Fast Food Consumption and Dental Caries among Teenagers

ABSTRACT

Background: Dental caries in teenagers is a significant public health concern. Fast food consumption among teenagers in Bangladesh is steadily increasing. 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. The calculated 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. By double-checking, data were altered for quality control. Statistical 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 and 52.2% took food from the school canteen. The majority (93.3%) ate at outside restaurants, with 90.4% eating fast food. 59.7% of people ate fast food at least once a week. Dental caries affected 36.8% of the teenager who ate fast food ($p<0.05$). A significant association was found between dental caries and the frequency of fast-food consumption. Among the respondents, 4.8% had dental caries who ate fast food daily ($p<0.05$).
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][2].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, trans fat, poly saturated fat salt, and a lot of food additives. It also lacks proteins, vitamins, minerals, and fiber [3].Diet and nutrition impact oral cavity growth, health, and disease development, affecting tooth integrity, pH, saliva, and plaque makeup[4][5].The frequency, with which cariogenic foods are consumed, particularly between meals, is strongly related to the risk of tooth decay[6].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 range up to 12% in developed countries, whereas it has been reported to be as high as 70% in less developed countries, particularly among disadvantaged groups [7][8]. 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 [9]. The aim of the study was to determine the association between fast food consumption and dental caries among teenagers.

2. METHODS

This cross-sectional study 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 17 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 25. 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.

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. Among them 53.6% were male and 46.4% were female. The religion of the majority of respondents were Islam (95%) and 59.4% of the respondents were businessmen (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 by Socio-demographic status (n-345)

Socio-demographic status	Percentage (%)	Total (%)
Age		
13 - 14 Years	36.3	100
15- 17 Years	63.7	
Sex		
Male	53.6	100
Female	46.4	
Religion		
Islam	95	100
Hinduism	5	
Occupation		
Service	37.4	
Business	59.4	100
Day labor	2	
Farmer	1.2	

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. Among the respondents, 73.3% took breakfast before going to school and 52.2% took food from the school canteen (Table 5).

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 6, the majority of the respondents, 218 (63.2%), had no caries, while 127 (36.8%) had caries. Table 7 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 8 shows the relationship between dental caries and the frequency of fast-food consumption. The results showed that there was a significant relationship between dental caries and the frequency of fast-food consumption ($p<0.05$).

Table 5: The distribution of respondents according to the food habit during school time. (n-345)

Category	Frequency	Percentage (%)
Breakfast		
Taking breakfast before going to school	253	73.3
Taking breakfast at school	92	26.7
Take foods from the school canteen		
Yes	180	52.2
No	165	47.8

Table 6: 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 7: 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	126(36.5%)	196(56.8%)	322(93.3%)	Chi-square test
No	1(0.3%)	22(6.4%)	23(6.7%)	$\chi^2 = 11.165$ p=0.000
Total	**127**	**218**	**345**	**(p<0.05)**

***Statistically significant**

Table 8: Association between dental caries and frequency of eating fast foods of the respondents (n=312)

Frequency Eating fast foods	Dental caries		Total	Statistics
	Yes	No	f(%)	

	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

The respondents' age distribution revealed that a sizable proportion were between the ages of 13 and 17. Specifically, 36.3% of the participants were aged 13 to 14, while the vast majority, 63.7%, were aged 15 to 17. This distribution is consistent with previous research indicating that teenagers constitute a significant demographic in terms of fast-food consumption [10][11]. Furthermore, an overwhelming majority (90.4%) of respondents said they ate fast food, with only a minority (9.6%) saying they didn't. These figures highlight the pervasiveness of fast-food consumption among teenagers, correlating with previous research highlighting fast food's popularity among this age group. [12]. The analysis of respondents' fast food consumption patterns revealed varying levels of frequency. The majority (59.7%) reported eating fast food at least once a week, with a smaller percentage eating it on a daily (4.6%), monthly (11.0%), or occasional (15.1%) basis. Furthermore, a small percentage of respondents (9.6%) said they avoided fast food entirely. These findings reflect the diverse nature of fast-food consumption habits among the adolescent population, reflecting a range of preferences and behaviors [13]. Importantly, the study found a link between dental caries and respondents' preference for eating out and frequency of fast-food consumption. The significant association between dental caries and restaurant preference highlights the potential impact of restaurant-based meals on oral health outcomes. Similarly, the link between dental caries and frequent fast-food consumption emphasizes the potential role of diet in the development of oral health problems. [14].

5. CONCLUSION

Oral health is an important aspect of overall health and well-being. The study highlights the link between fast food consumption and dental caries in teenagers, emphasizing the importance of addressing dietary habits to reduce oral health issues. The study reveals the need for public health initiatives to raise awareness and develop targeted interventions to promote better oral health outcomes among teenagers. Addressing dietary habits is crucial for a healthy mouth, allowing individuals to speak, eat, and socialize without fear of disease or discomfort.

6. CONSENT

All authors declare that "written informed consent from the participant was obtained for publication of this research report and accompanying images."

7. ETHICAL APPROVAL

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

8. REFERENCE

1.Athavale P, Khadka N, Roy S, Mukherjee P, Chandra Mohan D, Turton B, Sokal-Gutierrez K. Early childhood junk food consumption, severe dental caries, and undernutrition: a mixed-methods study from Mumbai, India. International journal of environmental research and public health. 2020 Nov;17(22):8629.

2.Chandrasekhar H, Ravindran V, Ganapathy D. Influence of modern food varieties in dental caries among schoolchildren. Drug Invention Today 2019;12(10):2313–2318.

3.Das JC. Fast food consumption in children: A review. Medical & Clinical Reviews. 2015;1(1):1-4.

4.Gunaseelan BV, Gunasekaran V. Prevalence of Dental Caries among Junk Food-and Non-junk Food-eating Schoolchildren in Urban and Rural Areas of Mayiladuthurai, Tamil Nadu, India. Journal of Scientific Dentistry. 2020 Jan;10(1):7-9.

5.Marsh PD. Dental plaque as a biofilm and a microbial community–implications for health and disease. InBMC Oral health 2006 Jun (Vol. 6, No. 1, pp. 1-7). BioMed Central.

6.Punitha VC, Amudhan A, Sivaprakasam P, Rathanaprabu V. Role of dietary habits and diet in caries occurrence and severity among urban adolescent school children. Journal of pharmacy &bioallied sciences. 2015 Apr;7(Suppl 1):S296.

7.Congiu G, Campus G, Sale S, Spano G, Cagetti MG, Lugliè PF. Early childhood caries and associated determinants: a cross-sectional study on Italian preschool children. Journal of public health dentistry. 2014 Mar;74(2):147-52.

8.Strömberg U, Holmn A, Magnusson K, Twetman S. Geo-mapping of time trends in childhood caries risk a method for assessment of preventive care. BMC oral health. 2012 Dec;12(1):1-7.

9.Khan MI, Polan M, Nahar A, Raihan M. Factors related to dental caries among the patients attending at the outpatient department (OPD) of Dhaka Dental College and Hospital. Bangladesh J. Dent. Res. Educ. 2013 Oct 14;3:16-20.

10. Asawa K, Sen N, Bhat N, Tak M, Sultane P, Patil V. Association of sugary foods and drinks consumption with behavioral risk and oral health status of 12-and 15-year-old Indian school children. Journal of education and health promotion. 2018;7.

11.VanChuyen N, Van Du V, Van Ba N, Long DD, Son HA. The prevalence of dental caries and associated factors among secondary school children in rural highland Vietnam.BMC Oral Health. 2021 Dec;21:1-7.

12. TAGURI HS, BUZGEIA MH, HAMZA MS. Fast Foods Consumption in Benghazi City, Libya (Doctoral dissertation, University of Benghazi, 2019.

13. Punitha VC, Amudhan A, Sivaprakasam P, Rathanaprabu V. Role of dietary habits and diet in caries occurrence and severity among urban adolescent school children. Journal of pharmacy &bioallied sciences. 2015 Apr;7(Suppl 1):S296.

14. Bae JH, Obounou BW. Presence of dental caries is associated with food insecurity and frequency of breakfast consumption in Korean children and adolescents. Preventive nutrition and food science. 2018 Jun;23(2):94.