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Research Article

USEFULNESS OF PERIODIC FOOD SAFETY TRAINING AMONG HOSPITAL FOOD HANDLERS

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A R T I C L E I N F O

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A B S T R A C T

Strict conformity to food safety standards is important in the Institutional kitchen whilst the food is served to the hospitalized patients. Regular training of food handlers (FH) may ensure food safety compliance and prevent food-borne illness and outbreaks. 100 FH were enrolled for the study, out of which 94 FH completed the study. The design of the study was Quasi - experimental design (pre- test, post-test design).A questionnaire was administered on FH in the beginning of the study to determine their existing level of knowledge, practice and attitude towards food safety issues related to food preparation and services in AIIMS hospital. Thereafter, one day of training session was conducted to update their food safety knowledge. Therefore, change in food safety knowledge was again determined by a questionnaire. Scores of pre and post training knowledge was statistically analysed. Correlation analysis revealed a significant positive correlation of post training knowledge with attitude ($r=0.232$, $P<0.02$). The findings of the present study provided an insight into planning appropriate training modules in the interest of providing quality dietary care to hospital dieted patients.

INTRODUCTION

Food is our basic necessity, it is a key contributor to physical well-being, its procurement, preparation and consumption is vital for sustenance of life. Food borne diseases (FBD) are an important cause of morbidity and mortality worldwide. Globally, increases in the incidence of food borne illnesses continue to be reported, often associated with outbreaks and food contamination that raise international concern [(1)]. FBD is a serious health concern in India. The economic burden caused by food borne diseases in India accounts for US$15 billion in year 2016 [(2)]. Mishandling of food is one of the major factors of all food-borne illness associated with catering outlets [(3)]. Food contamination can occur during preparation, processing or storage [(4)]. Implementing proper food handling practices and good personal hygiene and can minimize the transfer of pathogens from food handlers to consumers [(5)]. A person in the food trade who, in his routine work, come into direct contact with food in the course of its production, processing, packaging or distribution is called as food handler (FH).

Effective training of FH and implementation of knowledge gained by training to behaviour in particular can thus help limit improper food handling practices and thereby preventing occurrence of food borne illness. Indoor hospital dieted patients are most likely to get sick from unsafe food. This group of people is called the highly susceptible population. Information on the food safety and hygiene practices adopted by FH working in hospital dietary services is very little in India.

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Thus, this study was planned to assess the existing food safety knowledge, attitude, and self-reported practices of FH working in a tertiary care hospital of India and the effect of in-house food safety and hygiene training on the knowledge, attitude, and practices.

SUBJECTS AND METHODS

100 FH were enrolled for the study, out of which 94 FH completed the study. The design of the study was Quasi - experimental design (pre-test- post-test design). Ethical clearance from ethics committee of AIIMS was taken before conduct of the study. A questionnaire was designed to obtain the knowledge, attitude, and practices of FH working in hospital kitchen about various aspects of food safety. The questionnaire was pretested by conducting a pilot study on 30 participants for validity. The questionnaire was filled by the FH in the presence of administrator / Dieticians.

The questionnaire comprised four sections: The first section contained demographic data related to age, gender, years of service, duty timings, type of duty performed, any previous professional/skill development training undertaken and educational level. The second section comprised of 20 questions to assess the knowledge of food handlers pertaining to role of washing hands, maintaining cleanliness and proper storage and risk of food contamination, reading food labels of packaged foods, pest control measures, prevention of cross contamination and waste disposal. Respondents were asked to circle all answers within each question they believed to be correct. If an employee circled a response that was correct, that item was coded with a 1. If the response circled was incorrect,

the item was coded as a 0. Thus, the mean of each of the 20 individual knowledge items could range from 0 to 1, with an overall possible composite score of 20. The third section of the practice questionnaire had 14 questions to assess hygienic practices of FH related to wash room etiquettes, personal infection or injury, maintaining cleanliness and clean surfaces, food service and delivery, wearing proper uniform while working in the kitchen. Possible answers were listed as "Never", "Rarely", "Sometimes", "Most of the times", and "Always" and given marking from 0, for the incorrect answer to 5 for the most appropriate answer. Thus, the mean of each of the 14 individual knowledge items could range from 0 to 4, with an overall possible composite score of 56. The fourth section of the attitude questionnaire contained 10 questions related to beliefs FH regarding observed food safety issues, steps of hand hygiene, maintaining personal hygiene and food preparation and storage practices carried out by them in the workplace. Possible answers will be listed as "Strongly Disagree", "Disagree", and "Neutral", "Agree", "Strongly Agree" and given marking from 0, for the incorrect answer to 4 for the most appropriate answer. Thus, the mean of each of the 10 individual attitude items could range from 0 to 4, with an overall possible composite score of 60. The respondents completed 45 items questionnaire prior to training. Following the initial knowledge assessment and observations, employees attended 6-hour training sessions based on "Basic Food Safety Training Manual Catering", published by Food Safety and Standards Authority of India (FSSAI), India under Food Safety Training and Certification (FoSTaC) system. Following one week after the training, employees completed the same knowledge, attitude and behaviour assessment they had completed prior to training.

The data was analysed using SPSS 21 statistical software for windows. The socio-demographic characteristics of respondents were summarized using descriptive statistics. The pre and post scores respective to knowledge, attitudes and practices were compared using student t-test. Spearman's correlation coefficient was used to test the association between knowledge, attitudes and practices scores and demographic variables of the respondents. Findings with a p-value < 0.05 were considered to be statistically significant.

RESULTS

Characteristics of the food handlers who participated in the study are presented in Table 1.The mean age of food handlers was 38.9 (SD- 8.6) years. Majority (42.3%) of food handlers were educated up to 10th standard. Nearly 50% of them had over 10-20 years of experience.

The baseline mean knowledge composite score of food handlers was 15.16 (SD = 2.12) corresponding to 75.8 percent correct answers depicting good knowledge level of food handlers prior to training. Almost all of the food workers were aware of the critical role of general food safety hygiene practices in the work place, such as hand washing (91% correct answers), using gloves (94% correct answers) proper cleaning of the utensils (82% correct answers), and using closed lid container for storage (98 % correct answers). However, most of the participants (87%) failed to select the correct answer for the question about change in colour, door or taste in contaminated food. In addition, 63% workers did not know about disposing wet and dry waste separately. Further approximately 49 % workers did not know that typhoid fever is transmitted by food and 45 % did not know that wearing ring, bracelet or watch is a food hazard and 38 % were not aware that hospitalized patients' area at risk of food borne illness. Knowledge level of rest of the questions was fairly good corresponding to minimum of 72 % of correct responses.

The composite score of knowledge (19.14, SD-1.25) increased significantly (p<.000) post training corresponding to 95.7 percent correct responses. When the mean scores for the separate questions were compared between pre-and post-training, knowledge increased significantly for most of the questions. Only 3 questions (question no-6, 12 &16) showed non-significant difference as baseline score of two questions (no-6, 16) was already high and other one question (no 12) knowledge level did not increase significantly after training.

Practice responses are presented in Table 3. This section contained questions regarding general food safety and hygienic practices. FH demonstrated fairly good practices with mean score of 45.34(SD- 45.34) corresponding to 80.9 % correct responses. All most all food handlers were aware of general food safety and hygiene practices like washing hand before handling food and other activities (94.2% correct responses), covering cut on hand before food preparation (87.2 %correct responses), not leaving food on counter to be used by next day (83.2% correct responses), using hot soapy water for cleaning food preparation countertops (83.75% correct responses), avoiding touching body parts while distributing food (83.2% correct responses), checking of presence of insects and signs of spoilage while cutting vegetable (94% correct responses), and wearing cap (95.5% correct responses), and shoe cover (96.2% correct responses), before entering kitchen. However, 65.5 % workers were not aware of not handling food when ill and 54.25 were not aware of storing egg at correct temperature. The remaining questions (6, 9, 10 &11) related to food safety depicted fairly good score corresponding to minimum of 76 % correct responses.

The mean composite score (53.79, SD- 2.8) of food safety and hygiene practices increased significantly (P<.000) post training assessment the number of correct responses for all individual questions within practice category increased significantly between pre- and post-training assessments.

Composite score responses to the fourth section related to FH attitude towards food safety and hygiene was 32.15(SD-8.06), corresponding to 80.3 % correct responses. In the individual questions (1, 2, 5, 6, 7, 8, 9 7 10) pertaining to food safety attitude, food handlers achieved scores equal to or greater than 81.75 percent. However, 54 % food handlers were not aware about keeping cold room temperature below 5 degree centigrade and 39.5 % were not aware about the importance of cooking and eating food that have firm yolk and whites for food safety.

The mean composite score (37.07, SD- 5.07) food safety and Hygiene attitude increased significantly (P<.000) post training assessment the number of correct responses for all individual questions within Practice category increased significantly between pre- and post-training assessments. Analysing the correlation between pre-post assessment composite score with age, educational level, length of employment& previous skill training demonstrated non-significant relation with any of the variable.

Correlation analysis revealed a significant positive correlation of post training knowledge with attitude ($r=0.232$, $P<0.02$) but non-significant relationship with post training practice score. Similarly post training attitude also had non-significant relationship with practice score. Further, we could not find any significant correlation between education level and KAP scores.

DISCUSSION

The present study provided an important information on effect of in-house training on level of knowledge, practices and attitude of food handlers working in tertiary care hospital. In the present study most of the food handlers were educated up to metric level with up to 50 percent having work experience more than 10 years. Our study findings demonstrated good level of knowledge score of food handlers for different questions related to hand washing, cleaning, food contamination, food storage etc with overall 75.8% correct responses. Similar results have also been reported in a study of 200 food handlers in 7 military hospitals of Jordan [6]. Another study in tertiary care hospital of India reported fairly good baseline knowledge of the food handlers [7]. There was significant improvement seen in knowledge score post training. Training was found to be effective in increasing knowledge level of food handlers in various other studies [7, 8, 9, 10, 11, and 12].

The food handler's attitude was positive at baseline with 80.3 % correct response which is in line with the results of other studies [13,14,15]. In house training resulted in further significant improvement in attitude score with similar to results reported in other studies [7, 10]. Further approximately 80.9 % food handlers demonstrated good level of self-reported practices at baseline similar to other studies [13, 14, 15] and training resulted in significant improvement in self-reported practice. Two other studies [7, 12] also found training to be effective in increasing compliance to correct practices. However, various studies have also depicted the discrepancy between self-reported behaviour in observed or actual behaviour [16, 17].

However, post training knowledge and attitude score were not correlated with practice score which is in line with results of various studies [18, 19, 20, 21]. According to Worsfold *et al*. [22], behaviour change in safe food handling can be achieved when learned knowledge and skills are being rehearsed and used. Periodic training and management support are important elements in the translation of knowledge into practice [23]. The education level of food handlers is generally perceived as one of the important factors in regard to the food safety and hygiene knowledge [24]. In contrary, we did find any correlation of KAP score with education level. This might be due to the reason that education profile of majority of the workers was similar.

Our study demonstrated good KAP score at baseline as well as significant improvement after training. Food handlers training might have reinforced food handlers pre-existing higher KAP. Continual training and management support are important elements in the transfer of knowledge into behaviour [25]. Several reviews [26, 27, 28] identified training at workplace as one of the important features of effective training programmed as training away from workplace may cause difficulty in translating theory into improved practices. A study done by Adesokan *et al* suggest that refresher and short duration training of not more than two weeks at a stretch are key features of an effective training programme for improved food safety practices [12] .

CONCLUSIONS

The aim of any hospital kitchen should be to provide food that meets nutritional requirements and is microbiologically safe for indoor hospital dieted patients. Food preparation and distribution to hospital patients plays a critical role in the safety of hospital food. Moreover, for immune-compromised patients, the potential for food to cause infection is even greater. The findings of this study highlight the importance of providing health education in food and personal hygiene to food handlers and incorporation of the same in existing guidelines and policies for hospital kitchens.

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