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Research Article

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Knowledge and food hygiene practices among food handlers in food establishments

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ABSTRACT

Background: Food handlers with poor personal hygiene and lack of awareness of important issues in preventing food borne diseases, working in food establishments could be potential sources of infections of many intestinal helminthes of protozoa and enterogenic pathogens. The objective of the study was to procure information about various food handling practices and spread awareness about the prevention of food borne diseases.

Methods: An organization based cross-sectional study. All the food handlers in given area like Suraram, Shapur, Jeedimetla, Gajulramaram, Chintal and Gandimaisamma were contacted. A total of 86 food handlers in food establishments were interviewed within the stipulated time. The required data is obtained by per designed questionnaire method; the data collection involves the following criteria – Food handling practices, environmental and personal hygiene, knowledge of food hygiene and safety and also their attitude, measures taken for controlling and preventing of food borne illnesses, incidence of food borne diseases. Proportions and Chi square test were used for analysis of the data.

Results: It was found that maximum food handlers were not certified in food training (82.5%). Only 27.9% of food handlers reported that they heard about food borne diseases. That is they were aware that food can be a source of infection if not handled properly. Awareness or knowledge was better in females (36.8%) compared to males (25.3%). Majority of food handlers acquired their knowledge through mass media. It is seen that overall the attitude of food handlers towards handling of food was satisfactory. In the present study, it was found that all practices related to food hygiene were very well followed by majority of the food handlers in the study.

Conclusions: The overall knowledge, attitude and practices of the food handlers were very good and above the average.

Keywords: Food handlers, Knowledge, Attitude, Practices

INTRODUCTION

Food which is defined as an early article manufactured, sold or represented for the use as food or drink for human consumption or any item that enters into or is used in composition, preparation or preservation of any food or drink, is an important basic necessity, it's procurement,

preparation and consumption are vital for sustenance of life.¹

Food handler is defined as a person in food trade or someone professionally associated with it, such as an inspector, who in his routine work comes into direct contact with food in the course of production, processing, packaging or distribution.¹

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The term "food safety" is increasingly being used in place of food hygiene and encompasses a whole range of issues that must be addressed for ensuring safety of the prepared food.²

Accordingly, food handlers with poor personal hygiene and lack of awareness of important issues in preventing food borne diseases, working in food establishments could be potential sources of infections of many intestinal helminthes of protozoa and enterogenic pathogens.³

More than 250 food borne diseases are caused by either bacteria (Clostridium, Botulinum, E.Coli, Salmonella, Listeria, Vibrio Cholera); viruses (Enterovirus, Hepatitis A, Rotavirus, Norovirus); parasites (Entamoeba histolytica, Cryptosporidiosis, Giardia, Trichinosis.⁴

The various food borne diseases are botulism, camplyobacteriosis, hepatitis A, norovirus infection, salmonellosis, shigellosis, diarrhea, typhoid, food poisoning, amoebiasis, ascariasis, hook worm infections etc.⁵

The World Health Organization (WHO) estimated that in developed countries up to 30% of the population suffer from food borne diseases each year, whereas in developing countries up to 2 million deaths are estimated per year. Moreover, in developing countries up to an estimated 70 % of cases of diarrheal diseases are associated with the consumption of contaminated food. WHO estimated 16 million new cases and 600,000 deaths of typhoid fever each year.

Hence, the aim of study is to procure information about various food handling practices and spread awareness about the prevention of food borne diseases.

METHODS

Study type and design

An organization based cross-sectional study.

Study population

All the food handlers in given area like Suraram, Shapur, Jeedimetla, Gajulramaram, Chintal and Gandimaisamma were contacted.

Sample size

A total of 86 food handlers in food establishments were interviewed within the stipulated time.

Selection criteria

Inclusion criteria

Food handlers in hotels and food establishments and vendors of street food who gave their consent.

Exclusion criteria

Food handlers who are unwilling to interact.

Ethical considerations

The protocol of the study is submitted to the Institutional ethic committee and the consent is obtained from the authorities, restaurant owners and the participants (Food handlers and vendors) before interviewing.

The required data is obtained by per designed questionnaire method; the data collection involves the following criteria - Food handling practices, environmental and personal hygiene, knowledge of food hygiene and safety and also their attitude, measures taken for controlling and preventing of food borne illnesses, incidence of food borne diseases. The personal hygiene is assessed by their cleanliness, appearance and health. Practices such as acquisition of cooking skills, place of preparation, method of washing utensils and preservation are also observed. Attitude and practices were scored. For one correct answer, one mark was given and they were classified accordingly. Socio economic status was classified based Prasad's method of social classification.

Statistical analysis

Proportions and Chi square test were used for analysis of the data.

RESULTS

Table 1: Distribution of study subjects according to age and sex.

Age (years)	Male	Female	Total
15 - 24	13 (19)#	03 (15.7)	16 (18.6)
25 – 34	33 (49)	04 (21.05)	37 (43)
35 – 44	07 (10)	07 (36.8)	14 (16.2)
45 – 54	09 (13.4)	04 (21.05)	13 (15.1)
<u>></u> 55 − 64	05 (07.4)	01 (05.2)	06 (06.9)
Total	67 (77.9)	19 (22.1)	86 (100)

#Figures in the parentheses indicate percentage

Table 1 shows distribution of study subjects according to age and sex. Maximum study subjects were in the age group of 25 - 34 years (43%) and minimum were found in the age group of more than 55 years i.e. only 6.9%.

Table 2 shows distribution of study subjects according to Socio economic status. Maximum food handlers belonged to Class II (43.02%) and very few belonged to class V (1.16%).

Distribution of study subjects according to Educational status is seen in the Table 3. Maximum food handlers were illiterates (31.3%) and very few were either just literate or above inter.

Table 2: Distribution of study subjects according to socio economic status.

Socio economic status	Male	Female	Total
I	14 (20.8)#	05 (26.3)	19 (22.09)
II	30 (44.7)	07 (36.8)	37 (43.02)
III	13 (19.4)	02 (10.5)	15 (17.4)
IV	09 (13.4)	05 (26.3)	14 (16.2)
V	01 (1.49)	00 (0)	01 (1.16)
Total	67 (77.9)	19 (22.1)	86 (100)

[#]Figures in the parentheses indicate percentage

Table 3: Distribution of study subjects according to educational status.

Educational status	Male	Female	Total
Illiterate	15 (22.3)#	12 (63.1)	27 (31.3)
Just literate	06 (8.9)	00 (0)	06 (6.9)
Primary	18 (26.8)	01 (5.26)	19 (22.09)
Middle	16 (23.8)	02 (10.5)	18 (20.9)
Inter	07 (10.4)	03 (15.7)	10 (11.6)
Above inter	05 (7.4)	01 (5.26)	06 (6.9)
Total	67 (77.9)	19 (22.09)	86 (100)

[#]Figures in the parentheses indicate percentage

Table 4: Distribution of study subjects according to duration of experience.

Duration of experience	Male	Female	Total
< 5 years	21 (31.3)#	12 (63.1)	33 (38.3)
5 – 10 years	18 (26.8)	03 (15.7)	21 (24.4)
11 – 15 years	13 (19.4)	02 (10.5)	15 (17.4)
> 15 years	15 (22.3)	02 (10.5)	17 (19.7)
Total	67 (77.9)	19 (22.09)	86 (100)

[#]Figures in the parentheses indicate percentage

Table 4 shows distribution of study subjects according to Duration of experience. Maximum food handlers had experience of less than five years (38.3%) whereas only a few reported that they were food handlers since 11 - 15 years (17.4%).

Table 5 shows distribution of study subjects according to Certified in food training. It was found that maximum food handlers were not certified in food training (82.5%).

Table 6 shows distribution of study subjects according to addictions. Majority of food handlers (46.5%) had no addictions.

Table 7 shows distribution of study subjects according to knowledge about food hygiene. Only 27.9% of food handlers reported that they heard about food borne

diseases. That is they were aware that food can be a source of infection if not handled properly.

Table 5: Distribution of study subjects according to certified in food training.

Certified in food training	Male	Female	Total
Yes	15 (22.3)#	00 (0)	15 (17.4)
No	52 (77.6)	19 (100)	71 (82.5)
Total	67 (77.9)	19 (22.09)	86 (100)

#Figures in the parentheses indicate percentage

Table 6: Distribution of study subjects according to addictions.

Addictions	Male	Female	Total
Smoking	04 (5.9)#	01 (5.2)	05 (5.81)
Alcohol	10 (14.9)	02 (10.5)	12 (13.95)
Tobacco chewing	02 (2.9)	00 (0)	02 (2.3)
Beetle nut chewing	02 (2.9)	01 (5.2)	03 (3.4)
Mixed	24 (35.8)	00 (0)	24 (27.9)
No addictions	25 (37.3)	15 (78.9)	40 (46.5)
Total	67 (77.91)	19 (22.09)	86 (100)

#Figures in the parentheses indicate percentage

Table 7: Distribution of study subjects according to knowledge about food hygiene.

Have you ever heard about food borne diseases	Male	Female	Total
Yes	17	07	24
	(25.3)#	(36.8)	(27.9)
No	50	12	62
	(74.6)	(63.1)	(72.09)
Total	67 (77.91)	19 (22.09)	86 (100)

#Figures in the parentheses indicate percentage

Table 8 shows knowledge regarding transmission and prevention of food borne diseases in subjects who reported to have knowledge (N=24). Majority of food handlers acquired their knowledge through mass media.

Table 9 shows distribution of study subjects according to attitude about food hygiene. It is seen that overall the attitude of food handlers towards handling of food was satisfactory.

Table 8: Knowledge regarding transmission and prevention of food borne diseases in subjects who reported to have knowledge (N = 24).

		Male	Female	Total
	Mass media	07 (63.63)#	04 (36.36)	11 (100)
Source of information	Health Professionals	03(30)	07 (70)	10 (100)
Source of information	Formal training	05 (100)	0	05 (100)
	Posters	02 (100)	0	02 (100)
	Contaminated food	05 (62.5)	03 (37.5)	08 (100)
Transmission of diseases	Contaminated hands	09 (69.3)	04 (39.7)	13 (100)
Transmission of diseases	Contaminated water	06 (66.6)	03 (33.4)	09 (100)
	Any other	01 (50)	01 (50)	02 (100)
	Do not know	02 (40)	03 (60)	05 (100)
	Washing hands before serving	14 (70)	06 (30)	20 (100)
Durantian of turnaminian	Washing hands after defecation	08 (72.7)	06 (30)	20 (100)
Prevention of transmission	Regular trimming of nails	10 (83.4)	02 (16.6)	12 (100)
	Properly cooked food	02 (66.6)	01 (33.4)	03 (100)
	Keeping unhealthy persons away	04 (80)	01 (20)	05 (100)

#Figures in the parentheses indicate percentage

Table 9: Distribution of study subjects according to attitude about food hygiene.

Prac	tices questions	Proper attitude	Improper attitude
1.	Protective clothing reduces the risk of food contamination	52 (60.4)	34 (39.5)
2.	Washing of hands before and after handling food is mandatory	83 (96.5)	03 (3.4)
3.	Persons with cuts in the fingers should not handle food	55 (63.9)	31 (36.04)
4.	Raw food should be separated from cooked food	83 (96.5)	03 (3.4)
5.	Cooked food should be refrigerated promptly	22 (25.5)	64 (74.4)
6.	Cooked food should be served hot	75 (87.2)	11 (12.7)
7.	Is it necessary to consult a Doctor when ill	70 (81.3)	16 (18.6)

#Figures in the parentheses indicate percentage

Table 10: Distribution of study subjects according to attitude score as per gender.

Attitude score	Male	Female	Total
0 - 3	04 (5.9)#	03 (15.7)	07 (8.13)
4 – 7	63 (94)	16 (84.2)	79 (91.8)
Total	67 (100)	19 (100)	86 (100)

#Figures in the parentheses indicate percentage

Table 10 shows distribution of study subjects according to attitude score as per gender. It was observed that males had better attitude than females.

Table 11: Distribution of study subjects according to attitude score as per age.

Ago (yeong)	Attitude Sc	Attitude Score	
Age (years)	0 - 3	4 – 7	
15 – 24	02 (2.3)#	14 (16.2)	
25 - 34	01 (1.1)	36 (41.8)	
35 – 44	02 (2.3)	12 (13.9)	
45 – 55	02 (2.3)	11 (12.7)	
> 55	00 (00)	06 (6.9)	

#Figures in the parentheses indicate percentage

Table 11 shows distribution of study subjects according to attitude score as per age. Better attitude was observed in the age group of 25 - 34 years than other age groups.

In the present study, it was found that all practices related to food hygiene were very well followed by majority of the food handlers in the study. Only few practices like use of apron and use of cap were found to a minimum level (Table 12).

DISCUSSION

Maximum study subjects were in the age group of 25 – 34 years (43%) and minimum were found in the age group of more than 55 years i.e. only 6.9%. Similar findings were reported by other studies also, that the maximum food handlers were in the young age groups. ^{2,6,7,9,10,12,16}

Table 12: Distribution of study subjects according to practices about food hygiene.

		Proper Practice	Improper Practice
1.	Frequency of nail cutting	46	40
2		(53.4)	(46.5)
2.	Washing of hands with soap and water		12
	and water	(86.03)	
3.	Use of Apron	(27.9)	62 (72.09)
4.	Use of tidy clothes for	40	46
''	cleaning	(46.5)	(53.4)
		17	69
5.	Use of Cap	(19.7)	(80.2)
_	** 00	77	09
6.	Use of foot wear	(89.5)	(10.4)
7	II. Garate and Indian	85	01
7.	How often do you take bath	(98.8)	(1.16)
8.	Number of times the	82	04
	working area is cleaned per	(95.3)	(4.65)
	day	67	19
9.	Cleansing material	(77.9)	(22.09)
10.	Washing of hands before	80	06
10.	handling food	(93.02)	
11.	Keep ready to eat food in clean containers and cover i properly	51	35 (40.69)
12.	Cook food thoroughly before	re 85	01
12.	ready for consumption	(98.8)	(1.16)
13.	Check ingredients expiry	66	20
	date before food preparation		(23.2)
14.	Cover mouth while coughin	71	15
	y was in the maranthases indicate	(82.5)	(17.4)

#Figures in the parentheses indicate percentage

Maximum food handlers were illiterates (31.3%) and very few were either just literate or above inter. Other studies have found that most of the food handlers were educated up to high school or illiterate or had primary education. ^{1,2,6,7,10,11,12,13,14,15}

It was found that maximum food handlers were not certified in food training (82.5%). Other studies also reported that majority of the food handlers in their study were not certified in food training. ^{1,3,12,14,16,17}

Majority of food handlers (46.5%) had no addictions. 5.81% were smokers, 13.95% were consuming alcohol, 2.3% had a habit of tobacco chewing, 3.4% were beetle nut chewers and 27.9% were using more than two forms of addictions. Other studies also observed that the tobacco chewers in their study were very few. ²

Only 27.9% of food handlers reported that they heard about food borne diseases. That is they were aware that food can be a source of infection if not handled properly.

But 72.09% of food handlers in the present study were not aware about this fact. Awareness or knowledge was better in females (36.8%) compared to males (25.3%). Other studies reported that the food handlers in their study had better knowledge (i.e. more than 50 - 75% had correct knowledge)^{7,17} compared to present study.

Majority of food handlers acquired their knowledge through mass media. Takalkar AA et al⁷ also reported similar findings. Majority of food handlers believed that transmission of food borne diseases occurs through contaminated hands. Similar findings were also reported by other studies. Majority of food handlers believed that transmission of food borne illnesses can be prevented by regular cleaning of nails. Zain MM et al¹ reported that 83.3% of food handlers had knowledge about preventive measures.

It is seen that overall the attitude of food handlers towards handling of food was satisfactory. Similar findings were reported by other studies. 1,6

It was observed that males had better attitude than females. Similar findings were reported by other studies. 1.6

Better attitude was observed in the age group of 25 - 34 years than other age groups. Similar findings were reported by other studies.^{1,6}

CONCLUSION

The overall knowledge, attitude and practices of the food handlers were very good and above the average.

Recommendations

There are misbeliefs and lack of knowledge related to management of dog bite cases. As rabies is 100% preventable disease health education activity for the rural population to be taken for creating awareness about management of dog bite to prevent deaths occurring due to rabies.

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Ethical approval: The study was approved by the

Institutional Ethics Committee

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