Original Article

Food Safety Cognizance among Rural Adult Consumers

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Abstract

Background: *According to WHO, safe food is not contaminated with potentially harmful bacteria, parasites, viruses, toxins, chemicals and/or radionuclides. However, food can become contaminated at any point of production and distribution. A large proportion of foodborne disease incidents are caused by foods improperly or unhygienically prepared or mishandled at home, in food service establishments or markets.*

Objectives: *To assess the cognizance among rural adult consumers regarding food safety in a selected area of Bangladesh.*

Method and materials: *A descriptive type of cross-sectional study was done among a total of 125 rural adults of Chandragram village, Bajitpur, Kishoreganj. Purposive type of nonprobability sampling method had been followed to select the rural adult consumers. Face to face interview was conducted among the respondents to assess the knowledge, attitude and practice level regarding food safety, with the help of a semi structured mixed type of written questionnaire. The data analysis was done manual master sheet preparation and further presented by Microsoft excel worksheet prepared tables with diagrams.*

Results: *The maximum 42(34%) respondents were of 20-30 years aged and 110(88%) were male. Among the consumers, 35(28%) mentioned proper food preparation as meaning of food hygiene and 57(46%) said that food gets contaminated through keeping it uncovered. 68(54%) mentioned Diarrhoea as the disease spread by unhealthy practice of food handling, preparation and storage and 41(33%) said cooked food can be stored for 6 to 8 hours in normal room temperature. Out of the 125 respondents, 69(55%) respondents said they check the manufacturing and expiry dates of the packaged food items. While having any food anywhere outside home, the factors the 50(40%) respondents consider most are quality, a combination of freshness, visual and smell presentation of the supplied*

food item. Again 48(38%) respondents mentioned uncovered street foods and 44(35%) said the dirty utensils in restaurants are the prier most factors they reject food items for.

Conclusion: *Foodborne illness has threatened human health since the dawn of time. In fact, many food preparation methods we still use today, such as cooking, canning, smoking and fermentation, can be understood as primitive food safety measures, developed as a means of keeping people from getting sick. But in this study, less than half of the rural consumers have the appropriate awareness regarding food hygiene and food safety. Very few of them avoid uncovered street foods & only few consider the factors like utensil cleanliness with freshness of food in restaurants or even check the expiry date on the packaged food items. So, there is an immense need for increased health education regarding food safety among the rural people and obviously a good collaboration between governments, producers, distributors and consumers may help to ensure food safety everywhere.*

Key words: *Food safety, Food hygiene, Food contamination, Adults*

Introduction

Food is a potential source of infection and is liable to contamination by microorganisms, at any point during its journey from the producer to the consumer. Food hygiene in its widest sense implies hygiene in the production, handling, distribution and serving of all types of food. The primary aim of food hygiene is to prevent food poisoning and other food borne illnesses. The Declaration of Alma-Ata considered food safety as an essential component of primary health care. The importance of surveillance of foodborne diseases has been underlined in the WHO sixth General Programmed of Work for the period 1978-1983. The most important international programme carrying out activities in the field of food hygiene is the Joint FAO/WHO Food Standard Programmed.[1] According to WHO, 600 million cases of foodborne diseases affect the global population every year due to unsafe consumption (Patil et al., 2023). Even a small violation of food safety standards can trigger a public health crisis, economic loss and the erosion of corporate reputation in the form of interconnected food supply chains.[2] Food Hygiene and sanitation rests directly upon the state of personal hygiene and habits of the personnel working in the food establishments. Proper handling of foods, utensils and dishes together with emphasis upon the necessity for good personal hygiene is of great importance. The infections which are likely to be transmitted by the food handler are diarrhoea, dysenteries, typhoid and paratyphoid fevers, enteroviruses, viral hepatitis, protozoal cysts, eggs of helminths, streptococcal and staphylococcal infections and salmonellosis. Education of the food handlers in matters of personal hygiene, food handling, utensils, dish washing and insect and rodent control is the best means of promoting food hygiene.[1] Faeco-oral diseases are very common in Bangladesh. They spread by the transfer of pathogens from faeces and urine to foods or utensils. Healthy carriers of food-borne diseases are particularly dangerous. The prevention and control of food-borne diseases can be attained by food sanitation, proper temperature control, that is refrigeration, regular inspection of hotels and restaurants etc. Food sanitation includes inspection of meat in the slaughter house, high standard of personal hygiene of people engaged in cooking and handling food, medical examination of food handlers to exclude those suffering from wounds, boils and diarrhoeal diseases, food handling techniques like temperature maintenance, sanitary improvements of food stores and kitchen, keeping foods free from dusts and insects, health education of the food handlers in matters of food hygiene and personal hygiene.[3] Food safety is a critical public health concern for preventing foodborne illnesses and ensuring consumer protection. Food safety hazards may be present throughout the food supply chain, from farm to fork, posing significant health risks. Bacterial pathogens, agrochemical residues, toxins, food preservatives and adulteration are highly prevalent in the Bangladeshi food chain. The key food safety challenges of the country are the lack of public awareness, unhygienic practices in food handling and preparation, multiplicity of laws and lack of coordination among the regulatory authorities, bureaucratic complexities and lack of inadequate infrastructure with skilled human resources.[4]

Methodology

A descriptive type of cross-sectional study was conducted among a total of 125 rural adults of 20-60 years aged at a small village Chandragram situated ½ km away from the Jahurul Islam Medical College in Bajitpur, Kishoreganj. Purposive type of nonprobability sampling method had been followed to select the rural adult consumers. Face to face interview was conducted among the respondents to assess the awareness regarding food safety, with the help of a semi structured mixed type of written questionnaire for collection of required data. The study was conducted on the 11th of December 2019 from 10am to 1 pm. The respondents, who were available at the time of data collection, were the study samples. Firstly, the researcher explained the purpose of the study to the subjects and then verbal consent was taken from the respondents before the data collection. They were clearly informed about the objectives of the study and were also assured that data will remain confidential only used for academic or medical purposes. The respondents taken as sample of the study were informed thoroughly about the significance, process, limitations and even the consequence of this study. But it should be mentioned that they had the full right to withdraw or even discontinue the answering session anytime. And after the briefing they agreed to contribute and gave verbal consent. After compilation of data**,** the obtained data were checked for completeness, consistency and coded for reducing error and verification as well. The data analysis was done manual master sheet preparation and further presented by Microsoft excel worksheet prepared tables with diagrams. After completion of data analysis**,** the first draft was reviewed to follow second draft for any editing or modification. The final draft was prepared for submission to the authority.

Results

The results had been shown in graphical and tabular forms. The interpretation of the graphs and tables are as follows:

Table I: Distribution of the respondents regarding knowledge about Food Contamination

Knowledge about Food Contamination	Frequency	%
Through dirty food container	27	22
If food left uncovered	57	46
If food contents are washed with dirty water	41	32

Regarding foods getting contaminated, 57(46%) mentioned through absence of cover, 27(22%) mentioned through dirty food containers and 41(32%) mentioned if food contents are washed with dirty water

Table II: Distribution of the respondents according to knowledge about diseases spread by unhealthy practice of food handling, preparation and storage

Knowledge about diseases spread by unhealthy practice of food handling, preparation and storage	Frequency	%
Diarrhoea	79	63
Dysentery	21	17
Typhoid	13	10
Jaundice	12	10

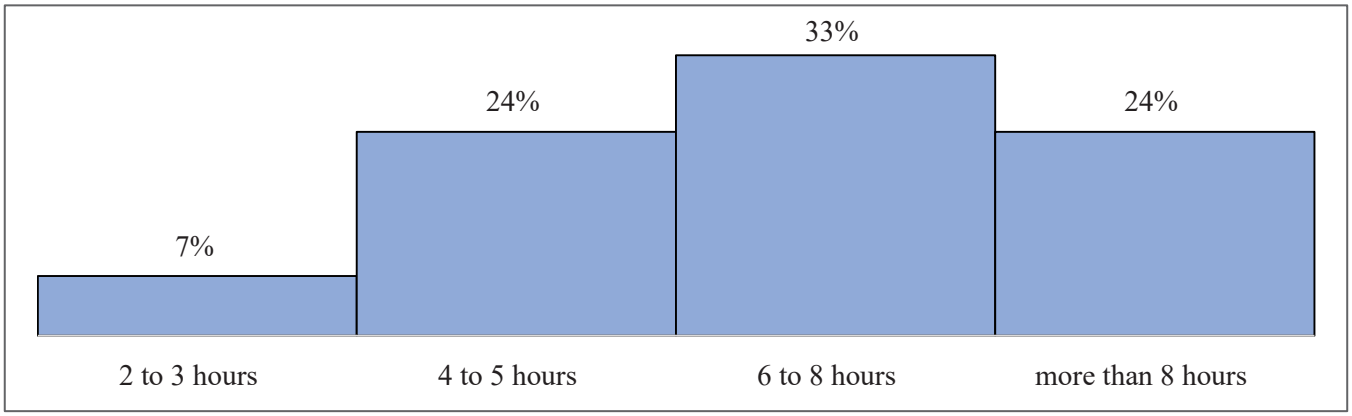
79(63%) respondents mentioned Diarrhoea, 21(17%) mentioned Dysentery, 13(10%) mentioned Typhoid fever and 12(10%) mentioned Jaundice as the diseases spread by unhealthy practice of food handling, preparation and storage

Table III: Distribution of the respondents according to idea regarding handling of raw cooking materials

Idea regarding handling of raw cooking materials	Frequency	%
Wash before cutting	98	78
Wash after cutting	27	22

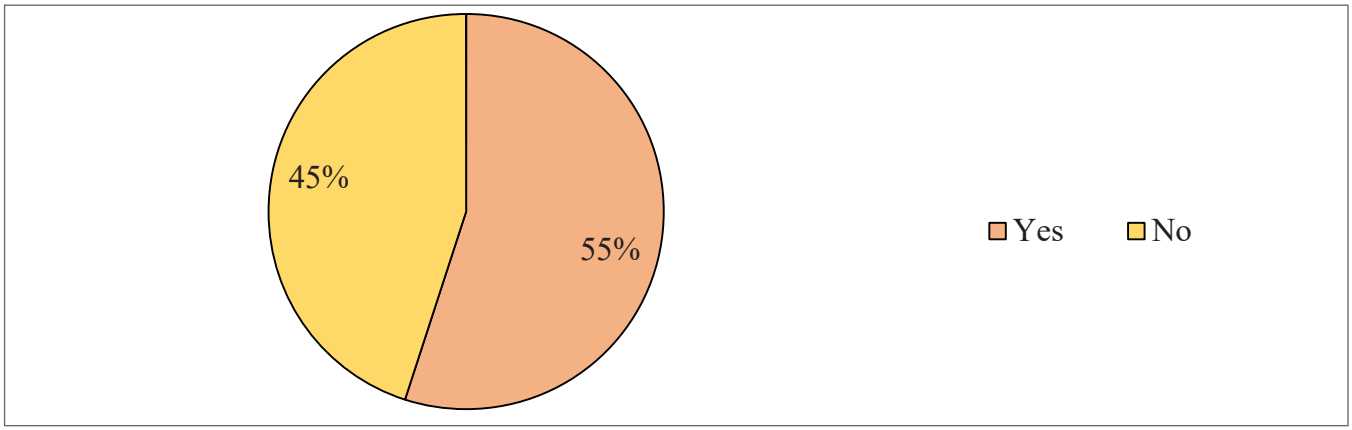
Among the 125 respondents, the majority 98(78%) mentioned that the raw cooking materials should be washed before cutting and 27(22%) said to wash after cutting respectively

Figure 1: Distribution of the respondents according to knowledge about cooked food storage time in normal room temperature



41(33%) mentioned 6 to 8 hours as the cooked food storage time in normal room temperature and rest mentioned 30(24%) 4 to 5 hours, 6(%) mentioned 2 to 3 hours, 30(24%) mentioned more than 8 hours accordingly

Figure 2: Distribution of the respondents according to checking the manufacturing and expiry dates of the packaged food items



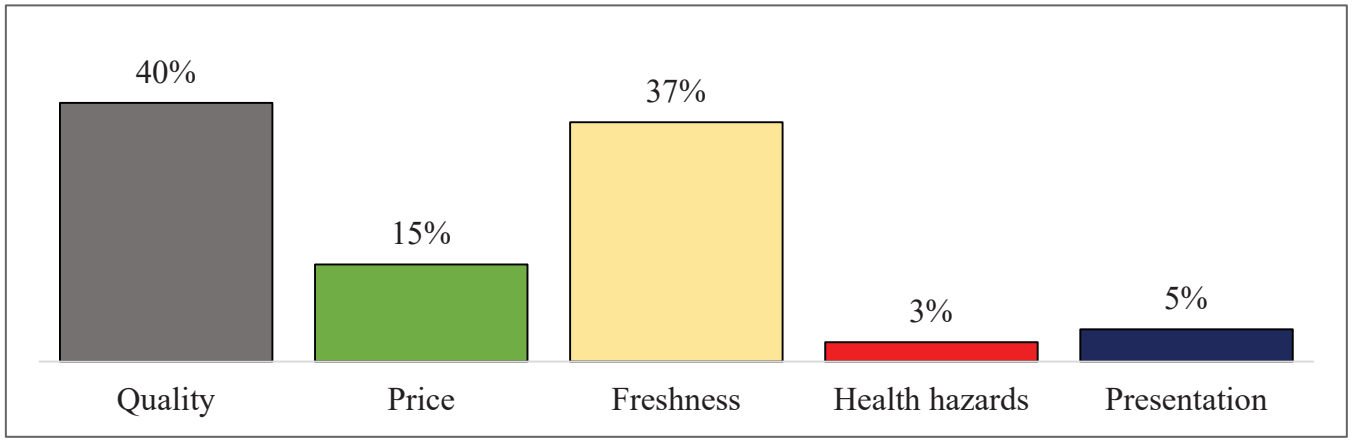
Out of the 125 respondents, the majority 69(55%) respondents said they check the manufacturing and expiry dates of the packaged food items and 56(45%) said they don't do that at all

Table IV: Distribution of the respondents according to knowledge about diseases spread by flies

Knowledge about diseases spread by flies	Frequency	%
Flies s it over excreta and s it on food next	65	52
Flies s it over waste and s it on food next	60	48

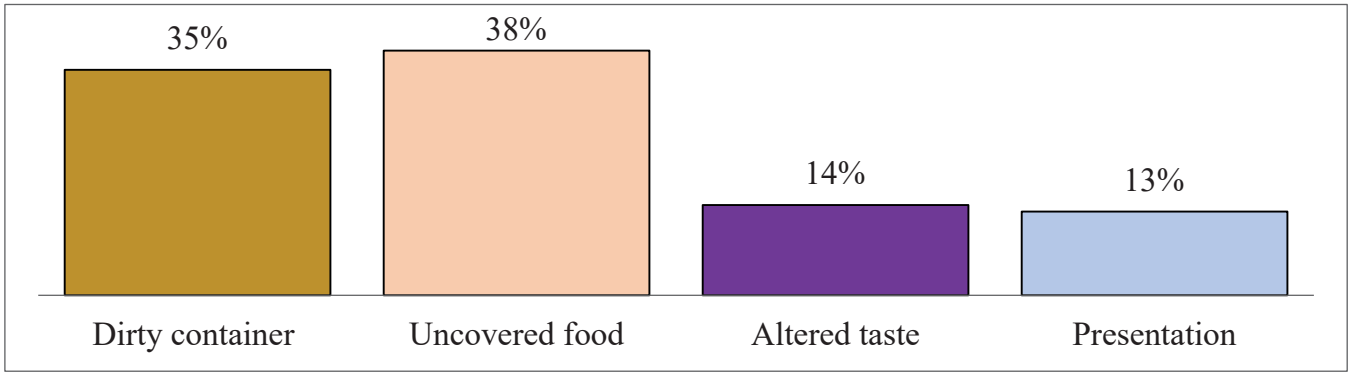
Regarding the ways of spreading diseases by flies, the majority 65(52%) mentioned that first the flies sit over excreta and sit on food next and the rest 60(48%) mentioned that the flies first sit over waste and then sit on food

Figure 3: Distribution of the respondents regarding factors considering having food anywhere outside home



While having food anywhere outside home, the factors the 50(40%) respondents consider most quality of the supplied food item price 19(15%), freshness with smell 46(37%), health hazards 4(3%) and visual presentation of the supplied food item presentation 6(5%) respectively

Figure 4: Distribution of the respondents regarding factors considered while rejecting any food



To reject any food items, the factors mentioned by the respondents were dirty container by 44(35%), uncovered food by 48(38%), altered taste by 17(14%) and presentation was mentioned by 16(13%) respondents accordingly

Discussion

The findings presented earlier need to be discussed to conclude. The maximum 110(88%) were male and 42(34%) respondents were of 20-30 years aged with the mean age was 38.3±0.6 years. 35(28%) mentioned proper food preparation, 34(27%) proper food handling, 19(15%) proper food storage, 29(23%) proper method of cooking as meaning of food safety. Ali et. al. (2018) conducted a study on KAP of food safety and hygiene among 869 students attending private institutions in Kedah and the researchers discovered that the students did have a good knowledge and attitude towards food safety and hygiene.[5] Another international survey among consumers in developing countries from Asia and Africa on food safety KAP was carried out among 453 consumers comprising 265 from Africa and 188 from Asia. Significant difference ($p<0.05$) in food safety KAP was observed between Africa and Asia. Cameroon had the least food safety knowledge (73.19±16.43) compared to Ghana (78.19±15.84) and Nigeria (88.16±8.88). Similarly, consumers in Iran had the least food safety knowledge (73.33±19.84) in Asia compared to Malaysia (88.36±11.64) and Pakistan (89.42±9.89).[6] Regarding foods getting contaminated, 57(46%) mentioned through absence of cover, 27(22%) mentioned through dirty food containers and 41(32%) mentioned if food contents are washed with dirty water. A review of 839 studies in low- and middle-income countries (LMICs) consumers identified specific factors contributing to these risks including poor hygiene, unhygienic food production practices, processing and distribution, inappropriate storage and packaging; lack of clean water and cross contamination with both agricultural and animal products and chemicals.[7] Regarding the ways of spreading diseases by flies, the majority 65(52%) mentioned that first the flies sit over excreta and sit on food next and the rest 60(48%) mentioned that the flies first sit over waste and then sit on food. 79(63%) respondents mentioned Diarrhoea, 21(17%) mentioned Dysentery, 13(10%) mentioned Typhoid fever and 12(10%) mentioned Jaundice as the diseases spread by unhealthy practice of food handling, preparation and storage. In a KAP study among 503 consumers from two metropolitan cities and two rural districts in Bangladesh had shown 99.2% mentioning abdominal pain, diarrhoea, vomiting, nausea as foodborne illnesses symptoms.[8] In this study, 41(33%) mentioned 6 to 8 hours as the cooked food storage time in normal room temperature and rest mentioned 30(24%) 4 to 5 hours, 6(%) mentioned 2 to 3 hours, 30(24%) mentioned more than 8 hours accordingly. In the international survey conducted in Africa and Asia among 453 consumers, 304(67.1%) said they consume food kept for long in room temperature.[6] Only (28.8%) pre pandemic and (38.2%) post pandemic consumers having safe storage and temperature control of food regarding knowledge, the Covid-19 comparative study revealed.[8] Among the 125 respondents, the majority 98(78%) mentioned that the raw cooking materials should be washed before cutting and 27(22%) said to wash after cutting respectively. The Covid-19 comparative study had shown 77.9% consumers washed the knife that has been used to cut raw meat with soap and water before using it again and 83.5% said inadequate cooking of raw food can cause foodborne illnesses. About 99% of participants knew that handwashing minimizes the risk of food contamination before and after cooking a meal.[8] Out of the 125 respondents, the majority 69(55%) respondents said they check the manufacturing and expiry dates of the packaged food items and 56(45%) said they don't do that at all. While having food anywhere outside home, the factors the 50(40%) respondents consider most are quality of the supplied food item price 19(15%), freshness with smell 46(37%), health hazards 4(3%) and visual presentation of the supplied food item presentation 6(5%) respectively. To reject any food items, the factors mentioned by the respondents were dirty containers by 44(35%), uncovered food by 48(38%), altered taste by 17(14%) and presentation was mentioned by 16(13%) respondents accordingly. 100% of respondents said they wash their hands before meals and as well as after defecation. In a nationwide cross-sectional survey in Bangladesh among 1400 adult consumers from September 2022 to November 2022 revealed that only 99.1% consistently washed their hands after using the toilet and they also washed their hands before eating. Again 30.2% of consumers stated that they never wash their hands after handling money. This aligns with similar rates in other studies in Ghana (96.6%) and South-Western Ethiopia (77.0%), but contrasts with lower rate in Egypt (41.8%) whereas neglecting this handwashing practice increases the risk of hand contamination and potential foodborne diseases.[9] Almost all the respondents mentioned that the food handlers should always wash their hands with soap immediately after visiting the lavatory and licking their fingers before picking up an article of food is to be

avoided. A review study regarding food safety among 1609 food handlers of 12 studies showed that in five studies (62.50%) food handlers had poor knowledge and in eight studies (72.73%) food handlers had poor practice. The restaurants and street food handlers were found with worse practices than others.[10]—All 125(100%) respondents also mentioned that the fingernails of the cooks should be kept trimmed and free from dirt and hair-head coverings should be provided, particularly in the case of females to prevent loose hair entering the food stuffs. They should also avoid cooking if they feel sick. In a web-based cross-sectional study among 777 Bangladeshi students, 47% said that a person with diarrhoea should not be involved in food preparation for others.[11]

Conclusion

Foodborne illness has threatened human health since the dawn of time. In fact, many food preparation methods we still use today, such as cooking, canning, smoking and fermentation, can be understood as primitive food safety measures, developed as a means of keeping people from getting sick. But in this study, less than half of the rural consumers have the appropriate awareness regarding food hygiene and food safety. Very few of them avoid uncovered street foods & only few consider the factors like utensil cleanliness with freshness of food in restaurants or even check the expiry date on the packaged food items. So, there is an immense need for increased health education regarding food safety among the rural people and obviously a good collaboration between governments, producers, distributors and consumers may help to ensure food safety everywhere. In fact, the policymakers, regulatory authorities and academicians should better undertake the existing challenges in the Bangladeshi food chain and develop more effective strategies for mitigating risks, ensuring food safety and enhancing public health.

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