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FOOD HYGIENE AND SAFETY PRACTICES OF FOOD SERVICE STAFF IN UNIVERSITY OF BENIN TEACHING HOSPITAL, BENIN CITY, NIGERIA

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ABSTRACT
This study was aimed at assessing the knowledge, attitude and practice of food hygiene and safety among food service staff of UBTH. A descriptive cross-sectional study was done. Data collection was by means of a structured questionnaire. A total of 155 available food service staff was studied. Their mean age was 41.4 years (SD = 8.8 years). Majority (71.03%) has heard of food hygiene and safety but only 12.2% had correct knowledge of it. Most of them demonstrated a positive attitude towards food hygiene and safety. Hand washing before handling food was done by 83.2%, after handling food by 61.3% and after using the toilet by 96.8% respondents. The knowledge of food hygiene and safety was poor among the respondents. However, they exhibited a positive attitude towards food safety while their practice was fair. The hospital should institute training programmes for all food service staff to improve their knowledge and practice of food hygiene and safety.

Introduction

Foodborne diseases remain responsible for high levels of morbidity and mortality in the general population, but particularly for at-risk groups such as infants and young children, the elderly and the immunocompromised which includes hospitalized patients[1]. Food plays a significant role in the prevention of certain diseases and eating the right and safe/hygienic foods helps in faster recovery from illnesses[2]. "Food hygiene and safety in hospitals poses peculiar problems, particularly given the presence of patients who could be more vulnerable than healthy people to microbiological and nutritional risks"[3]. Hence a major goal of the hospital should be to provide safe food to patients who frequently are at higher risk of acquiring infections and their complications.

Foodborne disease outbreaks in hospitals which are usually facilitated by several factors such as health and hygiene status of food handlers, poor hygiene conditions in the kitchen and its environ, lack of food preparation policies and lack of training of food handlers, have been reported all over the world[4-7]. "Patients receiving food from a single kitchen with poor food handling practices could suffer a foodborne infection which could result in an outbreak involving the whole hospital"[8]. Lo et al in the United Kingdom had described an outbreak of SRSV (small round structure virus) gastroenteritis in a group of hospitals in which a pre-symptomatic food handler was the common source of the outbreak[9]. Contaminated salad was the food item implicated and the food handler was said to have nursed her baby who was ill with

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vomiting and diarrhoea the day preceding the outbreak. She developed symptoms of gastrointestinal illness herself a day after the outbreak when she vomited in the kitchen. The Hazard Analysis and Critical Control Point (HACCP) which identifies critical control points in the food chain is particularly important and can facilitate appropriate target for resources and prevention efforts especially when many factors contribute to food contamination[10]. The development of foodborne diseases by patients in addition to the initial ailments that brought them to the hospital could result in far reaching public health consequences on the individual, families, communities and the country at large.

Apart from aggravating their illnesses and the possibility of fatality, it could also lead to prolonged hospital stay with increased financial burden and loss of man hour on the part of relatives of the patients. There is also a huge burden on the health care system of the country.

In the hospital setting, food handlers play a major role in foodborne disease outbreaks especially if they exhibit poor personal hygiene and lack knowledge and practice of food safety. A study carried out among food handlers working in food establishments around a rural teaching hospital in India showed that the health status and the level of personal hygiene of the food handlers were found to be unsatisfactory, thereby increasing the risk of food contamination considerably[11]. Previous studies carried out in Benin City, Nigeria also revealed poor knowledge and practice of food hygiene and safety among food handlers in the general population[12,13]. To the best of our knowledge, the issues of food hygiene and safety have not been evaluated in any hospital in Benin City, Nigeria. Since the food handlers in the hospitals in this locality are most likely going to be drawn from the general population, it becomes imperative to assess their food hygiene practices. Thus, this study was designed with the aim of assessing the knowledge, attitude and practice of food hygiene and safety among food service staff in the University of Benin Teaching Hospital, Benin City, Nigeria.

Materials and Methods

This cross-sectional study was carried out in the University of Benin Teaching Hospital (UBTH) Benin City, Nigeria, in June 2010. UBTH is one of the first generation teaching hospitals in Nigeria. It provides tertiary level of health care to the people of Edo State and other neighbouring states in southern Nigeria. The hospital kitchen started with the hospital in 1973 and comprised the main kitchen which prepares food for hospitalized patients and health care workers on call duty and the dietetic (special kitchen) which prepare food for those on special diet. The food policy in UBTH stipulates that all patients admitted into the hospital are fed three meals daily from the hospital kitchen and patients or patients relative are not allowed to bring in prepared food into the hospital.

This study was approved by the ethics and research committee of the University of Benin Teaching Hospital. Permission to carry out the study was also obtained from the Head of the Catering Department of the hospital and verbal consent was obtained from the study participants after full explanation of the study to them. At the end of data collection, respondents were given health education on food hygiene and safety with emphasis in the hospital setting.

The study population comprised of all available food service staff in UBTH during data collection. These comprised of those involved in the preparation of the food in both kitchens and those who serve the food to patients in the various hospital wards and units.

Data was collected using a structured interviewer administered questionnaire which contained open and close ended questions. The questions were derived from relevant sections of the FAO/WHO Recommended International Code of Practice General Principles of Food Hygiene[14] and the WHO 'Five Keys to Safer Food'[15]. Information sought from the food service staff included socio-demographic characteristics, their knowledge, attitude towards and practices of food hygiene and safety. The questions on knowledge assessed the ability of the respondents to correctly explain the meaning of food hygiene and safety, their knowledge of cross-contamination of food, the fact that food handlers can cause foodborne disease outbreaks and the names of organisms that can contaminate food. Respondents were also asked if they have had any form of training in food hygiene and safety either before or during their working period in UBTH. However, the details of the form/type of training were not explored further.

Data collected were checked for correctness before they were coded and analyzed using SPSS version 16 statistical software. Eight questions were used to assess respondent's knowledge of food hygiene and safety. Respondents' answers to the questions were assigned a score of 1 for correct responses and a score of 0 for incorrect responses giving a maximum point that a respondent can obtain to be 8. The total scores for each respondent were then converted to percentages and were used to categorize them as follows: poor knowledge; 0 – 49%, fair knowledge; 50 – 69% and good knowledge; 70 – 100%.

Results

All the 155 food service staff available in the hospital as at the time of data collection participated in the study. These comprised of those who work in the main kitchen 51 (32.9%), the dietetics section 24 (15.5%) and those who serve the food to the various wards 80 (51.6%). Table 1 describes the socio-demographic characteristics of the respondents. Their ages ranged from 25 to 64 years with a higher proportion 76 (46.5%) of them in the age group 35 – 44 years. Mean age was 41.4 years (SD = 8.8 years). Majority 112 (72.3%) of the food handlers were female while 43 (27.7%) were males. Most of the respondents 118 (76.1%) were married and a higher proportion had completed primary and secondary level of education, 43.9% and 43.2% respectively. Only 4 (2.6%) had tertiary level of education. Also, only 42 (27.1%) have had any form of training in food hygiene and safety.

Although, majority of the respondents 110 (71.0%) claimed to have heard of food hygiene and safety, only 19 (12.2%) respondent had correct knowledge while 28 (18.1%) and 108 (69.7%) had a fair and poor knowledge of food hygiene and safety respectively (Table 2). The attitude of the respondents towards food hygiene and safety is shown in Table 3. Majority of respondents 138 (89.0%), agreed that protective clothing reduces the risk of food contamination while 130 (83.9%) agreed that persons with cuts on their fingers should not handle food. All the respondents 155 (100%) and almost all of them 154 (99.4%) agreed that washing of hands before and after handling food is mandatory and that raw food should be separated from cooked food, respectively. One hundred and eleven (71.6%) agreed that cooked food should be refrigerated promptly while 122 (78.7%) agreed that cooked food should be served hot.

Table 4 showed the practice of food hygiene and safety among the respondents. Majority of the respondents practiced hand washing always before handling food 129 (83.2%),

Table 1: Socio-demographic characteristics of respondents

Variable	Frequency (N=155)	Percent
Age in years		
25 – 34	32	20.6
35 – 44	72	46.5
45 – 54	39	25.2
55 – 64	12	7.7
Mean age 41.4 years (SD= 8.8 years)		
Sex		
Male	43	27.7
Female	112	72.3
Marital status		
Married	118	76.1
Single	20	12.9
Widowed	10	6.5
Divorced	7	4.5
Educational status		
None	16	10.3
Primary	68	43.9
Secondary	67	43.2
Tertiary	4	2.6
Training in food hygiene and safety		
Yes	42	27.1
No	113	72.9

Table 2: Respondents' Knowledge of food hygiene and safety

Knowledge	Frequency	Percent
Good	19	12.2
Fair	28	18.1
Poor	108	69.7
Total	**155**	**100.0**

Table 3: Attitude of respondents towards food hygiene and safety (n = 155)

Attitude	Agree n (%)	Disagree n (%)	Indifferent n (%)
Protective clothing reduce the risk of food contamination	138 (89.0)	6 (3.9)	11 (7.1)
Washing of hands before and after handling food is mandatory	155 (100.0)	0 (0.0)	0 (0.0)
Persons with cuts on their fingers should not handle food	130 (83.9)	19 (12.2)	6 (3.9)
Raw food should be separated from cooked food	154 (99.4)	0 (0.0)	1(0.6)
Cooked food should be refrigerated promptly	111 (71.6)	35 (22.6)	9 (5.8)
Cooked food should be served hot	122 (78.7)	27 (17.4)	6 (3.9)

Table 4: Respondents' practice of food hygiene and safety (n = 155)

Practice	Always n (%)	Sometimes n (%)	No n (%)
Washing of hands before handling food	129 (83.2)	18 (11.6)	8 (5.2)
Washing of hands after handling food	95 (61.3)	54 (34.8)	6 (3.9)
Washing of hands after going to toilet	150 (96.8)	5 (3.2)	0 (0.0)
Rinsing of plate before serving food	139 (89.6)	15 (9.7)	1(0.6)
Separating raw food from cooked food	152 (98.1)	3 (1.9)	0 (0.0)
Use of separate utensils for handling raw food	99 (63.9)	48 (30.9)	8 (5.2)
Washing of cutting board before using it for food	100 (64.5)	47 (30.3)	8 (5.2)
Cooking of meat properly	149 (96.1)	6 (3.9)	0 (0.0)
Reheating of meat before dishing	0 (0.0)	0 (0.0)	155 (100.0)
Washing of fruits thoroughly before eating	73 (47.1)	2 (1.3)	80 (51.6)
Washing of vegetable before cutting	15 (9.7)	9 (5.8)	131 (84.5)

after handling food 95 (61.3%) and after using the toilet 150 (96.8%). Also, most of them rinsed their plates before serving food 139 (89.6%), separated raw food from cooked food 152 (98.1%) and cooked their meat properly 149 (96.1%). None of the respondents reheated their meat before dishing it. However, only half of the (51.6%) washed their fruits thoroughly before consumption.

Discussion

Food hygiene and safety and the role of food handlers in ensuring it in the hospital setting cannot be overemphasized. This study revealed that the food service in UBTH was done by workers who had primary and secondary level of education as only very few respondents (2.6%) had tertiary level of education. This has serious negative implications on food safety because previous studies have documented the fact that food handlers with higher level of education had better knowledge and practice of food hygiene and safety[3,13,16,17]. It was also very worrisome that only few respondents have had any form of training in food hygiene and safety. This could probably be due to the fact that the hospital management did not place a high premium on the importance of training of food service staff in ensuring that the food served to patients and health care workers is safe, sound and fit for human consumption. Training of food handlers is a very important tool in assuring food safety in any food industry and the hospital is not an exception. El Derea et al in a study on safety of patient meals in two hospitals in Alexander, Egypt demonstrated an improvement in the overall food safety practices and their associated parameters in both hospitals after a training programme for food handlers[8].

In this study, it was found that although majority of the food handlers have heard of food hygiene and safety, the correct knowledge of it was poor among them. Only few of them knew the correct meaning of food hygiene and safety i.e. the correct definition of food hygiene and safety, knowledge of cross-contamination of food, the fact that food handlers can cause foodborne disease outbreaks and knowledge of the names of pathogens that can contaminate food. This finding was consistent with reports of other studies in Nigeria and in other parts of the world[12,13,16-18]. The level of education of the food handlers in this study and their lack of training may have accounted for the poor knowledge of food hygiene and safety. The resultant effect of this is that, the food handlers could readily spread microorganisms to food in the course of their duty. This could lead to foodborne disease outbreaks in the hospital thereby compounding the problems that originally brought the patients to the hospital. In this situation, the vulnerable groups would be mostly affected. A study in Brazil showed that a hospital associated outbreak of listeriosis affected adult patients with median age of 80 years who had immunosuppressive conditions[19]. The possible vehicle of listeria probably originated in the hospital kitchen, since the cases occurred in the different wards of the hospital and stopped after an intervention in the kitchen[19].

Most of the food handlers reported a positive attitude towards food hygiene and safety as they agreed to all the questions used to assess their attitude. For example all of them agreed that hand washing before and after handling food should be mandatory. This positive attitude is consistent with many previous studies[2,13,16-18]. However, the positive attitude has not translated into a very good practice of food hygiene and safety. Although most of the food handlers would always wash their

hands before handling food and after using the toilet, only about one third of them would wash their hands after handling food, wash cutting boards before using it for food and used separate utensils for handling raw food. The use of improperly washed cutting boards could be associated with contamination of food with microorganisms which may be implicated in foodborne disease outbreaks. Although, most of the food service staff fared well in the practice of food hygiene and safety in the area of proper cooking of meat, an alarming finding in this study was the fact that less than half would wash fruits thoroughly before eating. This poses a lot of danger for food safety in the hospital setting which can result in food contamination and subsequent food borne disease outbreaks and nosocomial infections among patients.

This study has the following limitations; first, the form/type of training on food hygiene and safety received by the respondents was not evaluated. Secondly, the information on practice of food hygiene and safety relied on reports by the respondents who may be prone to information bias.

Conclusion

This study revealed poor knowledge of food hygiene and safety among food service staff of UBTH, though they exhibited a positive attitude towards food safety but their practice was fair. It is recommended that the hospital management should institute training and retraining programmes for all food service staff to improve their knowledge and practice of food hygiene and safety. The hospital should also establish and implement HACCP to ensure the safety of food consumed by patients and health workers from where the food is prepared in the kitchen to where it is eaten in the wards. Also more persons with tertiary level of education, who have had training in food hygiene and safety, should be employed as food service staff in the hospital since it has been documented in the literature that a higher level of education and training enhances the practice of food hygiene and safety. Food service staff in the hospital should endeavor to maintain good personal hygiene at all times as this will minimize food contamination. Further studies assessing the practice of food hygiene and safety using qualitative methods such as direct observation are advocated.

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