Section: Pathology

Research

A KAP STUDY ON FOOD HYGIENE OF FOOD HANDLERS IN SEMI-URBAN LUCKNOW

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Abstract

Background: Throughout the process of food manufacturing, processing, distribution, and preparation, contamination can happen at any time. The health of the people handling the food, their hygiene, and their understanding and application of food hygiene all have a significant role in the risk of food contamination. The study aims to find out the Knowledge, Attitude and Practices among food handlers regarding food hygiene. **Materials and Methods:** The present study is a community based Cross-sectional study among Food handlers working at food establishments in and around semi-urban areas of Lucknow. The sample size is calculated as 220. Descriptive statistics were used to assess and compile the data for each knowledge, attitude, practice (KAP). **Result:** Majority (35.9%) of the workers are from the age group of 24-49 years followed by (34.1%) 18–24-year age group. On the observational assessment of personal hygiene 53.6%, people use to wear aprons but their clothes weren't clean as 57.2% of food handlers was wearing dirty uniforms. In the case of food hygiene practices, 50% of people use gloves while handling food and 50% don't. 204 (92.8%) people use to wash hands with soap and water before preparing food. 72.6% of people said they use to wash their hands after using the bathroom. **Conclusion:** The study concluded that handlers were classified as having a moderate level of understanding. Increased environmental and food handler hygiene is necessary, nevertheless.

INTRODUCTION

To sustain life and advance good health, access to adequate supplies of safe and nourishing food is essential. Over 200 illnesses, from diarrhoea to cancer, are brought on by contaminated food that contains dangerous bacteria, viruses, parasites, or chemical chemicals. Additionally, it contributes to a vicious cycle of illness and malnutrition that disproportionately affects young children, the elderly, the sick, and infants. The number of people who purchase and consume meals made in public settings has increased due to urbanisation and changes in consumer behaviour. A longer and more complicated global food chain is the outcome of the growing consumer demand for a larger variety of foods that has been sparked by globalisation. Food safety is projected to be affected by climate change.[1] An increase in global concern over food safety has been brought on by the increased frequency of foodborne illnesses.[2] People handling food with poor personal hygiene have apparently been linked to numerous foodborne disease outbreaks. Food-borne illnesses are becoming more prevalent in both developed and poor countries. It is estimated that 1.9 million people die from diarrheal illnesses each year globally,[3] which are the primary causes of morbidity and mortality in underdeveloped nations. Food can get contaminated at any stage of its lifecycle, including manufacture, processing, distribution, and preparation.[4] The health of the people handling the food, their personal hygiene, and their adherence to food hygiene practises all have a significant role in the risk of food contamination.[5]

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Inadequate infrastructure, inappropriate food handling, and unsanitary conditions at food vending locations are the key risk factors that make street food a significant contributor to foodborne illnesses. Additionally, a number of studies showed that inadequate food safety knowledge, poor vendor attitudes toward food safety, low socioeconomic position, and a lack of adequate food safety regulatory mechanisms were significant contributors to inadequate food safety conditions and practices.[6] Addressing the trend of increasing foodborne diseases necessitates understanding of food handler behaviours. Recent lifestyle changes, the breakdown of the joint family structure, and a rise in the number of working women have all contributed to an increase in the consumption of ready-to-eat foods. The people may be able to meet their nutritional and taste needs, but they don't pay much attention to food safety or hygiene.[7] Training should be incorporated into a broader global viewpoint and pay more attention to a full spectrum of personal, social, and environmental aspects in order to modify handlers' behaviour more successfully. Additionally, it should take into account a variety of variables that might affect handlers' actions and see them as important collaborators in reducing food-borne illnesses in restaurants.[8] To oversee and control the food's hygiene along with the food handlers, all types of food facilities need to be registered. There aren't many registered restaurants in this part of Lucknow. Customers have had numerous infrequent cases of foodborne sickness. This study was conducted to evaluate the practises of food handlers and to identify any gaps in their instruction and training.

Research Question

What are the common habits and understanding of food handlers in terms of food hygiene, and what are the gaps in their education and training.

AIM and Objectives

1. To find out the Knowledge, Attitude and Practices among food handlers regarding food hygiene.
2. To know the registration status of these food establishments.
3. To spread awareness regarding food hygiene.

MATERIALS AND METHODS

Study area: All the food establishments in and around semi-urban Lucknow.
Study Design: A community-based cross-sectional study.
Study Unit: Food Handlers working in these establishments.

Inclusion Criteria

All food handlers who were willing to participate in the study and ready to co-operate.

Exclusion Criteria

(a) Food handlers who show a non-co-operative attitude, or refusal to provide the necessary information.
(b) Absenteeism of the food handlers from the food establishments during the period of the survey. Those food handlers who could not be contacted even after three visits were excluded from the study.

Sample Size

The study was conducted among food handlers employed by 20–30 restaurants in the study area. Any individual, who handles food, whether they make it or serve it, is considered a food handler.
Using the formula below mentioned, the sample size is determined based on the least proportion of diverse knowledge, components, and food hygiene.

$$n = d\frac{z_{\alpha}^{2}pq}{L^{2}}$$

Where p = 46.3% least proportion of various knowledge components about food hygiene
(Ref. Santos et al.)
q = 100 – p
d = 1.0, the design effect
Type I error α=5 %, for the significance level of 95%.
Allowable error L = 15% of p for detecting the results with 80% power of the study,
Data loss factor = 10%
The sample size required n = 220

Data Collection Procedure

The participants were given instructions for the survey in their native language. Participants acknowledged that the information would only be used for scientific study by signing a consent form on the questionnaire. The initial visit resulted in the development of a list of every food handler employed by these organisations. Using a pretested questionnaire, the demographic data of the food handlers, information on personal hygiene, personal habits, medical histories, and registration of food facilities were all collected during the subsequent visits. The study was used to assess their knowledge of food safety, attitudes regarding controls and preventative measures for foodborne illnesses, and food hygiene practises. An observational checklist was used to evaluate food handling practises, food cleanliness, and environmental hygiene.
The Knowledge, Attitude, and Practice of the Food Handlers Questionnaire were comprised of fifty items that were divided into three groups. Part 1 contained fifteen knowledge-related questions, Part 2 comprised of fifteen attitude-related questions, and Part 3 had twenty practice-related questions. On a five-point scale (0–4), with the options of strongly agrees, agree, not sure, disagree, or disagree strongly, all knowledge- and attitude-related items were scored. The responses to the practice-related

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questions, however, were scored on a five-point scale (0–4), with the options being always, frequently, occasionally, infrequently, or never. To ensure proper answers, the scale's orientation for some questions was reversed from 4 to 0 to 0 to 4. The scores between 3 and 4 were regarded as a positive response for dichotomous classification, but the scores below 3 were classified as a negative response (answering incorrectly) (Answering right).

Statistical Analysis

The SPSS-20 software was used to enter and analyse the data. Using the interviewing technique, data on the mentioned variable were collected from food workers. The five-point scores for the variables varied from 0 to 4. The mean score for each question was converted into a percentage score to simplify the presentation and interpretation of the findings by multiplying the best possible score by 100% and dividing the result by 4. Descriptive statistics were performed for each item on the knowledge, attitude, practise, and overall KAP means % scale. The results of the study was presented in a descriptive summary using cross tabulations, frequencies, and proportions. Chi-square testing was employed. P value was calculated at the 5% level of statistical significance.

RESULTS

The study was conducted among 220 food handlers working around the area of which 185 were males and 35 were females.

Table 1: Socio-Demographic Profile of Food Handlers

Socio-Demographic Characters		Frequency	Percentage (%)
Age	18-24 years	75	34.1
	24 -49 years	79	35.9
	> 50 years	66	30
Religion	Hindu	89	40.4
	Muslim	126	57.2
	Others	5	2.4
Caste	General	55	24.8
	OBC	107	48.2
	SC/ST	58	25.5
Sex	Male	185	84.0
	Female	35	16.0
Occupation	Cook	100	45.6
	Helper	72	32.5
	Waiter	48	21.9
Residence	Rural	95	43.2
	Urban	97	44.1
	Slum	28	12.7
Education	Illiterate	51	23.2
	Primary	26	11.8
	Middle	57	25.9
	High School	42	19.1
	> High School	44	20.0
Work Experience	<1 year	52	23.5
	1-2 years	62	28.3
	> 2 years	106	48.2
Training provided	Yes	62	28.2
	No	158	71.8

[Table 1] presented the age range of 24-49 years that was represented by 35.9% of the participants, followed by the 18-24 age range (34.1%). In these establishments, subjects were doing the tasks of cooking food (45.6%), helper (32.5%), and waiter (21.9%). Most participants were (48.2%) having more than two years of experience in this work. 23.5% of the food handlers employed by these establishments had no experience or had less than one year of experience.

Table 2: Observational assessment of personal hygiene of food handlers

Visual Inspection	Yes		No		Right vs Wrong	
	Number	%	Number	%	Chi sq	P-value
Wearing apron during work	118	53.6	102	46.4	1.16	0.559
Cleanliness of uniform	94	42.8	126	57.2	4.65	0.098
Keeping finger nails short and clean	138	62.9	82	37.1	14.25	<0.001
Wearing disposable gloves	110	50	110	50	0.00	1.000
Hair kept tidy and covered	92	42	128	58	5.89	0.053
Suffering from any disease	50	22.8	170	77.2	NA	NA

On the observational assessment of personal hygiene 53.6%, of the participants used to wear aprons but their clothes weren't clean as 57.2% of the food handlers were wearing dirty uniforms. When preparing and serving

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food, 50% of those who handle it don't wear gloves, and the other 50% did. Seventy-two percent of people (77.2%) were disease-free. It was determined that P-value 0.001 was significant. [Table 2]

Table 3: Knowledge about food hygiene

Knowledge about food hygiene	Right answer (%)	Wrong answer (%)	Right vs Wrong	
			Chi sq	P-value
Food poisoning is caused by Pathogenic organism	160 (72.5)	60 (27.5)	45.45	<0.001
Food handlers with unhygienic practices could be the source for food poisoning pathogens	153 (69.5)	67 (30.5)	33.62	<0.001
Food poisoning could cause severe disease that end in hospitalization and sometimes death	138 (62.8)	82 (37.2)	14.25	<0.001
Apparently healthy food handlers might carry food borne pathogens	129 (58.7)	91 (41.8)	6.56	0.038
Harmful bacteria multiply at room temperature	132 (59.8)	88 (40.2)	8.80	0.012
Keeping food in freeze help to prevent food poisoning	188 (85.6)	32 (14.4)	110.62	<0.001
Eating leftover cooked food at room temperature > 6 hrs can cause food poisoning	115 (52.6)	105 (47.4)	0.45	0.796
Drinking tea in plastic cup is not good.	145 (65.8)	75 (34.2)	22.27	<0.001

Most food handlers who were asked about their understanding of food hygiene gave accurate answers. Regarding pathogens, 72.5% of food workers correctly identified them. 69.5% were aware that unsafe food handling methods can lead to food poisoning. The knowledge that storing food in the refrigerator helps to prevent food illness was held by 85.6% of the workforce. Only 34.2% of those who handle food were unaware of the dangers of using plastic cups. [Table 3]

Table 4: Practice about food hygiene.

Practice about food hygiene	Good (%)	Poor (%)	Good vs Poor	
			Chi sq	P-value
Do you wear gloves when you handle food	110 (50)	110 (50)	0.00	1.000
Wash hand with water and soap before preparing food	204 (92.8)	16 (7.2)	160.65	<0.001
Wash hand after using bathroom	160 (72.6)	60 (27.4)	45.45	<0.001
Do you work when you have diarrhoea	189 (85.7)	31 (14.3)	113.47	<0.001
Do you work when you have lesions on your hand	204 (92.8)	16 (7.2)	160.65	<0.001
Do you allow your finger nails to grow	138 (62.9)	82 (37.1)	14.25	<0.001
Do you wash vegetables and fruits before slicing them	158 (72)	62 (28)	41.89	<0.001
Do you keep cooked meat or chicken at room temp for more than 6 hours	152 (69.2)	68 (30.8)	32.07	<0.001

50% of participants used gloves when handling food, and 50% didn't, according to practises for food hygiene. Before preparing food, 204 individuals (92.8%) washed their hands with soap and water. After using the restroom, 72.6% of respondents claimed to wash their hands. 69.2% of people never leave food outside for longer than six hours, and 72.2% of people wash their fruits and vegetables before using them. [Table 4]

DISCUSSION

One of the main problems with food borne illness transmission is sanitation and hygiene. Expectations for improved food hygiene and sanitation practises on affected routes should include reducing/preventing the incidence of food-borne illness. As a result, this study sheds light on how food administrators operating in the study environment now practise eating hygiene. A majority of the workers in this study (35.9%) were in between the ages of 24 and 49, while 34.1% were in between the ages of 18 and 24. Similar results were observed from a study conducted by Mudey AB et al,[9] which showed that the majority of food handlers (54.37%) were under the age of 30, but unfortunately, 3.75% were young children under the age of ten. Nee, Siow & Abdullah Sani,[10] reported in their study that 83.1% of the participants were 20 to 40 years old, and the rate of those who were below 20 and above 50 years old were 3.1%, respectively. In this study, we found that a maximum (48.2%) of people have experience of more than 2 years in this working field. 23.5% of food handlers working in these establishments had no or less than one year of experience. Similar results were found in a study by Lema K et al.[11] which found that respondents with more than two years of work experience were 1.86 times more likely to practise better food hygiene than those with two years and less experience. In these establishments, personnel do the tasks of cooking food (45.6%), helping (32.5%), and serving food (21.9%). Work experience was linked to the respondents' use of food hygiene practises. Better food hygiene procedures had been documented by skilled food handlers. This connection is in line with past research on determinants and practises of food hygiene.

On the observational assessment of personal hygiene 53.6%, of participants used to wear aprons but their clothes weren't clean as 57.2% of food handlers were wearing dirty uniforms. 50% of the food handlers wear gloves while cooking and serving while 50% worked without using gloves. The majority (77.2%) of the participants were not suffering from any disease. In a study conducted by Green L et al. 40% of employees who handled RTE food at work stated that they always wore gloves.

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Food service employees who handled RTE food while wearing gloves reported changing their gloves 15.6 times on average throughout an 8-hour shift (n = 127; 95% CI = 12.1–19.1).

The majority of the food handlers answered correctly about food hygiene knowledge. 72.5% of food handlers gave the right answer about pathogens. 69.5% knows that unhygienic food practices could be a source of food poisoning. 85.6% of workers knew that keeping the food inside the refrigerator helps in preventing food poisoning. Only 34.2% of people who handled food were unaware that using plastic cups can be dangerous. In their study, Akabanda F et al.[12] found that, in terms of the transmission of food-borne diseases, 76.2% of the respondents who handled food either did not know or did not recall that Salmonella is a food-borne pathogen and that 70.6% did not know or did not recall that hepatitis A is a food-borne pathogen. On the other hand, 81.7 and 87.7% of respondents, respectively, believed that typhoid fever and bloody diarrhoea can be spread by food. 50% of people used gloves when handling food, and 50% did not, according to food hygiene practises. Before cooking, 204 persons (92.8%) washed their hands with soap and water. After using the lavatory, 72.6% of participants claimed they used to wash their hands. Before using fruits and vegetables, 72% of people wash them, and 69.2% of people never leave food outside for longer than six hours. According to Tuglo L S et al,[13] the majority of SCFHs (n=343; 84.3%) kept their hands clean while cooking meals, washed their cooking utensils before using them again, used different bowls and chopping tools when cooking freshly prepared meals, and distributed uncooked and prepared meals before preserving them. Additionally, n=278 (68.3%) kept cooked food at room temperature for two hours after it was finished.

CONCLUSION

The data from this study clearly showed that food handlers adhered to the recommended standards for food safety and cleanliness, indicating a satisfactory degree of understanding about hygiene practices. However, since there has been a disruption in some safe food handling practises, on-going observation and training for FHs in safe food handling are required. This study shows that Food Handlers do not always practise their understanding of food safety in the actual world. The current findings provide useful baseline information for creating a thorough system for managing food safety and quality, which is necessary for organising, putting into practise, and assessing public food handling procedures. Regarding food safety and cleanliness as well as the prevention and management of food-borne illnesses, respondents expressed favourable attitudes. The food handlers demonstrated acceptable hygiene and cleanliness practises. However, there is a need to improve the environment's and food handlers' levels of hygiene.

Recommendations

It is crucial to implement strategies aimed at enhancing food workers' sanitary behaviour. The abilities of food handlers should be improved through ongoing supportive supervision so they can adhere to better food hygiene practises. Female food handlers should receive specialised training on improving food cleanliness.

Additionally, regular audits are necessary to guarantee the sustainability of efficient and ongoing training. To stop the spread of foodborne illness, regular medical checkups and stringent cleanliness enforcement should be promoted.

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