

ORIGINAL ARTICLE

Identifying Key Risk Behaviors Regarding Personal Hygiene and Food Safety Practices of Food Handlers Working in Eating Establishments Located Within a Hospital Campus in Kolkata

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Abstract: *Background:* Hospital canteens cater to a large population group and personal hygiene and food safety practices of food handlers assume immense importance to prevent food borne disease outbreaks. *Objectives:* To assess the self-reported behaviour of food handlers on personal hygiene and food safety practices and to find out their morbidity profile. *Methods:* An observational study was conducted by interviewing 67 consenting food handlers working in different eateries inside a hospital campus, using a pretested, predesigned schedule. *Results:* Majority (46.3%) of food handlers were educated upto primary level. Only 14.9% foodhandlers received preplacement training and 10.5%, preplacement medical checkup. Though practices of hand washing after going to toilet (95.5%) and before preparing food (79.1%) was reported to be quite high but for most other practices, hygiene was found to be low. Cuts/injuries on hands was reported as the most common morbidity in 44.8% but 11.9% continued work without any treatment. *Conclusion:* Preplacement training and in-service education on personal / food hygiene should be provided to all food handlers. Periodic medical checkups and routine sanitary inspection can improve their adherence to personal hygiene and food safety practices and prevent outbreak of food borne illnesses.

Keywords: Foodhandlers, hand washing, food hygiene.

Introduction

Food borne diseases remain a major public health problem across the globe. The problem is more severe in developing countries due to lack of personal hygiene and food safety measures. As much as 70% of diarrhoeal diseases in developing countries are believed to be of food borne origin [1]. Bacteria, virus and parasites have all been incriminated as causes of food borne diseases. Bacteria causing food-borne diseases include Salmonella, Campylobacter, Listeria, pathogenic Escherichia coli, Yersinia, Shigella, Enterobacter and Citrobacter. In addition, bacterial toxins can cause food-borne diseases from Staphylococcus aureus, Clostridium botulinum and Bacillus cereus. Viruses such as calicivirus, rotavirus, hepatitis A virus and parasites like Trichinella, Giardia, are primarily transmitted by food or water contaminated with human waste. Eating establishments in hospitals cater to a large population group comprising of patients, doctors, nurses, hospital staff, medical students, visitors of patients etc. Because food prepared in large quantities is more liable to contamination, there is a greater potential for the occurrence of food borne disease outbreaks if basic sanitary practices are not maintained [2].

Priority must be given to these canteens in hospitals and hostel kitchens because food poisoning cases in these eating establishments can affect a large number of people [3]. Therefore hospitals need to provide food that is microbiologically safe, not only to its hospitalized patients who are more susceptible to infection and consequent morbidity and mortality but also to a wide variety of consumers who are dependent on the eating establishments for their meals within the hospital premises.

Personal hygiene of food handlers and environmental sanitation are the two key factors in the transmission of food borne diseases. An important way to prevent food contamination is to maintain a high standard of personal hygiene and cleanliness. Mishandling of food and disregard of hygienic measures on the part of food handlers may enable pathogens to come into contact with food and, in some cases, to survive and multiply in sufficient numbers to cause illness in the consumer [3-5].

In this context a study was undertaken to determine the prevailing personal and food hygiene practices of food handlers working in various eating establishments in a hospital campus. Findings of this preliminary study may help in planning intervention activities targeting food handlers in order to improve their knowledge, attitude and practice towards food-borne diseases and food safety.

Objectives

1. To assess the self reported behaviour regarding personal hygiene and food safety practices of all food handlers working in various eating establishments located within the campus of a medical college hospital.
2. To find out their morbidity profile during the previous one-month and action taken thereafter.

Material and Methods

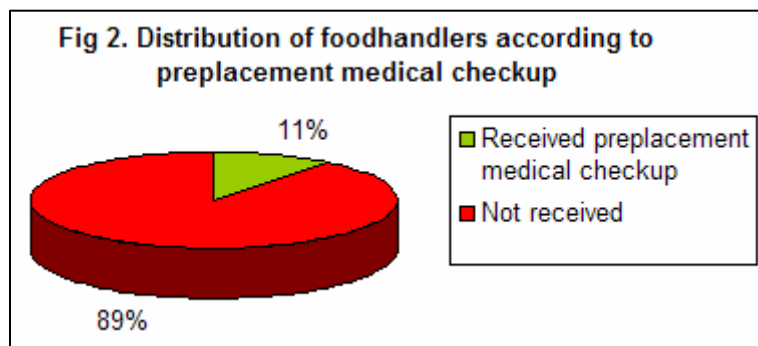
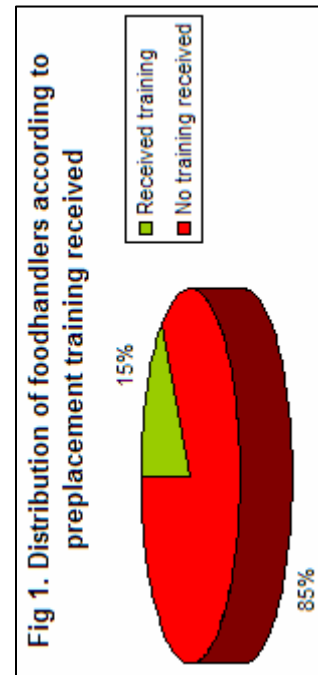
An observational study to assess the personal hygiene and food safety practices was undertaken among all food handlers working in 10 eating establishments within the campus of a medical college hospital in Kolkata during the period from October to December 2008. Literature review on the topic was done and the variables to be studied were selected. A questionnaire for the study was developed after discussion with experts and pretested on 7 food handlers and modified accordingly. The experts reviewed the questionnaire for clarity, completeness and content validity.

A non-probability convenience sample comprising of 67 consenting food handlers, employed in all the eating establishments within the hospital, were included in the study. All the participants were assured of confidentiality and anonymity and their written informed consent was taken. Data collection was done by interview of the food handlers. The participants were interviewed in local language about their socio-demographic characteristics, personal hygiene and food safety practices. The questionnaire also allowed the interviewers to record their observations on some aspects of personal hygiene. Data was then compiled and analyzed using appropriate statistical procedure.

Results

Altogether there were 67 food handlers and all of them agreed to participate so the response rate was 100%. About 11.9% were aged less than 18yrs and the majority (86.6%) lay in the working age group. Majority of the workers were males (94.1%) and were educated upto primary level (46.3%) [Table1]. Only 14.9% foodhandlers had undergone preplacement training [Fig.1] and 10.5% of them had preplacement medical checkup [Fig.2], while none of them received routine periodic medical checkups in the last one year.

Table-1: Sociodemographic profile of food handlers. (n = 67)	
Variables	Frequency (%)
Age	
15-18 yrs	11.9
19-60 yrs	86.6
> 60 yrs	1.5
Sex	
Male	94.1
Female	5.9
Education	
Illiterate	8.9
Primary	46.3
Secondary	35.8
≥ Higher Secondary	8.9
Nature of job	
Government	34.3
Private	65.7
Addiction	
Yes	53.7
No	46.3
Monthly income	
<Rs 1000	7.5
Rs 1000-3000	50.7
> Rs 3000	41.8

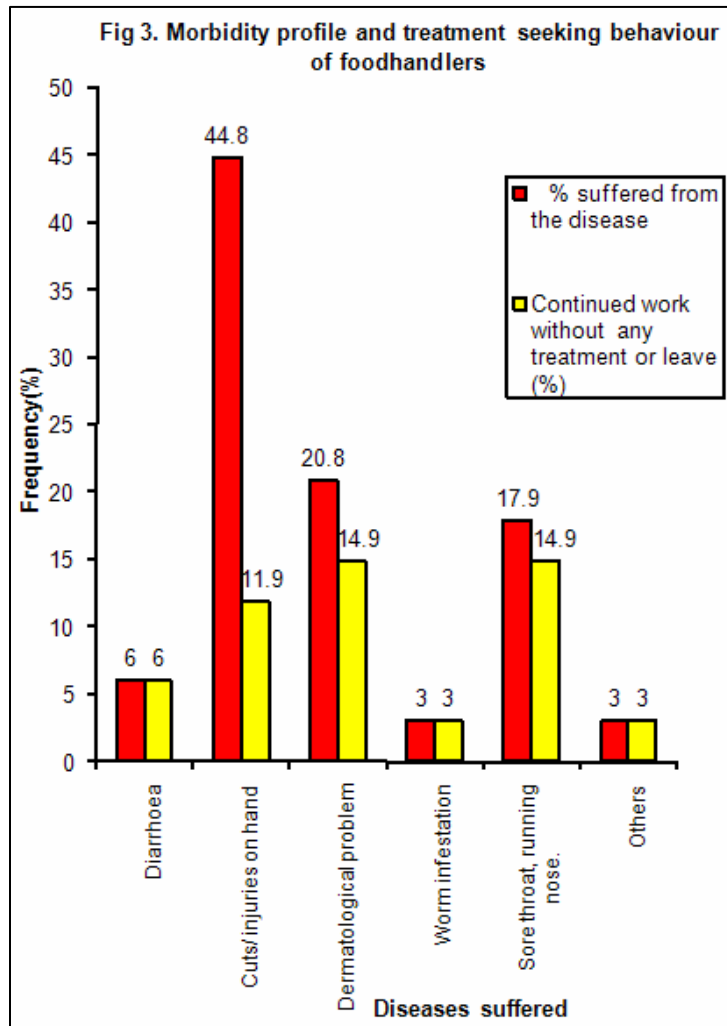


Hand washing practices with soap & water	Never (%)	Sometimes (%)	Always (%)
After going to toilet (n = 67)	-	4.5	95.5
Before cooking/preparing food (n = 67)	1.5	19.4	79.1
In-between handling raw & cooked food (n = 67)	18.5	30.8	50.7
After blowing nose (n = 67)	28.4	47.8	23.8
After touching body parts (n = 67)	50.8	35.8	13.4
After handling refuse (n = 67)	29.2	26.2	44.6
After using addictive substances (n = 36)	50.0	13.9	36.1
After touching dirty utensils, cloths (n = 67)	10.4	44.8	44.8
After handling money (n = 67)	52.2	17.9	29.9
Drying of hands after washing in separate clean cloth (n = 67)	-	97.1	2.9

Table 2 shows the self-reported practices of hand washing with soap and water on different occasions. 50.8% food handlers never washed their hands after touching body parts and handling money and 18.5% never washed hands in between handling raw and cooked food. A large number of them reported to washing hands only sometimes on other occasions reflecting inconsistent behaviour. However hand washing after going to toilet (95.5%) and before preparing food (79.1%) was reported to be quite high.

Food hygiene practices of the workers were similarly found to be completely lacking or unsatisfactory on different aspects. 62.7% reportedly used a common knife without washing it for cutting raw flesh food and other food. 32.8% handled food with bare hands inspite of having cuts/injuries on hands while 22.4% continued their work even if they suffered from illnesses like diarrhea, sore throat or skin diseases. About one fifth of them sometimes used bare hands to transfer cooked food. [Table 3]

Practices regarding food hygiene	(n = 67)		
	Never (%)	Sometimes (%)	Always (%)
Washing raw vegetables before cooking	-	6.0	94.0
Using common knife for cutting raw flesh food and other food	62.7	10.9	26.9
Washing utensils before cooking/ serving	-	3.0	97.0
Using bare hands to transfer cooked food	-	22.4	77.6
Keeping cooked food covered	8.9	23.9	67.2
Touching food with cuts / wounds in hands	11.9	55.3	32.8
Preparing food when suffering from diseases like diarrhea, cold or skin diseases	10.4	67.2	22.4



(6.0%). Most of the workers continued to work despite their illnesses. [Fig.3]

Discussion

Hand hygiene and food hygiene practices are the two most critical factors ensuring food safety. Although encouraging results were obtained regarding practices of hand washing after going to toilet and before food preparation this study revealed that the hand washing practices of food handlers was quite low on many other occasions especially after touching body parts, handling money, refuse and dirty utensils. Microorganisms can be introduced during food processing by cross-contamination from any raw agricultural product or from infected humans handling the food. The practice of not washing hands in between handling of raw and cooked food greatly increase the chances of such cross contamination and this practice was reported in the majority.

Observation on certain personal hygiene attributes revealed that 25.4% wore unclean clothes while working, 28.4% had long/unclean nails, 50.7% wore jewellery on their hand while preparing food and 29.9% had cuts/injuries on their hands while working.

Morbidity profile of food handlers in the past one-month revealed that cuts/injuries on hands occurred most commonly in 44.8% food handlers and 11.9% continued work without any treatment. Sore throat was the second most common illness reported by 17.9% followed by diarrhea

In the kitchen pathogens can be transferred from one food to another by a kitchen utensil used to prepare both without washing in between. In this study majority of foodhandlers reported to transferring cooked food by bare hands instead of using ladles either sometimes or always. More than half of the food handlers were observed to wear jewellery on their hands at work. Other authors have reported similar results [2]. Oteri T et al found positive responses to selected food hygiene behaviors such as hand washing before handling food and daily change of clothes in majority, however, only a very small proportion (28.6%) were observed to have actually washed their hands especially between handling cooked and uncooked foods [6]. The findings of this study indicate that food handlers attach varying degrees of importance to the need for hand washing and food hygiene practices on different occasions. There are many food handlers who apply some hygiene principles of food protection though many of them do not appreciate or understand the need for these principles [3,4].

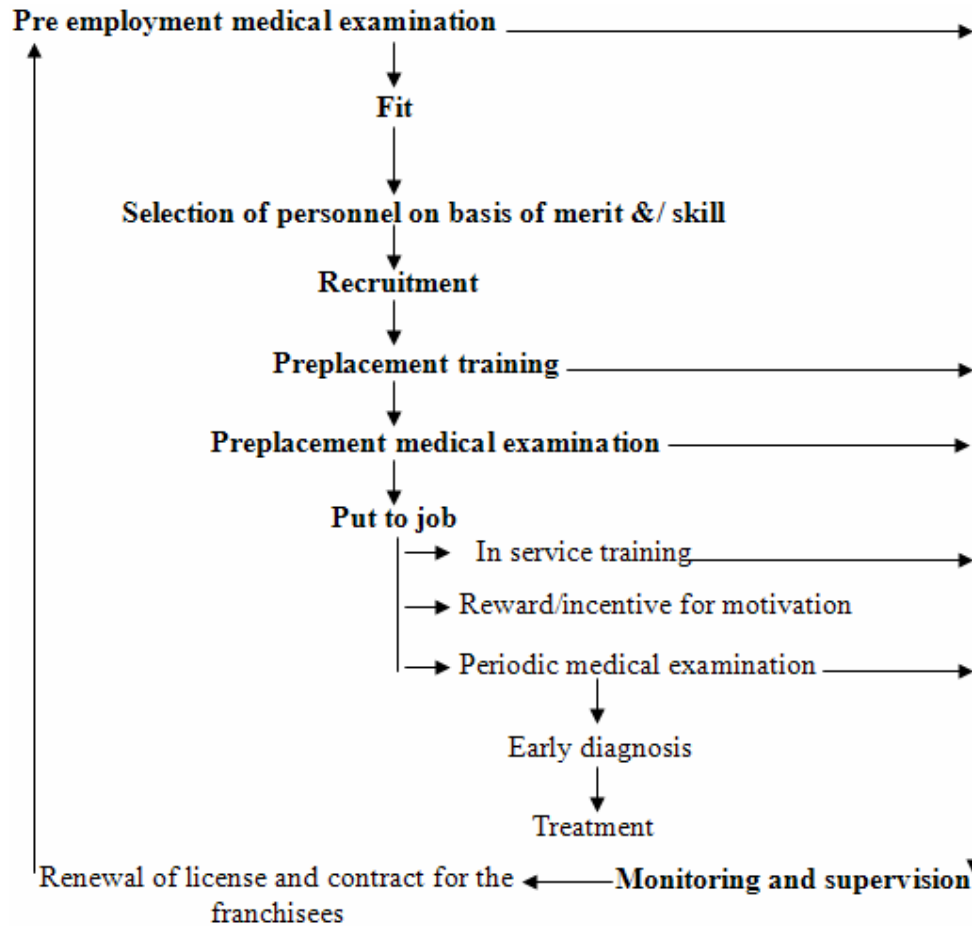
Infected food handlers are a common source of food borne viruses such as the Hepatitis A virus and other diarrhoea-causing viruses, which are excreted in large numbers by infected individuals either during the course of gastrointestinal illness or during convalescence, when they no longer have symptoms [7]. In one study a high (29.1%) prevalence of intestinal parasites in the stools of the food-handlers was reported [8]. Such high prevalence was attributed largely due to poor personal hygiene practices and environmental sanitation, lack of supply of safe water, poverty, ignorance of health-promotion practices, and impoverished health services and is a common finding in most developing countries. Dermatological manifestations are common in food handlers and irritants in food and allergic dermatitis have been implicated as the probable causes [9].

The present study found that many of the food handlers disregarded their illnesses like diarrhea, sore throat and skin infections and continued to work under such conditions. Disregarding these illnesses can contribute to the occurrence of frequent food borne diseases to their consumers in these eateries. Periodic deworming of the foodhandlers can be a useful preventive measure against intestinal parasitic infestations.

One limitation of this study was the small sample size so the study findings cannot be generalized. Also since data collection was done mostly by interviewing about their self reported practices and not actual observation of their behavior it is likely that good practices were falsely inflated.

Based on the study findings, we recommend that preplacement training and in service training on personal and food hygiene should be provided to all food handlers. They should receive preplacement and periodic medical check ups and avoid work during certain illnesses. Regular sanitary inspection can improve adherence of food handlers to personal hygiene and food safety practices. Awards/incentives to the workers for encouragement may be planned. Renewal of license and contract for the franchisees may be withheld if preplacement and periodic training and medical check ups are not done.

A flow chart for preplacement and periodic training and medical check ups as well as on going monitoring and supervision may be suggested as follows:



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