

KNOWLEDGE, ATTITUDE AND PRACTICES OF FOOD HANDLERS TOWARDS FOOD HYGIENE AND SANITATION

ABSTRACT

Knowledge of food hygiene essentially entails the handlers' awareness or things to be done or things to be put in place, in the course of either acquiring raw food materials, preparing food or serving food to the consumers, so that food safety is achieved. Food hygiene knowledge, attitude and practices are important because inadequate knowledge, poor attitude and poor sanitation practices have life-threatening danger to food safety. It is important to have an understanding of the interaction on prevailing food hygiene knowledge attitude and practices of food handlers in order to minimize foodborne outbreaks. The main objective of this study was to assess the knowledge, attitude and practices of food handlers regarding the aspect of food hygiene and sanitation in Kanpur. One hundred ten food handlers from fifty food establishments of Kanpur involved in this study. The data were collected from the street food vendors with the help of structured questionnaire and extensive observation. Knowledge and attitude towards food hygiene was satisfactory among food handlers, where most of the food handlers have fair knowledge and attitude that was (50.0%) and (40.90%) but fair practice was practiced by only (17.27%) whereas majority of them had poor practice (46.36). Statistical testing with chi-square at $p < 0.05$ showed that there is no correlation between educational level of the food handlers and practice of food hygiene; like-wise attitude of the handlers towards food hygiene and work experience had no impact on food hygiene practices of food handlers. About 53.6 per cent of food handlers always wash their hands before handling food and only (38.1%) of the food handlers had knowledge about hygiene and sanitation. The present study concludes food hygiene and there is need to increase the practice level of food handlers towards sanitation practices and hygiene.

Keywords: Food hygiene, Sanitation, Knowledge, Practices, Street food vendors

INTRODUCTION

Food is the basic requirement for human survival. Food safety is of utmost importance and is a matter of human concern. The health of the people largely depends on the quality of food they eat. (Pradhan *et al.* 2018). Food is the product that is rich in variety of nutrients required by microorganisms and may be exposed to contamination with the major sources from water, air, dust, equipment, sewage, insects, rodents and employees. Due to the changes in the production of food, food handling and preparation techniques as well as eating habits, the fact remains that food is the source for microorganisms that can cause illness (Nee and Sani 2011).

Food that was cooked on a large scale, it may be handled by many individuals and thus increasing the risks of food contamination. Unintended contamination of food during large scale cooking, leading to food-borne disease outbreaks can pose danger to the health of the consumers and economic consequence for nations (Akabanda *et al.* 2017). The main diseases which are caused by contaminated foods are typhoid, cholera, hepatitis A, food poisoning and dysentery.

Food hygiene is an essential matter of public health for protecting or preventing disease caused by unsafe food due to lack of good quality from production to consumption (Azanaw *et al.* 2021). About 600 million individuals become ill every year due to consumption of contaminated food and approximately 420,000 of these victims die per annum. The consumption of contaminated food

Comment [H1]: Make a modification on the title KNOWLEDGE, ATTITUDE AND PRACTICES OF FOOD HANDLERS TOWARDS FOOD HYGIENE AND SANITATION

Remove sanitation
Food hygiene is different from sanitation
Food Hygiene:
Food hygiene refers to practices and conditions necessary to ensure the safety and quality of food from its production to consumption. It involves proper handling, preparation, storage, and serving of food to prevent contamination, spoilage, and the growth of harmful bacteria, viruses, or other pathogens. Food hygiene practices include personal hygiene of food handlers, regular cleaning and sanitation of food preparation areas, proper cooking temperatures, use of safe water sources, and proper storage conditions.

Food Sanitation:
Food sanitation focuses on maintaining cleanliness and preventing the spread of disease-causing microorganisms during food processing, manufacturing, and selling. It involves the use of specific sanitation methods, equipment, and procedures to eliminate or reduce contamination risks. Sanitation practices include cleaning and sanitizing food contact surfaces, equipment, utensils, and maintaining proper waste management systems. It also involves pest control measures, effective cleaning agents, and regular monitoring to ensure compliance with sanitation standards.

In summary, food hygiene focuses on safe food handling practices throughout the entire food chain, while food sanitation emphasizes the cleanliness and prevention of contamination during food processing and preparation. Both are essential to ensure food safety and protect public health.

Comment [H2]: Write the food safety measures from production to spoon (food hygiene and sanitation)

Comment [H3]: paraphrase these sentence

Comment [H4]: Is it Good practice or fair practice? / write the standard word that best fits your outcome interest/

Comment [H5]: It concludes food hygiene what... good or poor practice?
It is mandatory to conclude and recommend it based on the discussion part of the study

Comment [H6]: It needs reference
Are these the only disease transmitted by contaminated food?

contaminated foods can transmit various diseases. Some of the main ones include:

1. Salmonellosis: A bacterial infection caused by the Salmonella bacteria, commonly found in undercooked poultry, eggs, and raw vegetables.

2. E. coli infection: This is caused by the Escherichia coli bacteria, which can be present in undercooked ground beef, raw milk, and contaminated produce.

3. Norovirus infection: Norovirus is highly contagious and can be transmitted through contaminated food or water. It causes gastroenteritis with symptoms like vomiting and diarrhea.

Formatted: Font: 12 pt, Bold

is correlated with an estimated 70% of diarrheal diseases in developing countries. Inadequate sanitation facilities, unsafe raw food, poor infrastructure, absence of food safety knowledge and awareness, inappropriate food handling methods, poor personal hygiene are the main causes of food borne diseases (Lema et al. 2020). The present study was conducted with the objective to assess the Knowledge, Attitude and Practices of food handlers.

MATERIALS AND METHODS

The present study was conducted in different areas of district Kanpur of Uttar Pradesh, India. A cross-sectional study was conducted to evaluate the KAP related to food hygiene and sanitation among food handlers in Kanpur district. The questionnaire was prepared to collect the information. Objectives of the study were explained to the respondents before the information was collected. A self-administered questionnaire was designed to obtain general information of the respondents and covering the aspects of KAP of food handlers about food hygiene and Sanitation. The data was analysed for percentage, mean, standard deviation, chi square test of independence of two attributes.

RESULTS AND DISCUSSION

General information of the respondents

A total of 110 street food vendors were surveyed after their consent. Results of the survey indicated that there was only one female food handler out of total and 109 (99.09%) were male. About 60 per cent of food handlers were in the age group of 29-39 years and 53.6 per cent of food handlers were educated up to primary level and none of food vendors were found to have education above intermediate level.

Knowledge, Attitude and Practices towards Food Hygiene and Sanitation

Results of the study revealed that 59 per cent of street food vendors had knowledge that eating improperly washed raw vegetables and fruits pose threat to health and 35.4 per cent never heard about food borne illnesses (Table-1). Out of 110 none of the food handler had training in hygiene and sanitation. About 64.5 per cent respondents agreed that food should always be covered and protected when not being served. Only 37 per cent food handlers agreed with the fact that food handlers should wear apron and head-cover when working while 63.6 per cent disagreed (Table -1).

Table 1: Food hygiene knowledge and attitude of food handlers in Kanpur (n=110)

Variables	Category	Frequency	Percentage
Eating improperly washed raw vegetables & fruits pose threat to health	Yes	65	59.0
	No	45	40.9
Ever heard about food borne diseases	Yes	71	64.5
	No	39	35.4
Using same cutting board for veg and non-veg food cause cross contamination	Yes	38	34.5
	No	72	65.4
Do you have any training in hygiene and sanitation	Yes	0	0.0
	No	110	100.0
Know about hygiene and sanitation	Yes	42	38.1
	No	68	61.8
Food should always be covered and protected when not being served	Strongly agree	2	1.81
	Agree	71	64.5
	Disagree	37	33.6

Comment [H7]: Write the socio demographic characteristics of the respondents clearly in tabular form/ include all the variables under consideration

Comment [H8]: Separately write the 5 point Likert scale for the attitude part and clearly state about its inference to other literatures and WHO recommendations.

Comment [H9]: What is this? be scientific

Foodhandlers should always wear apron and head-cover when working	Strongly agree	3	2.7
	Agree	37	37.0
	Disagree	70	63.6
Leftover food should be discarded	Strongly agree	1	0.909
	Agree	21	21.0
	Disagree	79	71.8

When food hygiene practices of the subjects was assessed it was found that most of the foodhandlers used tap water (55.4%) for washing fruits and vegetables Care of used utensils was poor due to poor accessibility of water. WHO reported that the most critical problems in street food vending are the supply of water of acceptable quality for drinking and washing. Therefore, water supply need close attention in street food operation. The food handlers were asked about their sanitation practices in storage area, it was found that (44.5%) respondents clean their storage area every week, (32.7%) every day, (14.5%) twice a week and (8.1%) once a month. This indicates that the sanitary practices of food vendors regarding storage area are moderate.

About 97.2 per cent food vendors were serving food in washed and dried plates. None of the respondents took measures for pest control in food service area. About 91.8 per cent respondents clean their cooking counters after cooking the food while (8.1%) did not do so. The practices of food vendors regarding refuse disposal was 44.5% respondents disposed their refuse by open dumping method while (36.3%) uses covered dumping. Sanitation facilities in the implementation of the food stalls not met the health requirement so that food handlers should pay attention to the requirements of sanitation facilities (Kim and Yoon 2022). Majority of the participants (60.9%) know that washing of hands before preparing food reduce transmission of food borne illness while (39%) did not know washing hands before food preparing reduce the risk of food borne illness (Table-2)

Table 2: Food hygiene and sanitation practices of food handlers in Kanpurn=110

Variables	Category	Frequency	Percentage
Do you always serve foods to washed and properly dried plates	Yes	107	97.2
	No	3	2.7
Do you always clean the cooking counters after cooking the food	Yes	101	91.8
	No	9	8.1
Do you clean your kitchen are regularly	Yes	93	84.5
	No	16	14.5
How frequently you clean storage area	Everyday	36	32.7
	Every week	49	44.5
	Twice a week	16	14.5
	Once a month	9	8.1
How you dispose of the refuse	Covered dumping	40	36.3
	Open dumping	49	44.5
	Burying	17	15.4
	Burning	4	3.6

Survey results revealed that 89% respondents had adequate knowledge of hand washing. Only 53.6 per cent food vendors agreed that they wash their hands after using toilet while 14.5% claimed that they wash their hands after blowing nose, (4.5%) when they start cooking food and (27.2%) wash hands whenever they like (Table-3)

Table3: Knowledge, Attitude and Practices of food handlers regarding handwashing

Variables	Category	Frequency	Percentage
Washing of hands before preparing food reduces transmission of foodborne illness	Yes	67	60.9
	No	43	39.0
Washing hands with water, and soap most preferable than water and ash	Yes	72	65.4
	No	38	34.5
Hand washing is important to prevent food borne diseases	Yes	98	89.0
	No	12	10.9
Under which conditions do you wash your hands while working	After blowing nose	16	14.5
	After using the toilet	59	53.6
	Before cooking food	5	4.5
	Whenever I like	30	27.2

Knowledge assessment of the food handlers done by scoring in which knowledge of the food handlers categorized into three categories: Good, Fair and Poor (Table-4) Among the 110 food handlers who were interviewed for the knowledge assessment, the majority (50.0%) of the respondents had fair knowledge (answered 60-80% of the questions correctly).

Table4: Knowledge, Attitude and Practice Assessment of Food Handlers by scoring method

	Level of Knowledge		Attitude towards Food hygiene		Practices towards Food Hygiene	
	Frequency	Percentage	Frequency	Percentage	Frequency	Percentage
Good	38	34.54	27	24.54	19	17.27
Fair	55	50.0	48	40.90	40	36.36
Poor	17	15.45	35	31.81	51	46.36
Total	110	100.0	110	100.0	110	100.0

CONCLUSION

Knowledge is the key element to influence food handling practices among food handlers. Overall results concluded that food handlers in Kanpur district having fair knowledge of food hygiene. Proper hygiene and sanitation prevent the spread of diseases and infections. It is required to provide training to food vendors regarding hygiene and sanitation to control the food borne illnesses.

REFERENCES

1. Akabanda, F.; Hlorts and Kwarteng, O, J. 2017. Food Safety Knowledge, Attitudes and Practices of Institutional Food-Handlers in Ghana. *BMS Public Health*, (2017) 17:40
2. Azabaw, J; Dagne, H; Andualem, Z and Adane, T. 2021. Food Safety Knowledge, Attitude and Practices of college students, Ethiopia, 2019: A cross sectional study. *BioMed Research International*, (2021) 6686392:1-10
3. Kim, J and Yoon, K. 2022. Association among the exposure to giving Knowledge, Attitude and Practice for Handwashing in people residing Seoul, South Korea: A retrospective cross-sectional study. 12:e053329
4. Lema, K; Abuhay, N; W; Kindie, W; Dagne, H and Guadu, T. 2020. Food Hygiene Practice and its determinants among Food Handlers at university of Gondar, Northwest Ethiopia, 2019. *International Journal of General Medicine*, 13(2020):1129-1137.
5. Nee, O, S and Sani, A. 2011. Assessment of Knowledge, Attitude and Practices Among Food Handlers at Residential Colleges and Canteen Regarding Food Safety. *Sains Malaysiana*, 40(4), 403-410.
6. Pradhan, S.S; Cacodar, A J and Akarkar, S, N. 2018. A Study of Personal Hygiene among Food Handlers in Panajidity, Goa *International Journal of Community Medicine and Public Health*, 5(11): 4822-4825.

UNDER PEER REVIEW

