' contributions: MK, SA and MR were the ones who came up with the idea for the study, performed the key statistical analyses, and wrote the first draft of the manuscript. MNP and PSG provided feedback on the statistical analyses as well as the draft manuscript. MR supervises the study. The final study was read and approved by all the contributors.

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Conflict of Interest: None

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Ethical Statement: Ethical approval from the ethical review committee of BUHS was taken. Permission from the factory authority was also taken. Informed consent was taken from the respondents before data collection.

Data availability statement: Data was collected from Check Point System Bangladesh, apparel labeling solutions factory in 2019.

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