



Food Safety Knowledge and Practices among Food Handlers in Food Street Lahore

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ABSTRACT

Background: Food safety can be defined as the confidence degree that the food will not cause any harm or sickness to the consumer when it is prepared, served and consumed based on its intended use. A secure food is a food that is physically, chemically and biologically ready to be consumed when it is prepared according to its main purpose and does not loses its nutritional value. **Aim of Study:** The purpose of this study to assess the knowledge and practices regarding food safety among the food handlers. **Method:** A descriptive cross sectional survey based study was conducted in Food Street, ShahiQilaha, Lahore. Convenience sampling technique was used to collect the data from respondents. Closed ended questionnaire was used. Data was gathered from food handlers working in Food Street, Shahi Qilaha, Lahore. SPSS version 20 was used to analyze the data and descriptive statistics applied. **Result:** In our study, almost all of the food-handlers were aware of the critical role of general sanitary practices in the work place, such as using gloves (88.0%). On disease transmission, 56.0% of the food-handlers had knew that Salmonella is a food borne pathogens and 74.0% were known that hepatitis A is a food borne pathogen, 44.0% respondents knew about the AIDS transmitted by food. Only 56.0% participants knew the temperature of 65° should keep for ready food and this knowledge with their experience. **Conclusion:** In generally the food handlers have satisfactory knowledge in the areas of food safety, personal hygiene and sanitation procedures. But they do not use strict hygienic practices during processing and handling food products. The most important issues are the lack of knowledge regarding refrigeration temperatures, lack of knowledge concerning cross-contamination and its control.

Keywords: Food handlers, Food safety, Knowledge, Practices

INTRODUCTION

Background

Food is essential to fulfill hunger. It is served as to fulfill biological needs. Food is very popular hierarchy Pyramid developed by Abhram Maslow. It is supported by Moon who noted that consumption of food is reflected as fulfilling biological need.

Food safety can be defined as the confidence degree that the food will not cause any harm or sickness to the consumer when it is prepared, served and consumed based on its intended use. A secure food is a food that is physically, chemically and biologically ready to be consumed when it is prepared according to its main purpose and does not loses its nutritional value. The basic rule when it comes to food safety is focusing at every step from buying to the consumption [1].

The objectives of Healthy People 2020 include reducing infections commonly transmitted through food in the general population caused by key pathogens [2]. There is a lack of documented information among street food vendors and food handlers of food establishments regarding food borne diseases and the level of food hygiene and safety measures. Food borne disease epidemic are often due to poor personal hygiene of people that handling foodstuffs. Food handlers therefore play an important role in ensuring food safety [3].

The World Health Organization (WHO) indicated that each year as many as 600 million people in the world become sick of which 420,000 die after consuming unhygienic food. In the United States, food borne diseases affect an esti-

mated 48 million people every year resulting in 128,000 hospitalizations and 3,000 deaths. Africa and Southeast Asia are believed that the highest incidence and death rates due to food borne disease [3].

The World Health Organization states that approximately 1-8 million people died from food-borne disease in 2005 due to intake of unhygienic food and contaminated drinking water. Food-borne diseases occur due to consuming of food that is contaminated with germs and their toxins. Food contamination increases due to inadequate preservation method. Unhealthy handling practice crosses contamination from food, contact or from persons, carries microorganisms in their nasal and skin surface. Furthermore many cases have been reported of food born viral disease that causes due to infected food handlers involved in catering services [4]. When cooked on large scale causes food-borne diseases that can danger to the health consumers and increase financially consequences for the nation. Food-borne disease have increased due to unhygienic food handling over the year, negatively affected the health consumers and financially wellbeing of developing countries [4].

Among food handlers implement high standards of hygienic healthy and safety practice. Although food handlers may demand knowledge and skill that is needed for food safety practices mistakes due to people handling that cause several food-borne diseases. In Pakistan and worldwide enteric illness of food-borne origin remain an important issue of public health [5].

It is necessary to focus on food safety education of all food prepare to decrease the incidence, morbidity, and mortality of food-borne illness and meanwhile decrease associated costs of treating the disease [6]. The contribution of food-borne epidemic is lack of knowledge of food hygiene and safety during preparation, processing and storage that lead to not follow the rules of food hygiene and safety [7]. Another possibility of food-borne diseases where minority populations may experience greater risks is at the food retail or food service level [8]. Diarrheal diseases are the most common food poisoning cases, some cases that may cause death. The diseases are caused by either microbe toxin or by the human body's reactions to the microbe [9].

Significance

Food business has responsibilities to ensure that staffs who supervise food handling activities have the skill and knowledge in food safety and food hygiene for the work that they do. Food handlers need the skills and knowledge to keep food safe for the task that they do in the business. It is important for the food handlers to know how their food handling practice contributes the safety of food and how they can decrease the risk of food-borne illness.

Justification

Food handlers are important factors in food-borne diseases outbreak due to mishandling of food during preparation, processing, storage and distribution. Deliberate contamination of food during preparation and delivery can cause illness due to proliferation and transmission of pathogens such as *Salmonella*, *Staphylococcus aureus* and bacteria are on rise and might endanger. The health consumers have very highly repercussion and affect the economic well-being of the country. There are many factors influencing the occurrence of disease which properly addressed can lead to reduce the incidence of disease.

Purpose of Study

To assess the knowledge and practices regarding food safety among the food handlers.

Research Question

What is the knowledge and practice regarding food safety among food handlers?

LITRATURE REVIEW

Generally, unsafe handling and less knowledge of food handling can result in spread to foodborne diseases. Study done by Osaili, et al. [7] highlights that less knowledge about basic food hygiene and storage temperature can results in cross contamination of disease via food handlers. It is the prime responsibility of food handler to make sure the safety of food and storage and to enhance their knowledge to prevent any kind of poisonous cases due to improper food handling. Human handling errors have been responsible for most epidemics of food-borne diseases. All these safe practices can result in reducing the risk of food borne illnesses [7].

According to a study done by World Health Organization in 2011, population in developing countries are at high risk developing food related problems due to multiple factors including unclean water for food preparation and improper practices to handle food storage by food handlers. Different cases of food borne illnesses and outbreaks are reported at national and international levels which underrate the food handling at higher levels [10].

Food handlers are the best source of infection sometime. They directly deal with handling of food item so they are the best medium to transfer the disease. Diseases with short incubation are easily detectable if they are related to food. Ingestion of unhygienic food may result in moderate to severe illness [11,12].

Knowledge is always shown by practice and behaviors followed by the person. According to Aiken, et al. [13], Practices are the ways in which people demonstrate their knowledge and action through their actions. In this study, about 1/3 respondents had a good level of food hygiene practice this shows that actions demonstrate the level of knowledge. The good level of hygienic practice observed in this study in less than 50% of the respondents was also similarly observed in past studies only 15%-32% respondents having a good level of food hygienic practice [13].

Another study done in Sub-Saharan Africa to identify the knowledge of food handlers related to diseases. Study shows that 89% vendors and 96% food handlers in food establishment mentioned at least one food borne disease. This study shows impact of knowledge about the consequences of improper food handling. About 72% food handlers in food establishment had good level of food hygiene practices and safety measures as compared to food handlers in street food shops 53% [3].

Ehiri and Moris also observed that attitude was an important factor that could not be ignored if food-borne illness were to be reduced. The safety measure of food handler is affected by several consequences starting from the quality of the raw material, to food handling and storage practices. Another important factor which is responsible for contamination of food items is environment. Process of preparing food on street is exposed to unhygienic environment as well as food handler. This also helps in contamination of food. Usually hawkers and vendors are responsible for these unfavorable conditions [14].

According to this study many people in groups are increased risk of food-borne diseases. For example, 13% of American are 65 years old, 7% are less than 5 years old, almost 4 million women are pregnant every year, and 1% is immune compromised due to disease, medical treatment, and/or organ transplant [15]. In this study, most of the respondents were aware of basics practices in the work place, like proper hand washing 98.7%, using gloves 77.9%, proper cleaning of the utensils 86.4% and sanitizer use 72.8%. In food-borne diseases across, 76.2% respondents did not know about the *Salmonella* is a food-borne pathogen and 70.6% did not know regarding hepatitis A is a food-borne disease. 81.7% respondents agreed with typhoid fever is a food-borne illness and 87.7% agreed regarding bloody diarrhea is across by food [4]. Food related participants and non-food related participants have almost the same score of 38% which shows their lack of knowledge and low level of education about the recommended temperature of refrigeration. Bacteria are the main cause of food-borne diseases in human beings [16]. Major food-borne disease is due to poor personnel hygienic condition of food handler. Hand washing and wearing of gloves protects from food-borne diseases.

MATERIAL AND METHODS

Research Design

The design of this study was Descriptive cross sectional. Convenience sampling technique was used for this study.

Study Area

The study was conducted at "Food Street Shahi Qilaha Lahore".

Study Duration

The study duration was three months (90 days).

Targeted Population

The study was conducted at Food Street Shahi Qilaha Lahore. All food handlers of the that Food Street was the targeted population.

Inclusion Criteria

Food handlers (cook, waiter) of Food Street Shahi Qilaha Lahore were included in this study.

Exclusion Criteria

Physically and mentally disabled food handlers and those who not meet the inclusion criteria were excluded from study. Similarly the food handlers who refused / not willing to participate were also excluded.

Ethical Consideration

A written application mentioning the purpose of the project with attached questionnaire was submitted to the chairman of the walled food authority and written permission was taken. Individual consents also taken from each Participant. Confidentiality was insured by collecting the data anonymously and coding the names of the respondents.

Research Tool

Close ended questionnaire was used regarding food safety knowledge and practice (Tables 1 and 2).

Pilot Study:

A pilot study was done to check tool for its validity and reliability. Pilot study was done in 10% responders.

Sample Size

The sample size was 200 food handlers.

Data Gathering Plan

All questionnaires were completed and data collected from food handlers at food street Shahi Qilaha Lahore. We were available to clarify their doubts about any point during the course of completing the questionnaire.

Statistical Design:

Data was analyzed through Statistical Package for Social Sciences (SPSS) 20.0 and descriptive statistics applied.

RESULTS

Demographical Data

- Age:** Among 200 respondents, 37.0% were between in 11-20 years of age, 41.0% were between in 21-30 years of age, 18.0% were between 31-40 years of age and 4.0% were 41-50 years of age (Figure 1a)
- Education:** Education level of the responders, Illiterate was 19.0%, Middle was 39.0%, and Metric was 28.0% and Above Metric was 14.0% (Figure 1b)

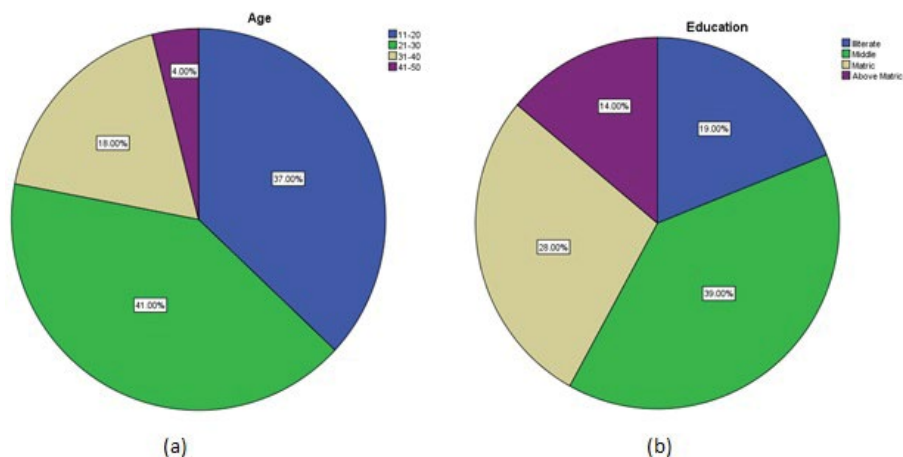


Figure 1 Demographical data

Table 1 Food safety Knowledge among food handlers

| Title | Yes | No | Don't know |
|---|-----|----|------------|
| Is using gloves while handling food reduces the risk of food contamination? | 70 | 5 | 25 |
| Are Proper cleaning and sanitation of utensils increase the risk of food contamination? | 18 | 42 | 40 |
| Is the typhoid fever can be transmitted by food? | 75 | 14 | 11 |
| Is the AIDS can be transmitted by food? | 44 | 25 | 31 |
| Is bloody diarrhea can be transmitted by food? | 77 | 13 | 10 |
| Is salmonella among the food-borne pathogens? | 56 | 6 | 38 |
| Is hepatitis A virus among the food-borne pathogens? | 74 | 14 | 12 |
| Is the hot ready to eat should be kept at a temperature of 65C? | 56 | 8 | 36 |

Table 2 Food safety practices among food handlers

| Title | Yes | No |
|--|-----|----|
| Do you wash your hands properly before or after using gloves? | 75 | 25 |
| Do you wear an apron while working? | 88 | 12 |
| Do you properly clean the food storage area before storing new products? | 91 | 9 |
| Do you use sanitizer while washing fruits and vegetables? | 84 | 16 |

DISCUSSION

Demographic Characteristics

Large number 41.0% respondents were in the age of 21-30. About 39.1% respondents were in the age of 41-50 years [4]. In this study 19.0% respondents were illiterate. Similar study showed that approximately 14.5% of respondents did not have any food safety related education [4]. In other study that showed impartial educational level, food-handlers performance in food safety knowledge was not good that cause for public problem [17,18].

Food Safety Knowledge of Food Handlers

70.0% respondents knew about the proper using of gloves while handling, minimize the chance of food spoiling because some participants did not have knowledge about the importance of using gloves while food handling. Our study result similar with study conducted in Italy, 61.1% respondents showed awareness of protective effects for food services. Most of respondents was not attended course regarding food safety knowledge [19,20].

In our study, only 18.0% respondents knew about the proper cleanliness of utensils due to the insufficient knowledge about cleaning and sanitation. Our study result opposite study conducted in Ghana showed that 86.4% were correct answer because the most respondent had knowledge about the proper cleaning and sanitation. Most of the respondents were received the vocational training of food handling [4].

In our study, a large number of respondents had knowledge about the typhoid fever transmitted by food 75.0% respondents said yes and this knowledge with in practice from a longer period of time. Our study result similar study conducted in Dessie town, Ethiopia showed that 95.0% were know about the typhoid fever transmitted by food [3].

In our study, 44.0% respondents knew about the AIDS transmitted by food. Mostly people had not knowledge about AIDS and its route of transmission and this less response also due to their low level of education. Our result opposite study conducted in Owerri, Imo State, Nigeria showed only 0.5% respondents knew about AIDS/ HIV food-borne disease. The respondents had not knowledge about the AIDS/HIV disease and they have not attended proper educational training of food hygiene [13].

In our study, 77.0% respondents were known the diarrhea transmitted by food because they had knowledge of food-borne diseases. Our result similar the study conducted in Isra University, Al-Nafees Medical College, Islamabad, Paki-

stan showed 76.6% students knew the knowledge regarding of transmission of diarrhea due to their higher education level and knowledge of food safety [21-23].

In our study, 56.0% respondents were knowledge regarding the salmonella food-borne pathogens and this knowledge due to their educational level. Our result similar study conducted in Italy showed 48.7% knew the salmonella food-borne pathogens and this knowledge was significantly greater with their higher education level [24].

In our study, 74.0% respondents were knowledge regarding the hepatitis A virus food-borne pathogens and this knowledge with a longer food-handling activity. Our result similar study conducted in Italy showed 48.7% knew the salmonella food-borne pathogens and this knowledge was significantly because they had attended education courses [24]

In our study, 56.0% participants knew the temperature of 65oc should keep for ready food and this knowledge with their experience. Our result similar the study conducted in Accra, Ghana 71.4% participants knew about the temperature of 65° should keep for ready food and this knowledge with the attending the educational training regarding food hygiene [25].

Food Safety Practice among Food Handlers

In our study, 75.0% participants had practice of proper hand washing and other participants not necessary to apply proper technique of hand washing because they had insufficient knowledge. Our result similar study conducted in Kolkata, India showed 84.90% had practice of proper hand washing because they were known the importance of proper hand washing [26].

In our study, 88.0% respondents were wearing an apron while working. This practice used with a longer time of this activity. Our study result similar study conducted in North West, Ethiopia showed 63.6% respondents were using apron and the other participants had not used proper food hygiene practices [27].

In our study, 91.0% respondents were clean properly food storage area before storing products and this knowledge with their educational level. Our result opposite the study conducted in Kolkata, India showed 34.90% cleaned properly food storage. A large number of participants had not known about the food storage area because they not give attention of this activity [26].

In our study, most of the participants had practiced the sanitizer while washing vegetables 84.0% respondents said yes, and 16.0% said no. Our study result similar study conducted in Immo state, Nigeria showed that 50.0% knew about using the sanitise while washing vegetables [28].

CONCLUSION

There is no doubt that food street trade is very important to the socio-economy of developing countries. Generally the food-handlers had insufficient knowledge regarding personal hygiene, generally, food safety, cleanliness procedures. But the food-handlers had not used strict hygiene practices during process and handling food products. The most important issues were the lack of knowledge regarding refrigeration temperatures, lack of knowledge concerning cross- contamination and its control. Effective food safety education may reduce the risk of foodborne illness in the future. Proper management of the trade by all the vendors, consumers, governments, food and health professionals in academics and development partners would ensure safe practices and engender safer and healthier society.

Limitations

Practice data were self-reported and this had the potential for response or social desirability bias. Individuals with correct information concerning any practice may report what was known rather than what was being practiced. Improvement in practice data would come from the actual observation of food handling practices in the work environment. Another limitation was the omission of illiterate food handlers from the study based on the data collection method used. A number of food handlers were challenged in this area, and their omission has resulted in the omission of valuable data from the study.

Recommendations

- Food safety messages should focus on the younger members of a population with educational programs, but more importantly, with relevant training

- Food handlers should be trained by an approved agency/institution with competency in curriculum development and knowledge assessment
- A certificate would be awarded at the successful completion of the course. Managers'/supervisors' training should be separate from the regular food handlers' training and should provide in-depth food safety information that will assist managers in protecting customers' health and improving employee performance
- Trained food handlers should present their certificate, pay the necessary fees, be interviewed, and receive a permit to handle food for a period of time to be determined by the Ministry of Health

DECLARATIONS

Conflicts of Interest

The authors declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

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