ISSN: 2309-5288 (Print)
ISSN: 2309-6152 (Online)
CODEN: JCLMC4

Journal of Coastal Life Medicine

To Determine the Level of Food Handlers' Understanding of Food Safety and Hygiene with the Goal of Publishing a Guidebook

Received: 26 August 2022, **Revised:** 22 September 2022, **Accepted:** 24 October 2022

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Key words: Information booklet, Food handlers, Effectiveness

Abstract

Background: The first step in making sure the food you handle and make is fit for human consumption is to practise good food safety and food hygiene. Consumers are at risk for food poisoning and other food-borne illnesses if standards of food safety and hygiene are not strictly enforced. Protecting the health of consumers necessitates a focus on food cleanliness and food safety.

Material and Method: method based on evaluation. Fifty city of Karad food handlers participated in the study. We used a pre- and post-test design with a single sample. Non-probability The samples were selected with a deliberate strategy. Fifty individuals involved in the food service industry served as the sample size. Knowledge of food safety and food hygiene practises was assessed by structured questions on day one, an informative booklet was distributed on day seven, and a post-test was given on day ten. The information was catalogued and evaluated so that researchers could gauge food handlers' awareness of and adherence to best practises for preventing foodborne illness in their workplaces in Karad.

Result: Among the demographic variables examined, it was determined that there were exactly as many women as men. The majority (58%) of the samples were made up of people between the ages of 30 and 39, the majority (52%) had between 1 and 5 years of experience working in the food service industry, and 66% were

ISSN: 2309-5288 (Print)
ISSN: 2309-6152 (Online)
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vaccinated against food-borne illnesses. There was an 84% increase in knowledge about maintaining safe temperatures for food among those who work in the industry, a 90% increase in familiarity with properly preparing food, an 86% increase in familiarity with properly rinsing containers and equipment, and an 84% increase in familiarity with proper hand washing procedures. Due to this finding, it was raised in the follow-up test. The average knowledge score on the assessment (31.08+3.02) exceeded the baseline score of 16.50+4.40. This proves that educating adolescent girls with an information pamphlet about reproductive health is successful.

Conclusion: The research concluded that providing food handlers with an information booklet was an efficient way to boost their food safety awareness and hygiene practises. Food handlers' understanding of food safety and hygiene standards was found to improve when they were given an instructional booklet on the subject.

1. Introduction

Countries in Development More than half of the metropolitan population [1] is fed by street vendors. However, if they are not properly regulated or handled, meals sold on the street might cause foodborne infections. In South Africa, for instance, there is no unified set of rules for "informal trading," which includes food hawking on the street [2]. For vendors on the street, the ability to prevent the spread of food-borne illness begins with knowledge of proper food handling and hygiene practises [3]. Water resources, socio-demographics, and cultural traditions also play a role in determining whether or not people follow recommended food hygiene procedures [4,5]. Nearly 47.6% of karad's street food sellers, according to observations, have inadequate hygienic procedures, such as distributing food with their bare hands, among other things [6]. The majority of street food vendors in Ghana also use their bare hands when serving customers [7].

Street sellers have been observed engaging in unsanitary practises due to a lack of ready access to water. For instance, most merchants selling food on the street buy their water from other vendors, while a smaller percentage (28%) gets their water from a nearby tap. The water used to wash dishes and hands is recycled [9]. Personal hygiene, vending experiences, the vending environment, and the availability of resources are just a few of the variables that affect safe food handling procedures. Example: food-borne illnesses like vomiting, stomach pains, nausea, and diarrhoea are linked to unsanitary circumstances, a lack of running water, and incorrect food handling techniques [10].

Karad's municipal authorities need to keep an eye on food carts for the sake of consumer health and safety. The purpose of this study is to gain insight into the knowledge and practises of food handlers in Karad city with regards to food safety, food cleanliness, and food handling. The results of this investigation may have significant implications for the development of programmes aimed at promoting healthy lifestyles, particularly with regard to the sanitation and safety procedures used by street food vendors.

It's possible to find street vendors in both public and private spaces, and they're often able to roam freely between locations on foot or bicycle.

Preventing food-borne illnesses and improving public health are two primary reasons why food safety and food cleanliness are so vital. Serving food that has been tainted with viruses, bacteria, or other pathogens might cause the recipients to become ill themselves[11]. Occasionally, food poisoning can be treated at home, but if it's severe, hospitalisation is necessary. As a result, it is crucial to broaden people's understanding of food safety and hygiene.

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2. Objectives of the Study

1. To assess the Level of Food Handlers' Understanding of Food Safety and Hygiene

3. Material & Methods

Karad City's food service workers provided the data for this study.
The research method consisted of both quantitative and qualitative techniques.

Research Design: An Non-Experimental design/ survey Method
The study took place in a predetermined location in Karad. Karad is home to a food stall and a slum.
Sample:Fifty people work in Karad's food processing industry
For this investigation, a sample size of 50 food handlers is necessary to achieve 95% confidence and 5% error.
Convenient sampling technique was used

4. The Criteria To Be Used In The Selection Of The Sample

The following criteria were used to select the samples for the study.
Inclusion criteria-
People who work with food who are interested in taking part in the study.
Exclusive criteria-
Food handlers who were not present on the day that the data were collected are excluded from the analysis.
Personnel responsible for handling food who declined the opportunity to take part in the study.
TOOL PRESENTATION: Demographic variables, structured knowledge questions on information regarding food safety and food hygiene practises related knowledge
TOOL PRESENTATION:

RISK FACTOR DETAILS: a) Informed consent form in English and Marathi – Yes
b) State whether you are aware of the guidelines surrounding the consideration of human trials by ethics committees and that you will be following them.

5. Tool For Data Collection

Data Collection Tool :
Section I **:** A Proforma to collect socio-demographic data of participants.
Section II : structured knowledge questionnaires on knowledge regarding food safety and food hygiene practices related knowledge.

6. Plan For Data Collection

Approval from KIMSDU's ethics committee was received prior to conducting the study in Karad.
• The KaradTaluka study was carried out in a particular part of the Karad region. The city of Karad is the location of a food stall and mess. The information was gathered from a total of fifty food handlers. A larger number of samples were collected in an effort to reduce the attrition rate, also known as mortality.
• The principal of the school provided their informed consent, which was received from the appropriate authority.
• The subject has been provided with an explanation of the purpose of the study, and informed consent will be sought from them.

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7. Results

Section I

Table 1– A Distribution of demographic characteristics of Food handlers (n=785)

VARIABLES		RESPONSE	PERCENTAGE
Gender	Male	25	50%
	Female	25	50%
Age	<20	9	18%
	30-39yrs.	17	35%
	40-50	17	34%
	>50	7	14%
Highest education level	Primary	6	12%
	Secondary	15	30%
	Tertiary	29	58%
Working experience	<1	8	16%
	1-5yr.	26	52%
	6-10yr.	8	14%
	>10yr.	9	14%
Covid vaccine	Yes	33	66%
	No	17	34%
Food handlers training certificate	Yes	26	54.2%

According to the figure that was just presented, the age range of 30-39 years old had the highest percentage of respondents (35%) across all age groups. The highest degree of education attained by teaching staff was 58%. Although covid vaccination rates were 66% of those vaccinated, the greatest number of food workers with 1-5

ISSN: 2309-5288 (Print)
ISSN: 2309-6152 (Online)
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years of experience were only 52%. However, 54.2% of food handlers possessed training certification.

Section II :- Food handler's knowledge related to food safety and hygiene

1) Temperature

STATEMENT	RESPONSE IN PERCENTAGE		
	YES	No	DON'T KNOW
Part-I Temperature control 1) Frozen beef are defrosted by soaking in water	74%	22%	2%
2) Freezing process of foods does not kill bacteria but prevent their growth	84%	12%	2%
3) Food can be stored at room temperature after cooking if for 2hr. before storing it in the refrigerator	82%	12%	6%
4) The correct temperature for refrigerator is 1-4^{oc}and freezer is below 18^{oc}	82%	18%	-

The information presented in the table above demonstrates that food handlers' knowledge concerning food safety and hygiene is related to the fact that maximum temperature control knowledge in the freezing process of food does not kill bacteria but rather prevents the growth of those bacteria 84% of the time in the post-test.

2) Cross Contamination

STATMENT	RESPONSE IN PERCENTAGE		
	Yes	No	Don't know

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ISSN: 2309-6152 (Online)
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Part-II Cross Contamination	88%	12%	-
1) Vegetable should be first chopped and then washed			
2) Fresh vegetables should be washed by soaking it in vinegar water	90%	10%	-
3) Bacteria cannot enter smashed conned food	62%	34%	4%
4) Staff cannot eat and drink in food preparation area	80%	18%	2%

The table that can be found above demonstrates that one's level of expertise in the subject of cross contamination should be at its highest level when one is speaking about fresh vegetables.

Food storage

STATEMENT	**RESPONSE IN PERCENTAGE**		
	YES	**NO**	**Don't Know**
Part-III **Food Storage** 1) Raw food should be stored in lower shelves within cold storage	68%	16%	16%

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ISSN: 2309-6152 (Online)
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2) Preparation of food in advance is likely to contribute to food born illness	86%	8%	6%
3) Frozen food cannot be frozen again after being defrosted in chiller	57.1%	26.5%	16.3%

Knowledge about food storage in that maximum knowledge measured in preparation of foods in advance likely to lead to food born disease is found to be 86% among food handlers in the post-test, as shown in the table above.

Equipment hygiene

STATEMENT	REWSPOSE IN PERCENTAGE		
	YES	NO	DON'T KNOW
Part-IV **Equipment Hygiene** 1) Bacteria can grow on broken or cracked dishes	64%	28%	8%
2) Rinsed container and equipment should be wiped with towel	80%	18%	2%
3) The action of detergent is sufficient to ensure effectiveness of cleaning equipment	60%	36%	4%
4) Cold storage should be opened and ventilated frequently	42%	50%	8%

The data shown in the table above reveals that eighty percent of food handlers have adequate knowledge regarding the hygienic treatment of equipment, as indicated by the fact that rinsed containers and equipment should be dried with towels.

3) Personal hygiene

STATEMENT	RESPONSE In PERCENTAGE		
	YES	NO	Don't Know
Part-V **Personal Hygiene** 1) There are six steps in hand washing procedure.	84%	14%	2%
2) Bacteria are normally found on the surface of human skin	76%	20%	4%
3) Only Waiter wear mask	46%	52%	2%

ISSN: 2309-5288 (Print)
ISSN: 2309-6152 (Online)
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4) Hair contains various type of bacteria and can be main sources of food contamination	84%	10%	6%
5) There is a no need to wash hand, before using gloves	64%	36%	_

The data presented in the table above demonstrates that the percentage of food handlers who have a maximum level of knowledge regarding personal hygiene, as measured by the number of steps in which they wash their hands and hair to remove various types of bacteria that can be a main source of food contamination, is 84%

Knowledge scores of subjects regarding food safety & food hygiene practices.

(n=50)

Knowledge Score	Mean	S. D	Mean Diff	Paired t Test	P value
Pre-test Knowledge Score	16.50	4.40	14.583	33.507	<0.001
Post –test Knowledge Score	31.08	3.02			

8. Discussion

In India, there has been an upsurge in both the selling of meals and their consumption along the roadways. Vending machines selling food on the sidewalk are becoming a typical sight in most commercial locations. The reliance on meals that may be purchased on the street is constantly growing, particularly in the metropolitan regions of cities and small towns. The general people, and notably migrant labourers, like these foods for the taste and flavour that they offer at a reasonable price. This is especially true for the general population. People who sell food on the street typically come from lower economic classes and have little or no formal education; as a result, they may not follow proper hygienic procedures. Despite this, the subject of food safety has not been given the proper attention it deserves, and it continues to be a major worry for all parties involved. [10]

In the current investigation The majority of respondents are aware of the temperature that should be maintained in the refrigerator and freezer (76.1%), as well as the role that temperature plays in preventing the growth of microorganisms in food (76.9%). vegetables can be possible health hazards due to high microbial load such as Salmonella spp. and pathogenic spore producing bacteria. this indicated a high level of knowledge on the need of knowing refrigerator and freezer temperature to limit the danger of food spoilage and effects on food safety. About 85.8 percent of the people who worked with food gave the correct response when asked about the statement about food preparation in advance. It has been pointed out that the custom of preparing food ahead of time has become standard at establishments that provide food service, and Food handlers were observed to have a low level of understanding regarding the cleanliness of equipment. Above findings supported to study conducted by Youn and Sneed (2003) and Ansari-Lari, Soodbakhsh and Lakzadeh (2010) pointed out that reported foodborne disease caused by improper food handling, food processes

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ISSN: 2309-6152 (Online)
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& home services. Majority did not know that dishtowels were not suitable for wiping wet equipment (70.9%), above findings supported to study conducted by Youn and Sneed (2003) and Ansari-Lari, Soodbakhsh and La It is possible to lessen the likelihood of getting sick from foodborne pathogens by heating and processing foods correctly. According to research that was conducted by Baş, Ersun, and Kivanc (2006), it was discovered that over seventy percent of food poisoning outbreaks were the result of improper handling of time, temperature, and cross-contamination. Included in this is the manner in which the meal is prepared in advance, an improper throwing method, and an improper temperature. Youn and Sneed (2003) and Ansari-Lari, Soodbakhsh, and Lakzadeh (2010) pointed out that a substantial number of reported cases of foodborne disease outbreaks were caused by improper handling at foodservice businesses, food processing facilities, and homes respectively. It is possible to lessen the likelihood of getting sick from foodborne pathogens by heating and processing foods correctly. According to research that was conducted by Baş, Ersun, and Kivanc (2006), it was discovered that over seventy percent of food poisoning outbreaks were the result of improper handling of time, temperature, and cross-contamination. This includes preparing food a very long time in advance, using an improper thawing method, holding food at an improper temperature, and malfunctioning cooling equipment (Mahmoud, El Gerges, Bou-Mitri & Jaoude, 2018; Liz Martins & Rocha, 2014; Osaili et aland malfunctioning cooling equipment (Mahmoud, El Gerges, Bou-Mitri & Jaoude, 2018; Liz Martins & (Bou-Mitri, Mahmoud, El Gerges, &Jaoude, 2018; Liz Martins & Rocha, 2014; Osaili et al., 2013). [11]

In the current study, the answer of the equipment hygiene was the maximum knowledge in rinsed container and equipment should be cleaned with towel, which was 80% in food handlers who were tested after the post-test.

The majority of those responsible for handling food in this survey (64.9%) gave an inaccurate response when asked about the effectiveness of cleaning equipment. They believed that it was sufficient to use detergent alone to ensure the effectiveness of cleaning equipment.

After reading the information booklet and taking the test afterwards, the average score on the knowledge section was higher than the average score on the knowledge section of the pre-test. Knowledge scores before and after the post test were shown to differ significantly, as measured by mean and standard deviation. ($P < 0.0001$). The findings of the current investigation are consistent with the findings of the study that Knowledge of food safety can be obtained, to a considerable extent, through training in food safety. This includes completing a certified training session in order to be exposed to the necessity of temperature control, safe food handling, personal cleanliness, and the causes of food borne infections for those who handle food. Knowledge of food safety gained from studying educational resources related to food safety. Knowledge of safe food handling methods is provided to the people holding the food. According to the findings of a few studies, expanding one's knowledge on the subject of food safety can lead to improvements in food hygiene practises. According to Abdul-Mutalib et al. (2012) and Toh and Birchenough (2000). On the other hand, there are research that have shown that having a good knowledge does not necessarily result in positive behaviour towards hygienic activities (Akabanda et al., 2017; Clayton, Griffith, Price, &

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Peters, 2002). This suggests that there is no predictable pathway for the transmission of knowledge into practises. [12]

Conclusion & Recommendations

This study reveals that despite the knowledge and behaviours of precursor programmes of good manufacturing practises (GMP), food handlers' practises should be strengthened by regular training and monitoring. Implementation of the Good Manufacturing Practice (GMP) and Hazard Analysis and Critical Control Point (HACCP) systems will help food vendor kitchens identify any problems along the way of their food processing operation, which will contribute to a reduction in the number of cases of foodborne illness.

It was shown that providing food handlers with information booklets on food safety and food hygiene procedures was an effective technique for increasing their knowledge on food safety and food hygiene standards. According to the findings of the study, if we advise them to do so, they will be required to hold a training session every three months for food handlers on proper food handling practises.

Acknowledgment

The authors would like to express their appreciation to each and every respondent, who not only volunteered their participation but also took the time to provide us with all of the essential and relevant information for the conduct of the study.

Conflicts of interest: There are no conflicts of interest.

Financial Support and sponsorship: Nil

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