Original Research Article

Fast Food Consumption and Dental Caries among Teenagers

ABSTRACT

Background:Dental caries in teenagers is significant public health concern.Fast food consumption among teenagers in Bangladesh is steadily increasing. There is a close relationship between fast food consumption and dental caries. The objectives of the study were to determine the association between fast food consumption and dental caries among teenagers.
Methods: This cross-sectional study was conducted from January to December 2022. Sample size was 345 teenagers from two secondary schools in Dhaka city.The convenience sampling technique was used to collect data through face-to-face interviews with a pretested, semi-structured questionnaire. A checklist was also used to collect data through clinical examination of the oral cavity. Data were edited for quality control by checking and rechecking. Statistics software was used to analyze the data.
Results: Among 345 teenagers, the mean ± SD age was 14.88±1.17 years. The majority of the teenagers (53.6%) were female and Muslim (95%). Around 59.4% of the teenagers' fathers were business owners, while 37.4% were government employees. The majority of respondents (73.3%) ate breakfast before going to school, 52.2% ate tiffin from the school canteen, and 54.8% ate snacks once a day. The majority (93.3%) ate at an outside restaurant, with 90.4% eating fast food. 59.7% of people ate fast food at least once a week. 53% of teenagers brushed their teeth on a regular basis. Dental caries affected 36.8% of the teenagers. 98.0% of teenagers who ate fast food had dental caries, which was statistically significant. ($p<0.05$). A significant association was discovered between dental caries and fast food consumption such as Burger (75.2%), Pizza (60%), Sandwich (40.8%), and Chicken Grill (60.0%) per week (p0.05). There was also a significant correlation (96.0%) between dental caries and regular tooth brushing. ($p<0.05$)
Conclusion: To prevent dental caries, teenagers should avoid eating fast food and snacks between meals and brush their teeth on a regular basis.

Keywords:*Dental caries, fast food, teenagers.*

1. INTRODUCTION

Globalization has resulted in a nutritional shift away from home cooking and toward fast food, which has contributed to an increase in dental caries among teenagers [1].Fast food lacks micronutrients such as vitamins, minerals, amino acids, and fiber. Fast food refers to foods that are perceived to have little or no nutritional value. It contains a lot of refined sugar, white flour, transfat, poly saturated fat salt, and a lot of food additives. It also lacks proteins, vitamins, minerals, and fiber [2].Diet and nutrition impact oral cavity growth, health, and disease development, affecting tooth integrity, pH, saliva, and plaque makeup[3].The frequency, with which cariogenic foods are consumed, particularly between meals, is strongly related to the risk of tooth decay[4].Dental caries is a multifaceted disease. Dental caries remains a major public health issue around the world. Dental caries is increasing in both developed and developing countries. Caries prevalence has been reported to be up to 12% in affluent countries. In Bangladesh, dental caries is a prevalent oro-dental issue. Dental caries affects almost 40% of children under the age of five. It has been observed that around 88% of people aged 13 to 22 are missing one or more permanent teeth as a result of dental caries or a related condition [5].The aim of the study was to determine the association between fast food consumption and dental caries among teenagers.

2. METHODS

Comment [RW1]: All manuscript needs moderating English grammar corrections.

Comment [RW2]: Remove this sentence because you must confirm this relation in your study.

Comment [RW3]: How can you determine the sample size?

Comment [RW4]: What's the meaning of it?

Comment [RW5]: This result was not present in the result section of the manuscript!

Comment [RW6]: The ratio was different but the same topics!
The 36.8% ratio of caries prevalence in all participants and 98% was not found in the manuscript!!!

Comment [RW7]: This result was not present in the result section of the manuscript!

Comment [RW8]: Was the correlation positive or negative?
This result was not present in the result section of the manuscript.

Comment [RW9]: Add the null hypothesis for this study, which was (the null hypothesis of this study was that there was no relationship between fast food consumption and dental caries among children). Then according to your study results, you can be accepted or reject the hypothesis.

This was a cross-sectional study that was carried out from January 2022 to December 2022. The study place was P.M Pilot boys' school, Zinzira, Keranigong, Dhaka. And P.M Pilot girls' school, Zinzira, Keranigong, Dhaka. The study population comprised of teenagers aged 13 to 19 years from above mentioned institutions in Dhaka district. Convenience sampling technique was used for sample selection. Face-to-face interviews were conducted using a semi-structured questionnaire and a clinical examination checklist. Before data collection pretesting was done among 35 teenagers at Shahid Cadet Academy School, Keranigonj, Dhaka to check the accuracy and degree of reliability of the questionnaire. To ensure consistency, the data were manually checked and edited after collection, and then coded, entered and analyzed with SPSS 22.The descriptive analysis made use of frequency, mean, standard deviation, and percentage. Chi-squire test used to determine the association between fast food consumption and dental caries among teenagers.

Comment [RW10]: Make sure.

3. RESULTS

In our study, among 345 students, 125 (36.3%) respondents belonged to 13-14 years and 220 (63.7%) belonged to 15- 17 years (Table 1).Whereas the majority of respondents (322 (93.3%) ate at a restaurant, 23 (6.7%) did not eat at a restaurant (Table 2).

Table 1: Distribution of the respondents according to their age (n-345)

Age of respondents	Frequency	Percentage	Mean ±SD*
13 - 14 Years	125	36.3	14.88(±1.17)
15- 17 Years	220	63.7	
Total	**345**	**100.0**	

*SD= Standard deviation

Comment [RW11]: You determined the age of participants in the material and methods was 13-19 years, and then in this table, you remember only the 13-14 years and 15-17 years. Where are the 18-19 years?
The teenage age range was 13-17, not 13-19.

Table 2: Respondent distribution at an outside restaurant (n-345)

Eating in outside Restaurant	Frequency	Percentage
Yes	322	93.3
No	23	6.7
Total	**345**	**100.0**

Most of the respondents 312 (96.9%) liked to eat fast foods in restaurants, 21 (6.5%) of the respondents ate Chinese food in restaurants, 8 (2.5%) of the respondents ate Indian food in restaurants, 19 (6%) of the respondents ate Bangla food in outside restaurants (Table 3). Table 4 also revealed that majority of the respondents 206 (59.7%) ate fast food weekly, 16 (4.6%) respondents ate fast food daily, 38 (11.0%) respondents ate fast food monthly, 52 (15.1%) respondents ate fast food occasionally.

Table 3:The distribution of respondents based on the types of foods consumed in outside restaurants(n-322)

Types of outside Restaurants	Frequency	Percentage
Chinese food	7	2.2
Indian food	2	0.6
Fast food	312	96.9
Bangla food	1	0.3
Total	**322**	**100.0**

Table 4:Distribution of respondents based on frequency of fast food consumption (n-312)

Frequency of fast food consumption	Frequency	Percentage
Daily	16	4.6
Weekly	206	59.7
Monthly	38	11.0
Occasionally	52	15.1
Total	**312**	**100.0**

According to Table 5, the majority of the respondents, 218 (63.2%), had no caries, while 127 (36.8%) had caries.Table 6 shows the relationship between dental caries and respondents' preference for eating out. The findings revealed a significant relationship between dental caries and respondents' preference for eating out.($p<0.05$). Table 7 shows the relationship between dental caries and frequency of fast food consumption. The results showed that there was a significant relationship between dental caries and frequency of fast food consumption ($p<0.05$).

Table 5:The distribution of respondents according to the presence of dental caries. (n-345)

Dental caries	Frequency	Percentage
Present	127	36.8
Absent	218	63.2

Total	**345**	**100.0**

Table 6:Association between dental caries and the respondents' preference to eat at an outside restaurant(n=345)

Preference to eat at an outside restaurant	Dental caries		Total	Statistics
	Yes f (%)	No f(%)	f(%)	
Yes	125(36.23%)	195(56.52%)	320(92.8%)	Chi-square test
No	2(0.57%)	23(6.66%)	25(7.2%)	$\chi^2 = 9.619$ p=0.001
Total	**127**	**218**	**345**	**(p<0.05)**

***Statistically significant**

Table 7: Association between dental caries and frequency of eating fast foods of the respondents (n=312)

Frequency Eating fast foods	Dental caries		Total	Statistics
	Yes f(%)	No f(%)	f(%)	
Daily	154(4.8%)	1(0.3%)	16(5.1%)	Chi-square test
Weekly	80(25.6%)	126(40.4%)	206(66.0%)	$\chi^2 = 24.256$
Monthly	10(3.2%)	28(9.0%)	38(12.2%)	p=0.000
Occasionally	16(5.1%)	36(11.5%)	52(16.7%)	(p<0.05)
Total	**121**	**191**	**312**	

***Statistically significant**

4. DISCUSSION

According to the findings of this study, 125 (36.3%) of 345 respondents were between the ages of 13 and 14, while 220 (63.7%) were between the ages of 15 and 17.In a similar study conducted in India in 2017, the majority (51.8%) of the participants were under the age of 12 [6]. Another study conducted in Hanoi, Vietnam in 2021 found that 1153 (58.1%) of the respondents were between the ages of 11 and 12 years old, and 832 (41.9%) were between the ages of 13 and 14 years old. [7]. The majority of the respondents (312 (90.4%) ate fast food, while 33 (9.6%) did not like fast food. Similar research was done in Dhanmondi, Bangladesh, where 197 (98.5%) students responded about their choice for fast food, with about 22% reported they ate it four days per week and 21.3% reporting they ate it every day of the week.

Comment [RW12]: It's false.
In Table 2, you remember that the frequency of participants that ate outside restaurants was 322, and the number of participants that did not eat was 23. However, in Table 7, you mentioned that the total number of participants eat at an outside restaurant was 320, and 25 were not eaten.
You must make sure from the numbers and corrected tables 2 and 6

Comment [RW13]: Add this result to the abstract: the ratio of caries incidence was higher in the daily fast food taken than at other times.

Comment [RW14]: The discussion was very weak because you did not mention good reasons for the results that appeared to you, and just compared your results with previous studies.
You must add significant reasons for the results that appeared to you.

[3].The majority of respondents 206 (59.7%) ate fast food weekly, 16 (4.6%) ate fast food daily, 38 (11.0%) ate fast food monthly, 52 (15.1%) ate fast food occasionally, and 33 (9.6%) did not eat fast food. A similar study conducted in Benghazi City, Libya, discovered that more than two-thirds of the study population (68.5%) consumed fast foods three times or more per week, while 17% consumed fast foods at least once a week, and (14.5%) twice weekly. Furthermore, 63.5 percent of participants consume fast food on a daily and weekly basis, compared to 28 percent during holidays, 8.3 percent during celebrations, and only 0.2 percent during vacation[8]. Caries were absent in 218 (63.2%) of the respondents, while they were present in 127 (36.8%) of the respondents. In a similar study conducted in Tamil Nadu, India, 80% of 59 students in rural schools had caries and 20% did not. In an urban school, 84% of 115 students had caries, while 16% had none. Caries affects more urban students than rural students. [3].Another study was conducted in Chennai, India, among 916 teenagers, and the prevalence of caries was found to be 36%, which was very similar to the current study[9].This study also found a link between dental caries and respondents' preference for eating out. The findings revealed a significant relationship between dental caries and respondents' preference to eat in restaurants (P0.05). This study found a significant association between dental caries and frequency of eating fast foods (P<0.05). In terms of dietary habits, both eating breakfast and eating out frequently were strongly linked to dental caries (P<0.001) [10].

8. ASSENT

All authors declare that "written informed assent from the participant was obtained for publication of this research report and accompanying images." This journal's Editorial Office/Chief Editor/Editorial Board members can review a copy of the written consent

9. ETHICAL APPROVAL

Ethical approval was taken from the IRB of National Institute of Preventive and Social Medicine (NIPSOM). Bangladesh.

10. REFERENCE

Comment [RW15]: The number of references was little.

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Comment [RW16]: Add year.

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