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Knowledge on food safety for prevention and control of food borne diseases in Dhaka city

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ABSTRACT

A cross sectional mixed type of study was conducted to find out the knowledge on food safety among the adult population of Dhaka City. The study was aimed to assess the knowledge on food safely for taking necessary steps against food borne illness. A total of 203 interviews of adults from six places of Dhaka City (Manikdi, Mohammadpur, Dhanmondi, Mirpur, Gulshan and Banani) were takent to gather information in this regards. Data were collected by a pre tested structured interviewer-administered questionnaire that is prepared following the guidelines of WHO regarding food safety. The study revealed that 79% of respondents had intestinal problem while 21% did not have intestinal problems. 81% stated that their intestinal problem was due to food and 19% said it was not due to food. 61% of respondents stated that the area of involvement of abdomen was the left side and 39% stated that the involvement was the right side. It is stated that 77% of respondents were no siblings in the family with food borne disease whereas 23% stated that their siblings were with food related diseases. About 34 % had normal or more knowledge about food safety while 66 % had less knowledge. About 60% of respondents had below normal understanding about hygiene whereas 40% had normal or above normal understanding. It is observed that 97% respondents agreed in various degrees that prevention of food borne diseases can improve health status; 42% respondents said that they always washed their hands before handling food or preparing them, 13% did it often, 23 % sometimes and 22 % never washed their hand before handling food. The study showed that 85% respondents always washed their hands with soap after coming out from toilet, 11% did it often, 2% did it sometimes and 2 % never did it. 88% respondents sometimes used to keep their dining room and kitchen protected from insects, pests and animals, in 4% it was often or all time protected while 8% never had it protected. There is a significant relationship ($P<0.0250$) between knowledge level and earning level and knowledge level and educational level. The findings of the study identified several gaps, ignorance, and weaknesses in the knowledge level of adult general mass about food safety and food borne diseases. This calls for further research, knowledge enhancing services and awareness creating program at different areas for better outcomes in public health sector.

INTRODUCTION

Food safety issues have become one of the most widely discussed topics of Bangladesh. However, the theme of the World Health Day'2015 was 'Food Safety' and no other theme would have been that much relevant & close to Bangladeshi context. One major food safety concern of Bangladesh is unhygienic practice in food handling. As per reports from Directorate General of Health Services (DGHS), on an average 3,850 people died from diarrhea each year from the period of 2003 to 2009 attributed mainly to unsafe food. Another major food safety concern of Bangladesh is use of toxic and poisonous food adulterators. Food adulteration with toxic chemicals has reached an astounding level in Bangladesh. The range of chemicals and colouring agents that are being used in food is beyond imagination. It is needless to say that unsafe food has severe negative impact on public health. As per global estimate, 2 million deaths occur annually due to unsafe food and more vulnerable are children. It causes more than 200 diseases, ranging from diarrhoea to cancers. In Bangladesh, the situation is also not different. Formalin, calcium carbide, various coloring agents, urea, sulfuric acid and other adulterator cause cancer, asthma, skin diseases, depression, respiratory diseases, infertility, convulsion and miscarriage; affect kidney and liver; damage cardiac system and nervous system; and adversely

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affect children's physical and mental growth (Wooster et al., 2005; WHO, 1988). Experts say that the pattern of diseases in Bangladesh has changed over time. In earlier times, infectious diseases were more prevalent whereas now the number of patients suffering from cancer and other non-communicable diseases are on the rise due to food adulteration.

The government of Bangladesh started implementing the Safe Food Act 2013 from February 2015 to fight adulteration and protect public health. It is expected to resolve the issues of current multi-bodied control mechanisms of food safety issues. It aims to control food adulteration at various stages of the supply chain and also take care of other food-related concern. The new act also has raised penalties substantially –both financial and imprisonment.

Lack of awareness, negligence and indifference among consumers are also obstacles to ensuring food safety. However, food behavioral change among people and awareness among of food sellers about maintaining safe food supply are imperative to reduce the risk to vulnerability to unsafe food. It is very important to know the level of knowledge about food safety and its control and prevention among the adult population of Bangladesh. Policy makers may become interested in these issues when they understand that deficiency of food safety causes a huge health impact and economic loss for Bangladesh. The present study was undertaken to assess the level of knowledge on food safety and prevention & control of food borne diseases among the adult population of Dhaka city and to determine the related factors with the level of knowledge. And to find out the relation between socio- economic status and food safety knowledge of adult population.

METHODS AND MATERIALS

A cross-sectional descriptive type (both quantitative and qualitative type) of study was done at six places of Dhaka City namely Manikdi, Mohammadpur, Dhanmondi, Mirpur, Gulshan and Banani for six months in the year 2015. Total numbers of adult respondents were 203 where 107 were males and 96 were females. The respondents were selected based on inclusion criteria (Adult 18 years of above of both sexes, mentally sound, no diagnosed MH problem, physically stable and willingly agreed to answer the pre-formed questionnaire) and exclusion criteria (below 18 years of age, physically/mentally not fit or disabilities and non co-operative).

Data collection

Data were collected through interview by the researcher by using structured questionnaire which were pre-tested before final data collection. It was prepared in English and Bengali consisting 30 questions (both open & closed ended). The pre-tested questionnaires were carefully explained to the respondants so that they could answer them properly and easily. No formal appointment was made with the respondents for their interviews. The researcher visited the locale randomly and interview was undertaken. A Focus Group Discussion was done by the researcher as a facilitator with 10 participants of different ages & occupation. In conducting interviews, the researcher took all possible measures to ensure valid and reliable data from the respondents. The sample size for this study was determined by using the formula stated by Lwanga and Lemeshow. Data was analyzed by using Statistical package for social science (SPSS) 20. Inferential statistics were done to see relationship by using $(\chi)^2$ chi-square test.

RESULTS AND DISCUSSION

Socio-demographic characteristics

Table 1
Characteristic of respondents.

Characteristics	Status	Percentage
Level of Education	Illiterate	10
	Primary	13
	Secondary	27
	Higher Secondary	15
	Graduate	35
Sex	Male	51
	Female	49
Marital Status	Married	63
	Unmarried	37
Number of	One	37

Children	Two	2
	Three	43
	Four	15
	Five	3
Earning Status	Self	
	Dependant on father and mother	
	Dependant on other guardian	
Monthly Income	<5000 taka	8
	5001-10000 taka	12
	10001-15000 taka	14
	15001-20000 taka	65
	20000 above taka	11
Any Intestinal Problem	Yes	81
	No	19
Intestinal Problem Due To Food	Yes	81
	No	19
Area of Abdomen Involved	Left	61
	Right	39
Any Siblings With Food Related Diseases	Yes	23
	No	77
Times of Meal A Day	One	3
	Two	69
	Three	28
Types of Food Eaten Daily	Rice	32
	Bread	15
	Vegetable	22
	Fish/Meat	21
	Biscuits	2
	Milk	8
Family Members	Above 4	92
	Below 4	8
Affection to	Cigarette or biri	33
	Beatle nut	13
	Pan	6
	Gutka	1
	Tea/coffee	47

Table 1 revealed that among 203 respondents, 10% people were illiterate, 13 % had primary education, 27 % had secondary education, 15 percent had higher secondary and 35% were graduated. About 51 % respondents were male and 49% were female. 63% of respondents were married and 37% were unmarried, 37% respondents had one child, 2% had two children, 43% had three child, 15% had 4 child and 3 percent had five children.

It is observed that 76% respondents were self sufficient, 22% were dependent on their parents and 2 percent were dependent on other guardians. About 8 % respondents earned less than 5000 taka, 12 percent earned 5000 to 10000 taka, 14 percent earned 10000 to 15000 taka, 65 percent earned 15000 to 20000 taka and 11% earned above 20000 taka (Table 1).

The date demonstrated that 79% of respondents had intestinal problem while 21 % did not have intestinal problems and 81% stated that their intestinal problem was due to food and 19% said it was not due to food. About 61% of respondents stated that the area of involvement of abdomen was the left side and 39% stated that the involvement was the right side. It is also observed thatt 77% of respondents stated that there were no siblings in the family with food borne disease whereas 23% stated that their siblings were with food related diseases.

The study represented that 3% of respondents had one meal/day, 69% had two meals/day and 28% had 3 meals/day,32% took rice, 15% took bread, 22 % took vegetable, 21% took meat/fish, 2% biscuits and 8% took milk for food. About 92% respondents had four or more family members while 8% had below 4 numbers of family members. It is also observed that 33% were smoker who took cigarette or biri, 13% took beatle nut, 6% took pan, 1% took gutka while 47% had the habit of taking tea or coffee.

Existing knowledge about food safety

Table 2
Knowledge on food safety and related issues.

Knowledge	Status	percent
knowledge about food safety	Most	3
	More	10
	Normal	21
	Less	42
	Least	24
Understanding about hygiene	Lot	11
	Good	12
	Normal	17
	Less	43
	Least	17
Prevention of food borne diseases can	concern	97
	Not concern	3

improve health status		
Washing hands before food handling and during preparing food	all time often sometimes never	42 13 23 22
Washing hands with soap after coming from toilet	all time Often Sometimes Never	85 11 2 2
Raw food kept seperated from cooked food	Yes No	57 43
Response to whether there is separate storage and freezing of raw foods	YES NO	58 42
Separate equipments to handle raw and cooked food	YES NO	32 78
Reheat cook food before eating	Yes No	57 43
Time period to keep cooked food at room temperature	half an hour one hour 2 hours more than 2 hours	4 18 12 66
Length of time for which food is stored in refrigerator	1-5 days 1-2 weeks 3-4 weeks more than 4 weeks	32 30 31 7

It is observed that 66 % respondents had the least or less knowledge about food safety while the rest 34 % had normal or more knowledge. About 60% of respondents had below normal understanding about hygiene whereas 40% percent had normal or above normal understanding (Table 2). About 97% respondents agreed in various degrees that prevention of food borne diseases can improve health status. Among the respondents 42% respondents always washed their hands before handling food or preparing them, 13% did it often, 23 % sometimes and 22 % never washed their hands before handling food. About 85% respondents always washed their hands with soap after coming out from toilet, 11% did it often, 2% did it sometimes and 2 % never did it. Data showed that 88% sometimes kept their dining room and kitchen protected from insects, pests and animals, in 4% it was often or all time protected while 8% never kept it protected.

The study represents that 57% of respondent kept raw food separated from cooked food and 43% didn't keep raw food separated from cooked food. About 58% respondents stated that they used to do separate storage and freezing of raw food and 78% had separate equipments to handle raw and cooked food. It is found that 57 % used to reheat food before eating and 43% did not.Data shows that 88% respondents used to keep food at room temperature for 2 hours or more while 12 percent used to keep it below 2 hours. About 32% respondents kept food in fridge for 1-5 days, 30% kept for 1-2 weeks, 31% for 3-4 weeks and 7% for more than 4 weeks.

Figure 1
Distribution of use of safe water.

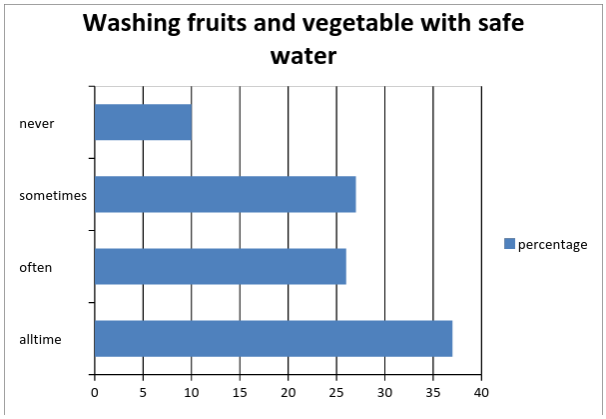

Figure 2
Response to whether fruits and vegetables are washed with safe water.

In this study it was observed that 7% never used safe water while the rest used it sometimes, often or all time (Figure 1). About 90% used safe water to wash fruits and vegetables before cooking. Among these 90% people, 39% used safe water all

time, 25% used often and 26% used sometimes (Figure 2). Among the respondents 22% never used to check expiry date before buying food (Figure 3).

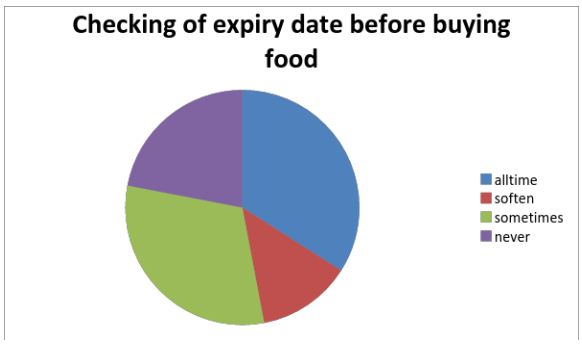

Figure 3
Response to whether expiry date is checked before buying food.

Existing knowledge about prevention and control of food borne diseases

Table 3
Knowledge about prevention and control of food borne diseases.

Knowledge	Response	Percentage
Know about food borne diseases	Yes	12
	No	88
Knowing of common food borne diseases		
Heard about Botulism	Yes	07
	No	93
Heard about Typhoid fever	Yes	78
	No	22
Heard about Cholera	Yes	81
	No	19
Heard about Hepatitis A	Yes	44
	No	66

About 88% respondents stated that they did not know about food borne diseases. It is shows that only 7% respondents heard about botulism and 93% didn't hear about it; 78% respondents heard about typhoid fever and 22% did not; 81% heard about cholera and 19% did not; 44% respondents heard about hepatitis A and 66% did not know about it.

Association between independent and dependent variables

There is a significant relationship between level of knowledge on food safety & food borne diseases depends on the level of education of respondents, level of knowledge on food safety & food borne diseases depends on the earning level of respondents but there is no significant relationship between level of knowledge on food safety & food borne diseases does not depend on the marital status of respondents knowledge on food safety & food borne diseases does not depend on the gender of respondents (Table 4).

Table 4
Relation between educational status and level of knowledge.

Status		Level of knowledge		
		Good knowledge	Poor knowledge	
Educational status	Educated	96	13	χ^2= 24.000
	Non educated	2	47	P-Value <0.0010
Marital status	Married	45	14	χ^2= 0.156
	Unmarried	35	9	P-Value< 0.7500 (not significant)
Earning level	High Income Group	47	3	χ^2= 5.515
	Low Income Group	26	17	P-Value< 0.0250 (significant)
Gender	Male	35	16	χ^2= 0.004
	Female	36	15	P-Value< 0.9500 (not significant)

CONCLUSION

The results revealed a clear picture of the poor knowledge about food safety and prevention & control of food borne diseases among adult people in Bangladeshi context. The respondents do not have sufficient existing knowledge about five keys to safer food provided by WHO. They are not adequately habituated about maintaining hygiene, using safe water, keeping food safe. They have also little knowledge about the types, occurrence, causes and symptoms of food borne diseases. In this study, we saw that the understanding about diseases being spread from street food is not quite clear to the respondents and some even had no idea about it. Among others who knew about street food their level of knowledge about street food was not up to the mark.

RECOMMENDATION

1. Necessary steps should be taken to improve educational status of people to ensure improvement of knowledge level.
2. Necessary interventions should be taken to raise the income level to ensure improvement in knowledge level.
3. Awareness programs should be organized to improve knowledge about hygiene and food safety.
4. Health camps should be organized to teach people various modalities of food handling.
5. Awareness programs should be organized to improve knowledge about d food borne diseases.
6. Health camps should be organized to teach people about various types, occurrence, causes, symptoms and primary treatment of food borne diseases.

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