
STUDY TO ASSESS THE KNOWLEDGE AND ATTITUDE TOWARDS FOOD HYGIENE AMONG FOOD HANDLERS IN HOSPITAL SETUPS

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Abstract

The investigation was undertaken to study the knowledge and attitudes of food handlers regarding food hygiene. Sample of 50 food handlers were selected which included Cook, Food serving staff, nurses, dietitians, housekeeping staff and domestic staff working in hospitals, health care centers, nursing homes and clinics of west district of New Delhi. Questionnaire method was used to collect the data.

The study involved testing the dependent variables: knowledge about food hygiene and attitudes of food handlers and comparing these with the independent variables: educational background, recency of acquisition of training, years of experience, age and any other training in food hygiene or food safety. The interrelationships of knowledge and attitudes were determined. Food hygiene knowledge and attitudes were assessed using questionnaire specially designed for the study. Results of the study shows that there is need to investigate, modify and improve the present food hygiene and safety education given to nurses within the training institution and in-service education for food handlers.

Key words: Food Handler, Hospital Setup, Food Hygiene, Food borne diseases

Introduction:

The spread of diseases through food is still a common problem which results in appreciable morbidity and occasional mortality. Food handlers play an important role in ensuring food safety throughout the chain of production, processing, storage and preparation. In large scale cooking, food is handled by many individuals, thereby increasing the chances of food contamination due to improper handling. Deliberate or accidental contamination of food during large scale production might endanger the health of consumers, and have very expensive repercussions on a country.

The World Health Organization (WHO) states that about 1.8 million persons died from diarrheal diseases in 2005, mainly due to the ingestion of contaminated food and drinking water. Food poisoning occurs as a result of consuming food contaminated with microorganisms or their toxins, the contamination arising from inadequate preservation methods, unhygienic handling practices, cross-contamination from food contact surfaces, or from persons harboring the microorganisms in their nares and on the skin. Unhygienic practices during food preparation, handling and storage creates the conditions that allows

the proliferation and transmission of disease causing organisms such as bacteria, viruses and other food-borne pathogens.

Hospitalized patients are more vulnerable to potential hazards, and neglecting these principles can lead to increased morbidity and mortality. The practice of safety measures by the food service staff in hospitals is necessary for the prevention of food-borne outbreaks. It is important to have an understanding of the interaction on prevailing food safety beliefs, knowledge and practices of food handlers in order to minimize foodborne outbreaks.

The annual incidence of illness related to food consumption continues to present a challenge to health management. The number of food borne illnesses traced to improper food handling in hospitals indicates a need for research to improve food hygiene. Hence if the knowledge and attitude of food handlers regarding food hygiene is adequate, perhaps these illnesses would have less of an impact on society.

Rationale for the study

Food hygiene and food hygiene practices are of great concern in the current situation. It's ironic to state that, awareness on food hygiene and food hygiene practices are of poor standard among food handlers working in canteen, hotel or cafeteria situated in hospital or hospital premises. A major risk of food contamination lies with the food handlers. Dangerous organisms present in or on, the food handler's body can multiply to an infective dose, given the right conditions, and come into contact with food, or surfaces used to prepare food. It has been established that, to a considerable extent, the domestic hygiene practices adopted by food handlers can result in a greater or lesser microbial load in prepared meals. Unsafe food handling practices in food service establishments are a major contributor to the transmission of food-borne illness.

A significant fraction of cases have been attributed to consumption of food in hospitals, and as the number of meals eaten away from the home during hospitalization continues to rise, the potential for large-scale food borne-disease outbreaks will continue to increase. Diseases spread through food still remain a common and persistent problems resulting in appreciable morbidity and occasional mortality. Food handlers play an important role in ensuring food safety throughout the chain of production, processing, storage and preparation and service of food hence their knowledge regarding the same should be of the highest concern.

Hospitalizations resulting from food borne disease outbreaks have increased in recent years but can be prevented if people follow proper food handling practices. During 2008 alone, 1,034 food borne disease outbreaks were reported. More than 23,000 people got sick during these outbreaks, and 22 people died. Almost half of the outbreaks had a single cause or food source.

Food handlers in hospitals contribute to the incidence of food borne disease; therefore, it is essential that workers and management staff have a thorough understanding of safe food practices since hospitalized patients are more vulnerable to potential hazards, and neglecting these principles can lead to increased morbidity and mortality.

The findings of the study may throw light on knowledge level and attitude of food service staff on food hygiene thus helping in creating awareness in reducing the incidence of food borne illnesses. The study results may help the food management staff and hospital authorities to take appropriate measures to reduce the spread of food borne

illnesses; thereby increase personnel knowledge and hospital organizational growth.

Objectives of the study

1. To determine the level of knowledge regarding food hygiene among food handlers in selected hospital.
2. To identify the level of attitude regarding food hygiene among food handlers in selected hospital setup.
3. To find out the association of knowledge scores with the selected demographic variables.
4. To find out the association of attitude scores with the selected demographic variables.

Methodology:

This study was designed to investigate the food handlers knowledge and attitude towards food hygiene and also the effect of specific independent variables upon nutrition knowledge and attitudes of food handlers, and the relationships among the dependent variables was investigated. The study was conducted in cooperation with the Hospital administration, dietetics department and nursing superintendent of Hospital, clinics and health care centers of New Delhi. The subjects for the study were selected among the staff working in hospitals, health care centers, nursing homes and clinics in New Delhi. Only fifty food handlers were taken as subject for the present study.

Purposive sampling was used to select the sample. A list was obtained from the Dietetics Department and Nursing Superintendent and a request letter was sent to selected nurses and Kitchen staff requesting them to willingly participate in the study.

Inclusion and Exclusion criteria**Inclusion criteria**

- Food handlers who were working in selected hospital.
- Both male and female food handlers who were working in the selected hospital
- Those who were available during study.

Exclusion Criteria

- Food handlers who underwent training in food hygiene practices.
- Food handlers who were physically challenged.
- Food handlers those who were not present at the time of data collection

List of Food handlers was made by consulting the Staff Nurse and the Dietetics department of the Hospital, Clinics and Health care centers. Purposively selected participants were invited to participate in the study. Day of data collection was fixed with those who were willing to participate. The researcher visited the participants at their place of work to collect data by completing the questionnaire. A period of one month was used to collect the data.

Questionnaire was formed from existing literature, group discussions with nurses and dieticians, observation of their working at the work place where necessary and expert advice

from Dietician, Nurses and Quality Managers. The checklist was made for various topics to be included in a questionnaire with the help of experts in the field of nutrition. This process serve to maximize the content validity of the questionnaire, i.e. the questions selected will represent whole area of knowledge and attitude being measured. The preliminary instrument was then ready for piloting in a sample population.

The pilot study was done to test the questionnaire for comprehension and clarity. The aim of the pilot study was to validate the questionnaire's content. The participants were to ensure the questions were specific, well structured (face validity) and were addressing basic and food safety and hygiene questions that were relevant (content validity) to the Food handlers.

The first phase of the pilot study was conducted with two eminent members in the field of Quality Management. Both of the pilot study participants completed the questionnaire and provided written comments independently on the existing questions. The researcher incorporated all the suggestions made and the revised questionnaire was then returned to the study participants for a second review.

Most of the changes made were related to the multiple choice questions which were made more specific and comprehensive and repetition was eliminated. They also noted that the questionnaire was too long thus the questions were reduced from 52 to 48 questions. Eliminated questions were those that were mostly highlighted as being too technical (knowledge section (n-4)).

The second phase of the pilot study was done with 10 nurses. Person those who were willing to participate in the pilot study were contacted. Each pilot study participant completed the questionnaire and gave their comments. The questions which were commented not applicable (socio-demographic section (n-4) and knowledge section (n-8)) in their set up were omitted. All the final suggestions made were used for the improvement of the content and comprehension of the questionnaire and were incorporated in the final questionnaire used in this study.

The 36-item validated questionnaire consisting of 6 socio-demographic questions, 23 questions on nutrition knowledge and 7 questions on attitude on food hygiene formed the basis of this study.

Demographic details comprised of 6 questions aimed at gathering basic and background information such as age, profession, years of education, work experience, any other training/experience in food hygiene or food safety and the recency of education / training. The aim of this section was to determine the work profile, experience, level of education and any other training attended in food hygiene or food safety.

Knowledge related to food hygiene contained 23 questions. The questions were aimed at assessing the food handler's knowledge on certain aspects of food hygiene.

The respondent had to choose one correct answer amongst multiple choice answers from which only one was correct to the question. The option of do not know was also added as a choice to the question to decrease the non-response rate. All the questions that were left blank were regarded as incorrect. One mark was assigned to each correct answer.

Attitude towards Food Hygiene

This section has 7 statements to assess food handlers attitudes towards food hygiene. Five

point Likert scale was used to determine the degree of agreement to a given statement.

-2	-1	0	1	2
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Data Collection Procedure

Instructions to Subjects

The questionnaire along with a invitation/consent letter inviting the subjects to participate in the study together with an explanation of the purpose of the study and assurance of confidentiality and anonymous management of the data was hand delivered to the study participants at their places of work by the researcher.

A questionnaire was completed with different sections assessing socio-demographic information, knowledge and attitudes on food hygiene. The researcher was personally involved in collecting the data (n=45) and was therefore available for clarification, while some (n=5) of the respondents took the questionnaires and completed them at home or after their working hours. Before any data was collected the participants received and signed an informed consent form.

Data analysis

Data was entered in Microsoft Excel software, and analysis was performed using Statistical Package for Social Sciences (SPSS).

Descriptive Statistics:

The following components were described using descriptive statistics:

- Socio-demographic profiles
- Food handler's knowledge.
- Food handler's attitudes.

Inferential Statistics:

The following procedures were used in the present study:

- Stepwise and multiple regressions were carried out on the two dependent variables, knowledge and attitudes, to determine whether the independent variables were factors which related to the dependent variables.
- The knowledge scores were determined by taking the number of correct responses by each respondent out of the 23 knowledge questions asked and is expressed as a percentage. The percentage scores were graded to determine whether subjects' knowledge levels were poor, average or adequate. The grading table was designed by the researcher as there was no standard scoring table available in the literature.

Grading system used to classify the respondents knowledge levels.

Percentage	Grade
0-40%	Poor
41-70%	Average

Level of Significance

A p-value of less than 0.05 was considered to be statistically significant.

Results

The Percentage knowledge score of Cook, Serving staff, Domestic and Housekeeping staff was 29.5%, 15.25% and 6.25% respectively which indicates a poor knowledge level. While the Percentage knowledge score of dietitian was 94.7% indicating above average knowledge level and that of nurse was 52% indicating average knowledge level. Food handlers (kitchen staff, serving staff and housekeeping staff) in the selected Hospital demonstrated that they had lack of knowledge on food hygiene. Their knowledge is crucial because lack of personal hygiene has been shown to be significant contributory factors to food-borne illness especially in hospitalized patients. The kitchen staff had shown the highly negative attitude related to food hygiene and food safety.

The overall mean attitude scores recorded was positive for cook, nurses and dietitians with the mean score of 38.8, 141.7 and 188.5 respectively. As expected both nurses and dietitians have highly positive attitudes towards Food hygiene. Serving staff, domestic and housekeeping staff had highly negative attitude towards food Hygiene. All the respondents feel that food hygiene training will help to increase their knowledge on food safety.

The results of stepwise regression the variable recency of training was found to be significantly related to the test score of nurses. Those nurses who had graduated less than 5 years ago achieved significantly lower scores for knowledge than nurses who had graduated 5 to 10 years ago. The cook, serving staff and domestic and housekeeping staff who had less than eight years of education achieved significantly lower knowledge test scores. The respondents who had undergone any training or education on food hygiene or food safety had got higher knowledge test scores. The results of multiple regressions of all the independent variable (age, years of education, any other food hygiene or food safety training, recency of training and work experience) studied related to the attitude test score of dietitians and nurses has no role. The coefficient of the regression equation for the dependent variable knowledge and attitude showed that attitudes and knowledge were significantly and directly related.

Conclusion

The study was designed to investigate the knowledge and attitudes related to food hygiene of Food Handlers working in hospital setup. The data was collected by means of questionnaires which measured, separately, nutrition knowledge and attitudes. As well, the questionnaires collected demographic information on the independent variables such as information on education, experience, age, other food safety related training and recency of training. The test of nutrition knowledge consisted of 23 items based on the nutrition

knowledge that a food handler should possess. The test of nutrition attitudes consisted of 7 statements reflecting attitude toward hygiene.

A total of 70 questionnaires along with the consent form were distributed to the nurses, dietitians, cook, serving staff and domestic and housekeeping staff working in the various hospitals, clinics, nursing homes and health care centers in New Delhi, out of which 67 complied with the inclusion criteria and 50 completed the questionnaire. These 50 questionnaires, representing a 75% response rate, were used for data analysis. Multiple and stepwise regressions were carried out to determine which independent variables were related to the dependent variables. Partial correlation analysis was done to determine the relationship of knowledge and attitudes. Analyses were tested at the 5% level of significance.

The present study reveals that there is a paucity of in service food hygiene education intervention among Food handlers. The results indicate the knowledge and attitude are significantly, directly and very strongly related. Thus, a sound knowledge of Hygiene and food safety is important if good practices are to be instituted by food handlers. Although, it is well established that practice are significantly and directly related to attitudes which definitely originate from knowledge. Thus it seems most important that sound hygiene and food safety knowledge be instilled in the food handlers and also in health professionals.

Since, it is a well known fact that knowledge directly and strongly influences practice. Thus there is need to investigate, modify and improve the present food hygiene and safety education given to nurses within the training institution and in-service education for Food handlers. Because nurses demonstrate significantly poorer nutrition knowledge if they have no opportunities to undergo training, it appears extremely important that there be enough nutritionists to serve adequately as consultants to the nurses and Kitchen staff in a continuous, ongoing manner.

In conclusion, the results of National family health survey (2005-2006) indicated that there is a need of food hygiene and food safety education to be offered to the public. Nurses and dietitians are in the best position to do this. This practices and inadequate knowledge on food hygiene may be one of the contributing factors to the high prevalence of malnutrition in hospitalized patients. Thus it is imperative that the nurse, dietitians and kitchen staff should have adequate food hygiene knowledge and that they implement sound practices. Food hygiene and food safety education both in training curriculum and in in-service education need to be investigated and improved. Nutritionists are necessary and effective consultant to nurses and kitchen staff. Hence, delivering continuous education through workshops and courses helps to improve Food Handler's knowledge and attitudes.

Introduction of the Hazard Analysis and Critical Control Points (HACCP) system could help. HACCP employs a structured and rational approach to the analysis and prevention of potential hazard points at each stage of food operation.¹⁹⁻²¹ It requires operators/ handlers to enumerate and identify all steps in their activities that are critical to achieving food safety and to identify and evaluate safety measures. The developed world has been introduced to this system and great efforts have been expended to improve food safety at all levels of the food chain, including the canned food industry. The current study shows that food service personnel in selected hospitals often have insufficient knowledge regarding the basics of food hygiene. Providing education about the HACCP system may help.

REFERENCES

1. Adams M, Motarjemi Y. Basic food safety for health workers. Geneva: World Health Organization; 1999. p. 113-4.
2. Annor GA, Baiden EA. Evaluation of food hygiene knowledge attitudes and practices of food handlers in food businesses in Accra, Ghana. *Food Nutr Sci.* 2011;2(8):830. doi: 10.4236/fns.2011.28114.
3. Barrie D. The provision of food and catering services in hospital. *J Hosp Infect.* 1996;33(1):13-33. doi: 10.1016/S0195-6701(96)90026-2.
4. CN, Aguwa OC, Abanobi OC, Nwoke EA. The knowledge, attitude and practices of food handlers in food sanitation in a metropolis in south eastern Nigeria. *East Afr J Public Health.* 2009 Dec;6(3):240-3.
5. Fielding JE, Aguirre A, Palaiologos E. Effectiveness of altered incentives in a food safety inspection program. *Prev Med.* 2001;32(3):239-244. doi: 10.1006/pmed.2000.0796.
6. Gent R, Telford D, Syed Q: An outbreak of campylobacter food poisoning at a university campus. *Communicable disease and public health/PHLS* 1999, 2(1):39-42.
7. Mukhopadhyay, P., G. K.Joardar, K.Bag, A.Samanta, S.Sain, and S. Koley. 2012. Identifying key risk behaviors regarding personal hygiene and food safety practices of food handlers working in eating establishments located within a hospital campus in Kokata. *Al Ameen J. Med. Sci.* 5(1): 21-28.
8. Omaye ST. *Food and nutritional toxicology.* Boca Raton: CRC press; 2004. p. 163-73.
9. Seaman, P., and A. Eves. 2008. Food hygiene training in small to medium-sized care settings. *Int. J. Environ. Heal. Res.* 18(5): 365-374.
10. WHO .Food Safety and Foodborne Illness. Fact sheets No. 237. Geneva: World Health Organization; 2007.
11. World Health Organisation (WHO) 2000. *Foodborne Disease: Focus on Health Education.* WHO, Geneva.
12. Zain MM, Naing NN. Sociodemographic characteristics of food handlers and their knowledge, attitude and practice towards food sanitation: A preliminary report. *Southeast Asian J Trop Med Public Health* 2002; 33(2): 410-7.