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Original Research Article

Cross-Sectional Assessment of the Knowledge and Practices of Food Handlers and Identify Gaps in Education & Training of Food Handlers

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Abstract

Aim: to evaluate the knowledge and practices of food handlers and identify gaps in education & training of food handlers.

Methodology: The current study was a cross-sectional study conducted among the food handlers working in the five food establishments within the campus of Lord Buddha Kosi Medical College, Saharsa, Bihar for 1 year. These food establishments provide food to the visiting patients and their relatives, medical students, doctors and staff of the hospital. 100 food handlers who were available during the study were interviewed and the necessary data collected. All the food handlers working in the five food establishments within the hospital and who were willing to participate were included in the study. After obtaining their written informed consent, data was collected using a pretested pre-validated questionnaire. The questionnaire was divided into sections to collect the sociodemographic details, knowledge, attitude and practice towards personal hygiene and food handling, and the morbidity profile of study participants. The final score for Knowledge, Attitude and Practice was computed by adding up the scores designated for each response of the questions.

Results: Among the 100 food handlers who were interviewed, 61 were males and 39 were females. Majority of the study participants (76%) were between the age group 15 to 35 years. As per educational qualification, about 35% of the food handlers had studied up to higher school while others were illiterate (15%) or studied graduation (09%). The work experience among the food handlers ranged from few months up to 20 years of experience in this profession. However, most of the food handlers had work experience of less than 5 years (66%). Overall, the knowledge, attitude and practices of the food handlers was good with mean knowledge score of 6.4 (out of 10), mean attitude score of 37.2 (out of 40) and mean practice score of 38.4 (out of 45).

Conclusion: The association between the mean scores of knowledge, attitude and practice did not show any statistical significance with gender and educational qualification of study participants. However, there was statistically significant association between the lower attitude and practice scores and the gastrointestinal morbidity history of food handlers. Also, there was

positive correlation between years of work experience and the mean knowledge, attitude and practice scores of the food handlers.

Keywords: Food borne diseases, food handlers, morbidities, hygiene.

Background

Food safety is defined by the FAO/WHO as the assurance that when the food is consumed in the usual manner does not cause harm to human and wellbeing [1]. Food borne diseases are increasing in both developed and developing countries. Annually, millions of the people are influenced by food borne diseases associated with the consumption of contaminated food [2]. Food handlers represent an essential component of commercial food management systems. Food handlers can be responsible for numerous food borne diseases in case proper food safety practices are not followed [3]. Diarrhoeal diseases, mostly caused by food borne microbial pathogens, are leading causes of illness and deaths in the developing countries, killing an estimated 1.9 million people annually at the global level [4].

Food contamination may occur at any point during its journey through production, processing, distribution, and preparation [5]. The risk of food getting contaminated depends largely on the health status of the food handlers, their personal hygiene, knowledge and practice of food hygiene [6]. Infections can also be acquired through contaminated unwashed fingers, insects, and circulation of bank notes and by wind during dry conditions [7]. Contamination of food with eggs and cysts especially those sold by hawkers may also serve as a source of infection to consumers of such items [8].

Therefore, food handlers i.e. any person who handles food, regardless whether he actually prepares or serves it, play an important role in the transmission and, ultimately, prevention of food borne disease [7]. Information regarding food handlers' practices is key to addressing the trend of increasing food borne illnesses. In recent years, due to changing lifestyle, breakdown of joint family system and increase in number of working women has led to consumption of ready to eat foods. The individuals may be able to satisfy their taste and nutrition needs but pays little attention to hygiene and food safety [9].

Malpractices during the preparation of food and unhygienic conditions in food preparation areas may cause outbreaks of food borne diseases [10]. Previously, researchers have analyzed food safety knowledge, attitudes, and practices of food handlers to assess the prevailing conditions of food safety in selected regions. This study was undertaken with the aim to evaluate the knowledge and practices of food handlers and identify gaps in education & training of food handlers.

Materials and Methods

The current study was a cross-sectional study conducted among the food handlers working in the five food establishments within the campus of Lord Buddha Kosi Medical College, Saharsa, Bihar for 1 year. These food establishments provide food to the visiting patients and their relatives, medical students, doctors and staff of the hospital. There are in all 153 food handlers working in the five food establishments in the campus. But many of the food handlers

were on leave during the period of study. Hence, only 100 food handlers who were available during the study were interviewed and the necessary data collected. All the food handlers working in the five food establishments within the hospital and whowere willing to participate were included in the study. Those food handlers who were not willing to participate were excluded from the study.

The participants were explained about the purpose of the study and ensured about the confidentiality of the data. Institutional ethics committee approval was obtained for the study. After obtaining their written informed consent, data was collected using a pretested pre-validated questionnaire. The questionnaire was divided into sections to collect the sociodemographic details, knowledge, attitude and practice towards personal hygiene and food handling, and the morbidity profile of study participants.

There were 10 items under Knowledge, 8 items under Attitude and 9 items under Practices. For knowledge, score of 0 and 1 was allotted as per the binary response. The responses for Attitude and Practice were recorded based upon the Likert's scale with five points. For items under Attitude section, highest score (5) was given to response "Strongly Agree" and lowest score (1) was given to "Strongly disagree". Similarly, for section under Practices, highest score (5) was given to response "Always" and lowest score (1) was given to "Never". The final score for Knowledge, Attitude and Practice was computed by adding up the scores designated for each response of the questions.

Results

Among the 100 food handlers who were interviewed, 61 were males and 39 were females. Majority of the study participants (76%) were between the age group 15 to 35 years. As per educational qualification, about 35% of the food handlers had studied up to higher school while others were illiterate (15%) or studied graduation (09%). The work experience among the food handlers ranged from few months up to 20 years of experience in this profession. However, most of the food handlers had work experience of less than 5 years (66%). Overall, the knowledge, attitude and

Table 1: Distribution of participants based upon socio demographic factors.

Variables	Number (%)
Age (years)	
15-25	36
25-35	40
35 and above	24
Gender	
Male	61
Female	39
Marital status	
Single	35
Married	65
Educational status	
Illiterate	15
Primary	09
Middle	19
Higher	35

Higher secondary	13
Graduate and above	09
Years of work experience	
0-5	66
5-10	21
10 and above	13

practices of the food handlers were good with mean knowledge score of 6.4 (out of 10), mean attitude score of 37.2 (out of 40) and mean practice score of 38.4 (out of 45).

Table 2: Association of the knowledge, attitude and practice scores with socio demographic factors

Variables	Mean knowledge score (out of 10)	Mean attitude score (out of 40)	Mean practice score (out of 45)
Gender			
Male	6.6	36.8	35.4
Female	6.4	37	38.3
Educational status			
Illiterate	6.9	36.3	37.4
Primary	6.4	38.1	38.5
Middle	6.7	36.7	36.4
Higher	5.5	37.2	38.5
Higher secondary	6.5	36.0	37.2
Graduate and above	7.1	38.4	41.4
Morbidity history of stomach pain/bloody stools/fever			
Yes	6.0	34.8	35.6
No	6.6	37.2	40.2

Out of the 100 food handlers, 92% of them were aware that long, untrimmed nails could be possible source of food contamination. Also 86% of the study participants strongly agreed that wearing hand gloves and clean clothes are necessary hygienic measures for food handlers. Among the food handlers, 90% of them practiced washing hands with soap before handling food items. Also 95% of the study participants practice wearing hand gloves while handling food items. However, for certain specific aspects, the participants had poor knowledge and attitude. Among the study participants, 74% of them were not aware that food handlers could be potential source for food contamination. Also 83% of the study participants opined that apparently healthy person may not spread food borne infections. Out of the 100 food handlers, only 58% agreed upon the need of active participation of food handlers in control of an outbreak of food borne illnesses. The association between the mean scores of knowledges, attitude and practice did not show any statistical significance with gender and educational qualification of study participants. However, there was statistically significant association between the lower attitude and practice scores and the gastrointestinal morbidity history of food handlers. Also, there was positive correlation between years of work experience and the mean knowledge,

attitude and practice scores of the food handlers.

Annually, millions of the people are influenced by foodborne diseases associated with the consumption of contaminated food [2]. Food handlers represent an essential component of commercial food management systems. Food handlers can be responsible for numerous foodborne diseases in case proper food safety practices are not followed [3].

In this study, majority of the study participants (76%) were between the age group 15 to 35 years. In a similar study by Udgiri Rekha S, Masali KA [11], they found 73.2% of respondents were below 30 years of age and only 9 (2.72%) respondents were above 50 years whereas Gupta and Ketkar [12] from Nagpur in their study on food handlers observed that 22.3% of them were below 25 years of age. It is also seen that a majority (61%) of food handlers were males in the present study. In a study by Isara AR and Isah EC [7], they found 65.1% were females while another study by Maizun Mohd Zain and Nyi Naing [13] found 69.5% of the food handlers were females. 15% food handlers were found illiterate in the present which differed markedly from the study by Isara AR and Isah EC [7], wherein they found 98% of the respondents were having formal education. The lower literacy rate in the present study may be due to the fact that majority of food handlers were migrants from states like Madhya Pradesh, Bihar and Uttar Pradesh where the literacy rates are relatively lower.

We found out that correlation between the years of work experience of food handlers and their knowledge, attitude and practice score was positive, thus the mean score improving with increase in work experience. It indicates that practical skills learnt by doing is better retained and implemented than information learnt as knowledge. In a

Discussion

food safety survey conducted in Brazil by Soares *et al.* [14], education was found to be highly correlated with the knowledge of participants.

Similar results were reported by McIntyre *et al.* [15] in knowledge, attitude and practice model-based research survey conducted on food handlers in Canada. Regarding the knowledge, attitude and practices scores of food handlers, Yarrow *et al.* [16] ascertained that an increased level of education resulted in better KAP scores. Hence, this research study concludes that the level of education of food handlers have a significant association with food safety attributes. A research study carried out in Vietnam by Vo *et al.* [17], concluded that the level of education had a positive impact on knowledge and practices of food handlers. Soares *et al.* [18] reported that the level of education was significantly associated with the knowledge of food handlers.

Conclusion

The association between the mean scores of knowledges, attitude and practice did not show any statistical significance with gender and educational qualification of study participants. However, there was statistically significant association between the lower attitude and practice scores and the gastrointestinal morbidity history of food handlers. Also, there was positive correlation between years of work experience and the mean knowledge, attitude and practice scores of the food handlers. In our study, majority of food handlers were aware about need of personal hygiene and severity of food borne illnesses. Also, the food handlers had moderately good attitude towards their roles and responsibilities to prevent any potential outbreak of food borne infection.

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