Street Food in Relation to Consumers Health Status in Selected Locations of Dhaka Metropolitan City

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Abstract

It was a descriptive type of cross sectional study carried out on 491 street food consumers from 40 street food-vending shops at Dhaka metropolitan city. In this study, the street food consumer, who consuming street food regularly as a main meal at least for one month was included. The study showed that the people of low- economic status (51.9% deficit) and having minimum education (56.4% illiterate) mostly consuming street foods. Health status analysis shows that 19.3% consumers had swollen red gum, 16.5% dental carries, 11.4% have angular stomatitis, 8.8% bleeding gum and 1% enlarged thyroid. In addition, 20.1% cases suffered from diarrhoeal diseases and 1.1% hepatitis in last four weeks. Among diarrhoeal diseases 11.0% Amoebiasis, 6.7% Acute watery diarrhoea and 2.4% Bacillary desentery. Street food consumers mean Body Mass Index (BMI) was 19.75 (SD ± 1.72) and majority of the consumers (80.5%) had BMI more than 18.5. Nutritional status (BMI) of the consumers shows significant change with duration of consumption (p - value <0.001), economic status (p - value < 0.002) and two groups of consumers (one meal and two meal) (p - value < 0.001). In spite of high morbidity rate street foods maintain good nutritional status. To maximize the benefits of street food it is essential to create awareness among consumers and vendors through health education programme. Study recommends training for street food handlers, routine inspection, monitoring the food quality and safety by recognized authority.

Key words: Street food consumer, Health status, Nutritional status.

Introduction

Street foods as ready to-eat foods and beverages prepared and /or sold by vendors especially in street and other similar public places[1]. Street foods emerge as an integral part of the urban life style and can be considered as nutritious and tasteful to their industrially manufactured counter parts [2]. Street food accounts for a part of the daily diet and so contributes towards meeting nutritional requirements, although the contribution varied and is rarely quantified. However, food contamination is a major contributor to illness. The study conducted among 116 food vendors in Johannesburg assessed the microbiological food quality and potential risk, showed 15% street

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vendors and 13% formal food vendors had contaminated foods [3]. Globally WHO estimated that 70% of diarrhoeal diseases are of food-borne origin. In the United States 12.6 million cases of food-borne illnesses were identified in each year [4]. Inadequately washed glasses, plates and utensils by food vendors is one of the most important source of out break of cholera [5]. A study finding showed that patients admitted to the San Lazaro hospital between July and September 1989 and whose stools yield *Vibrio cholera 01* on culture among the 158 cases who had bought food from street vendor [6]. In another study on street vended foods and weaning foods which was conducted at Dhaka metropolitan city showed 52% of food contaminated with *E. coli*, 63.5% with *B. cereus*, 13.46% with Salmonella, 5.76% with *Vibrio clolera*, 40.38% with *Cl. Perfrigens*, 46.15% with *St. aures*, 7.69% with Coliforms and 9.61% of sour card with profuse growth of yeast [7]. Besides microbial contamination micronutrient deficiencies are major public health problems in developing countries. As street foods are widely consumed by millions of people in these countries. So fortification with micronutrient could improve the nutrient profile of these foods and serves as a means of introducing micronutrient rich foods to the consumers [8].

Like many metropolises, Dhaka is the grip of sudden and unprecedented urban growth and the number of street vending shops are increasing rapidly that provide affordable food for the greater part of the population especially for the low-income group of people. Besides the advantages of street foods, they are also recognized as possible hazards to health. However, epidemiological information is not available about the nutritional status of street consumers and the risk of food borne diseases among them resulting from street food consumption in our country. Food – borne diseases are quiet common in our country due to poverty, ignorance, lack of health education, poor hygiene and sanitation. Despite our society has advanced in sanitation, food preservation and hygiene, the prevalence of food – borne illness remains high. It demands proper attention to improve the quality, safety and nutritional aspects of street foods. It needs the involvement of the relevant government authorities to take control measures through proper legislation and regulation to avoid public health hazards.

Materials and Methods

Selection of location

Dhaka metropolitan city was the study area and locations were selected purposively. They were as follows: (a) Gabtoli bus terminal, Mirpur (b) Mohakhali bus terminal, Tejgoan (c) Motijheel bus terminal, Motijheel (d) Fulbaria bus terminal, Gulistan (e) Kamlapur railway station, Motijheel (f) Syedabad bus terminal, Motijheel (g) Sadarghat launch terminal, Kotoali (h) Gandaria railway station, Sutrapur, Dhaka.

Street food consumers

People who had street food as main dishes regularly for at least one month and take at least single in a day.

Sample size and technique

The sample size was calculated as 480 with error tolerated .05. However an increased sample size of 491 were taken in the study. The study area was designed purposively and eight locations were selected in Dhaka metropolitan city. Street vendors who sale street food as main dishes at least for last six months in that selected location were registered accordingly. Then five vendors were selected from each location randomly and forty vending shops were selected. Subsequently, one seat for consumption of street food was again selected randomly in each shop. Then, every alternative consumer who full filled the selection criteria was enrolled for the study. Twelve to fifteen consumers were interviewed from each shop.

Research instrument

A standard questionnaire was developed in accordance to the objectives of the study to obtain relevant information of the street food consumers. Besides, for anthropometrical measurement an electronic weighing scale was used to record the body weight and height of the subject was measured on bare foot on standing position with a standard scale.

Statistical Analysis

All data were double entered into two computers in EPI- info programme and subsequently the values were merged to minimize the errors. At the end of the data entry, they were shifted to SPSS programme and analyzed. Then tables and figures were made with variables of interest. P   values were calculated to find the significant different variables of street food consumers.

Results

It was a cross – sectional study conducted among 491 street food consumers. Table – 1 shows the socio-economic characteristics of the respondents. Here it is found that the most (98.2%) of the respondents were males. Among the respondents, majorities (63%) were in the age group of 15 – 29 years and significant numbers (56.4%) were illiterate. The occupation pattern shows that rickshaw pullers (22.4%), small traders (18.9%) and day labour (14.7%) were the main consumers. Regarding their economic status, 51.9% were in deficit state of economic condition.

Table – 1. Socio-economic characteristics of street food consumers (N = 491).

Socio-economic characteristics	Number	Percent
Sex		
Male	482	98.2
Female	9	1.8
Age (in year)		
15 – 19	74	15.1
20 – 29	235	47.9
30 – 39	143	29.1
40 and above	39	7.9
Education		
Illiterate	277	56.4
Primary	118	24.0
Secondary	76	15.5
Above secondary	20	4.1
Economic Status		
Deficit[a]	255	51.9
Balance[b]	218	44.4
Surplus[c]	18	3.7
Occupation		
Labour	72	14.7
Rickshaw puller	110	22.4
Small trader	93	18.9
Driver	51	10.4
Service	61	12.4
Others	104	21.2
Religion		
Muslim	491	100

[a] Who run his family with loan.
[b] Who run his family without loan.
[c] Who run his family with surplus budget.

Figure – 1 depicts the food – borne illness of street food consumers. Of the food – borne illness, 20.2% were diarrhoeal disease and 1.1% hepatitis. Among the

diarrhoeal diseases, 6.7% were acute watery diarrhoea, 11% Amoebiasis and 2.4% Bacillary dysentery.

Nutritional deficiency signs of street food consumers shows that 19.3% consumers had swollen red gum, 16.5% dental carries, 11.4% angular stomatitis, 8.8% bleeding gum and 1% thyroid   (Table - 2).

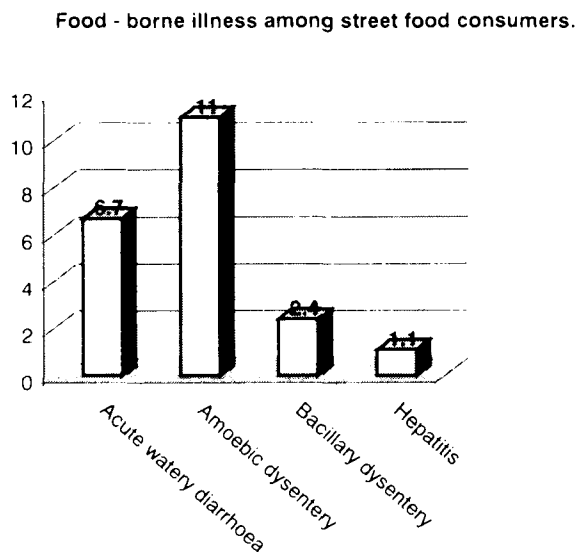**Figure 1: Food – borne illness of street food consumers (N= 491).**

Food - borne illness among street food consumers.

Table 2:   Frequency of nutritional deficiency signs of street food consumers (N=491).

Features	Number	Percent
Angular stomatitis	56	11.4
Dental carries	81	16.5
Swollen red gum	95	19.3
Bleeding gum	43	8.8
Enlarged thyroid	05	1.0

Regarding the Mean Body Mass Index (BMI) of the street food consumers, majorities of the consumer (80.5%) had BMI more than 18.5 and 19.5% consumers

are suffering from thinness. Among them 13.2% mild, 3% moderate and 3% severe thinness (Table- 3, 4).

Table 3: Nutritional status (Body Mass Index - BMI) of street food consumers (N= 491).

Body Mass Index (BMI)	Number	Percent
≥ 18.5 - Normal	396	80.5
< 18.5 - Thinness	95	19.5

Mean Body Mass Index (BMI) is 19.75 (SD ± 1.72)

Table 4: Different grade of malnutrition among street food consumers (N = 491).

Grade of Malnutrition	Number	Percent
17 – 18.4 (CED – 1)	65	13.2
16 – 16.9 (CED – II)	15	3.0
< 16 (CED – III)	15	3.0

Normal = BMI > 18.5

CED 1 = 1 st degree Chronic Energy Deficiency (BMI 17 18.4)
CED II 2 nd degree Chronic Energy Deficiency (BMI 16 – 16.9)
CED III 3 rd degree Chronic Energy Deficiency (BMI < 16)
(Table 3 4, Ref: WHO Technical report series).

Nutritional status (BMI) of the consumers shows significant change with duration of consumption (p-value<0.001) and economic status (p-value <0.002) (Table – 5, 6). Body Mass Index (BMI) of two groups of consumers had significant relation (p-value<0.001) shown in Table-7

Table 5: Relation between BMI and duration of street food consumption (N = 491).

Duration (months)	Number of persons	Mean BMI (SD±)	Comment
1 - 12	89	18.48 (2.0)	
13 – 24	87	19.41 (1.40)	
25 – 36	78	19.89 (1.52)	
37 – 48	56	19.84 (1.31)	Significant
49 – 60	40	20.28 (1.78)	
61 – 72	25	20.36 (1.65)	
73 – 84	11	20.58 (1.52)	
85 – 96	32	20.14 (1.50)	
> 97	73	20.44 (1.65)	

Body Mass Index (BMI) of consumers and duration of street food consumption shows significant relation (P value < 0.001).

Table 6: Relation between BMI and economic status of street food consumption (N = 491).

Economic status	Number of persons	Mean BMI (SD±)	Comment
Surplus	18	20.14 (2.03)	
Balance	218	20.06 (1.64)	Significant
Deficit	255	19.39 (1.76)	

Body Mass Index (BMI) and economic status of street food consumers shows significant relation (p value < 0.002).

Table 7: Relation between two groups of consumers and BMI.

Frequency of meal consumption	Number	Percent (%)	Mean BMI	
One meal	248	50.5	20.01 (SD± 1.62)	Significant
Two meals	243	49.5	19.41 (SD± 1.82)	

Relation between BMI of two groups of consumers showed significant change (P value < 0.001).

Discussion

It was a descriptive type of cross – sectional study carried out in different places of Dhaka metropolitan city among 491 street food consumers from 40 street vending shops with a view to find out the nutritional and morbidity status in relation to street food consumption. The study shows all the consumers were Muslims. Among them 98.2% were male and 1.8% female. Regarding the age of the respondents, majorities (63.0%) were in the age group of 15 – 29 years and a significant numbers (56.4%) of consumers were illiterate (never gone to school). Among the consumers, 22.4% rickshaw pullers, 18.9% small traders and 14.7% were labour. Regarding the economic status of the street food consumers, 51.9% and 44.4% were in deficit and balance state respectively (Table-1).

Health and nutrition status analysis shows that 19.3% consumers had swollen red gum, 16.5% dental carries, 11.4% angular stomatitis, 8.8% bleeding gum and 1% thyroid (Table- 2). Bangladesh National Nutritional Survey (BNNS) 1995 – 1996 results shows 11.1% people had angular stomatitis, 21.2% dental carries, 4.7% swollen gum, 5.3% bleeding gum and 22.5% have enlarged thyroid[9].

The study also shows that 21.2% of street food consumers had history of food – borne illness in last four weeks. Of the food – borne illness, 20.1% are diarrhoeal

disease and 1.1% hepatitis. Among the diarrhoeal diseases, 6.7% are acute watery diarrhoea, 11% amoebiasis and 2.4% bacillary dysentery (Figure – 1). According to the report of IEDCR-1993, the prevalence of diarrhoea and dysentery were 10.56 and 5.29 per thousand populations respectively. Health and Demographic Survey (HDS) 1994 and 1995 shows that the prevalence of diarrhoea and dysentery were 10.56 and 5.29 per thousand populations respectively [10].

Study shows street food consumers Mean Body Mass Index (BMI) 19.75 (SD ± 1.72). Majorities of the consumer (80.5%) have BMI more than 18.5 and 19.5% consumers are suffering from thinness. Among them, 13.2% mild, 3% moderate and 3% severe thinness (Table-3, 4). Bangladesh National Nutritional Survey (BNNS) 1995 – 1996 results shows that 75.3% people had normal nutritional status (BMI > 18.5) and 24.7% suffered from thinness [9].

Nutritional status (BMI) of the consumers shows significant change with duration of consumption (p-value < 0.001) and economic status (p-value < 0.002). Body Mass Index (BMI) of two groups of consumers had significant relation (p value < 0.001). (Table – 5 to 7).

References

1. Food and nutrition paper 46, Report of an expert consultation on street foods, Yogyakarta, Indonesia, December 1988, FAO/Rome, 1989

2. Cohen M. The influence of the street food trade on women and children health. In D.B. Jelliffe and E.F.P Jelliffe eds. Advances in international maternal and child health. Volume 6, 1986, Oxford, England, Clarendon press, 1986; 148-65

3. Mathee A. Von Schirnding YE. Byrne. J de Beer. M. Letlep A. Hobbs C and Swanepoel F. The greater Johannesburg Healthy foods Market programme. Urbanization and Health Newsletter, 1996 Mar; (28): 39-47.

4. REF Bishai WR et.al. 1993. Food poisoning syndromes Gastroenteral – clin worth-Am. 1993. Sept; 22(3)579-608.

5. Reiff F.M. Cholera in Peru. World Health Organization . 1992; Jul-Aug; 18- 9.

6. Lim-Quizon MC. Benabaye RM. White FM. Dayrit MM and White ME. Cholera in Metropolitan Manila: Food borne transmission via street vendors. Bulletin of the World Health Organization 1994; 72 (5): 745-9

7. Siddique A.B. Talib A M. Hamid AKH Syed. Hossain A Feroz and Farruque A. Survey report on street vended and weening foods from Dhaka Municipal area under under WHO project. BAWCWS – 001.

8. Draper A. Street foods in developing countries: the potential for micronutrient fortification. Opportunities for micronutrient interventions (OMNI), 1998 (2) 8 p.

9. Khursheed Jahan. Mosharraf Hossain. 1998. Nature and extent of malnutrition in Bangladesh. Bangladesh National Nutritional Survey, 1995-1996.

10. Bangladesh Health and Demographic Survey: Summary findings, 1994 and 1995, Bangladesh Bureau of Statistics, Statistics division, Ministry of planning, Dhaka, April, 1996.)