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Practice of food safety among restaurant workers in Chennai and the impact of an awareness programme on their knowledge of food safety

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Abstract

The present study was planned to assess the practice of food safety among food service personnel working in restaurants in Chennai city and to evaluate the impact of an awareness program on their knowledge. 100 food service personnel working as food handlers in restaurants in Chennai city, were selected as participants for the study. Questions regarding the practice of food safety included the personal habits and hygiene followed in the workplace. It was found that the percentage of male participants who followed hand hygiene practices was higher as compared to the female participants. The percentage of female participants who did not consume foods in the uncooked or partially cooked state was significantly higher than the percentage of male participants. There was a significant difference in the total food safety practice scores between males and females. After the awareness program, it was found that most of the participants answered the post-test questionnaire correctly. Thus, it can be concluded that imparting of knowledge on food safety will lead to better attitude and practices of food safety, which will lead to higher standards of personal hygiene, and food preparation and service, thereby ensuring safe food for the consumers.

Keywords: food safety practice, restaurants, Chennai, food handlers, knowledge of food safety, awareness program

1. Introduction

Food handlers play a paramount role in ensuring food safety and prevention of food poisoning. Michaels and co-workers (2004) ^[9] reported that infected food handlers could transmit agents of gastrointestinal infectious diseases via poor personal hygiene practices. Many reports have demonstrated similarities between the pathogens isolated from patients and food handlers, clearly indicating that food handlers were the vehicles of transmission for the foodborne pathogens (Olsen *et al.*, 2001) ^[10].

The preparation and service of food requires handling of materials which are extremely vulnerable to becoming the media of contamination, thereby leading to the spread of infection and disease. Following the principles of HACCP is considered one of the most effective ways to prevent food poisoning, especially in the developing countries. Food hygiene training is crucial in food safety and is an essential part of the Hazard Analysis and Critical Control Point (HACCP) concept (Bryan, 1991) ^[11].

Most of the training programs are based on the knowledge, attitude, and practice (KAP) model (Egan *et al.*, 2007; Worsfold *et al.*, 2004) ^[3, 14], which is based on the premise that an increase in knowledge will translate to positive attitude and appropriate practices. While knowledge is a prerequisite for positive attitudes and practices, there are many other factors (environmental, social, cultural, belief systems, and so on) that determine whether food handling knowledge positively impacts attitudes and practices in the workplace (Seaman and Eves, 2008) ^[12].

The aim of any food handlers' training program is to influence safe food handling behaviour in the workplace. However, Clayton *et al.* (2002) ^[2] have shown that knowledge-based training programs do not automatically translate to safe food handling in the workplace.

2. Materials and Methods

A random sample of 100 food service personnel working in restaurants in Chennai city were

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chosen as the participants for the study. The participants constituted both males and females and were between 20 and 55 years.

2.1. Questionnaire

A standardised questionnaire was given to the participants to answer. Questionnaire sketch was designed based on previous research in the world and experience in this field (Taylor, 2001; Grujic *et al.*, 2010; Jevšnik *et al.*, 2008) ^[13, 4, 5]. The survey was adapted from one used to assess baseline knowledge of food handlers in the suburbs of Chicago (Manes *et al.*, 2013) ^[8].

Information on the socio-demographic data, details about the food service establishment, health status of the food service personnel were elicited from the participants. Questions regarding the practice of food safety included the personal habits and hygiene followed in the workplace.

2.2. Awareness Program

For the awareness program, three aids were used to educate and increase the knowledge of food safety among the food service personnel. A PowerPoint presentation was prepared

and used as an audio-visual aid in improving the awareness of the participants as far as food safety is concerned. Posters were also used in creating awareness and increasing the knowledge on food safety. Pamphlets on food safety in the workplace were distributed to the participants after the presentation.

2.3. Post-test Questionnaire

The post-test questionnaire consisted of 10 questions regarding knowledge of food safety. The questions were formulated based on the aspects that were dealt with during the awareness program. The purpose of the post-test questionnaire was to assess the impact of the awareness program on the food safety knowledge of the food service personnel.

3. Results and Discussion

The data obtained was consolidated and analysed statistically. The results have been discussed below.

3.1. Practice of Food Safety

Table 1: Percent distribution of food service personnel based on practice of food safety

Practice of food safety		Yes		No	
		N	%	N	%
Wear gloves when you handle ready-to-eat food or prepare sandwiches	Male	59	86.8	9	13.2
	Female	26	81.3	6	18.8
Wash your hands with water and soap before preparing food	Male	64	94.1	4	5.9
	Female	26	81.3	6	18.8
Wash your hands with water and soap after using the bathroom	Male	58	85.3	10	14.7
	Female	27	84.4	5	15.7
Work when you have diarrhoea	Male	50	73.5	18	26.4
	Female	15	46.9	17	53.1
Work when you have cuts/wounds on your hands	Male	56	82.4	12	17.6
	Female	21	65.6	11	34.4
Allow your finger nails to grow	Male	53	77.9	15	22.0
	Female	21	65.6	11	34.4
Wash vegetables and fruits before slicing them	Male	64	94.1	4	5.9
	Female	21	65.6	11	34.4
Keep cooked meat or chicken at room temperature for more than 4 hours	Male	59	86.8	9	13.2
	Female	15	46.9	17	53.1
Clean food contact surfaces before and after preparing food	Male	62	91.2	6	8.8
	Female	22	68.8	10	31.3
Work when you have cold	Male	51	75.0	17	25.0
	Female	16	50.0	16	50.0
Wash fresh vegetables and fruits in tap water before eating	Male	58	85.3	10	14.8
	Female	24	75.0	8	25.0
Wash your hands with water and soap before eating your meal	Male	61	89.7	7	10.3
	Female	26	81.3	6	18.7
Wash your hands with water and soap after handling raw meat	Male	60	88.2	8	11.8
	Female	26	81.3	6	18.8
Wash your hands with water and soap after using the toilet	Male	64	94.1	4	5.8
	Female	27	84.4	5	15.7
Dry your hands after washing them with towel	Male	55	80.9	13	17.1
	Female	26	81.3	6	18.8
Eat half-cooked eggs (Egg yolk is soft)	Male	43	63.2	25	36.7
	Female	15	46.9	17	53.2
Separate raw meat from ready to eat foods	Male	48	70.6	20	29.4
	Female	26	81.3	6	18.8
Check the temperature of the refrigerator	Male	53	77.9	15	22.0
	Female	24	75.0	8	25.1
Drink raw (unpasteurized) milk	Male	61	89.7	7	10.3
	Female	19	59.4	13	40.7
Eat half cooked meat (inside is pink)	Male	63	92.6	5	7.3
	Female	19	59.4	13	40.7

It can be observed that, most of the male participants followed hand hygiene practices such as wearing gloves when preparing sandwiches (86.8 percent), washing hands with soap and water before preparing food (94.1 percent), washing hands with soap and water after using the bathroom (85.3 percent), washing hands with water and soap before eating (89.7 percent) and washing hands with water and soap after handling raw meat (88.2 percent) as compared to the female participants.

Majority of the female participants reported that they did not work when they had diarrhoea (53.1 percent), did not work when they had cuts or wounds on their hands (34.4 percent) and did not work when they were suffering from a cold (50.0 percent) when compared to the male participants.

Among the female participants, 53.2 percent did not eat half-

cooked eggs (egg yolk is soft), 40.7 percent did not drink raw (unpasteurized) milk and 40.7 percent did not eat half cooked meat (inside is pink). The percentage of female participants who did not consume foods in the uncooked or partially cooked state was significantly higher than the percentage of male participants.

From the results of a study conducted by Park, it was recommended that more job specific and hands-on training material for restaurant employees should be developed and more continuous implementation of food safety training to be carried out (Park *et al.*, 2010) [11].

3.2. Comparison of total food safety practice scores of male and female food service personnel

Table 2: Comparison of total food safety practice scores of male and female food service personnel

Variable	N	Mean	SD	SE Mean	't'	Level of significance
Total practice score	Male	68	35.96	6.942	.842	2.511
	Female	32	31.69	9.730	1.720	

**-Significant at 1 percent level. *-Significant at 5 percent level. NS – Not Significant.

There was a significant difference at 1 percent level in the total food safety practice scores between males and females. The mean value for males was higher than that of the females. Regarding employee behaviour, female employees were superior to male employees (Ko, 2015) [6].

3.3. Knowledge Assessment of Food Safety Post the Awareness Programme

After conducting an awareness programme on food safety at the workplace of the participants, their knowledge on the same was evaluated.

Table 3: Percent distribution of food service personnel working in restaurants in Chennai city based on their food safety knowledge after the educational programme

Food safety knowledge assessment	Frequency	%	
It is safe to store raw meat, poultry and fish directly above ready-to-eat foods	True	92	92.0
	False	8	8.0
Dustbin lids can be kept open and near food preparation and service areas	True	100	100.0
	False	0	0
The danger zone is from 12°C to 55°C	True	84	84.0
	False	16	16.0
Wearing gloves while handling food prevents spread of germs	True	100	100.0
	False	0	0
Using separate cutting boards and knives for vegetables and meat prevents cross contamination	True	100	100.0
	False	0	0
One need not cook meat and eggs, and boil milk properly before consuming	True	100	100.0
	False	0	0
Food handlers need not shower or shave before working in the kitchen	True	100	100.0
	False	0	0
Three-sink dishwashing method should be used for the washing of utensils and cutlery	True	100	100.0
	False	0	0
Washing hands before preparing food and after using the toilet is a good hand hygiene technique that should be followed by food handlers	True	100	100.0
	False	0	0
Food that has been thawed can be refrozen and thawed again for later use	True	84	84.0
	False	16	16.0

All the participants (100 percent) answered correctly to the questions “Dustbin lids can be kept open and near food preparation and service areas”, “Wearing gloves while handling food prevents spread of germs”, “Using separate cutting boards and knives for vegetables and meat prevents cross contamination”, “One need not cook meat and eggs, and boil milk properly before consuming”, “Food handlers need not shower or shave before working in the kitchen”, “Three-sink dishwashing method should be used for the washing of utensils and cutlery” and “Washing hands before preparing food and after using the toilet is a good hand hygiene technique that should be followed by food handlers”.

Majority (92 percent) of the participants answered correctly to the question “It is safe to store raw meat, poultry and fish directly above ready-to-eat foods”. Eighty four percent of the participants answered correctly to the questions “The danger zone is from 12°C to 55°C” and “Food that has been thawed can be refrozen and thawed again for later use”.

The food handlers in a study conducted by Manes *et al.* (2016) [7] had an average overall food safety knowledge score of 49 percent, demonstrating substantial gaps that need to be addressed.

3.4. Mean scores for food safety knowledge of food service personnel

Table 4: Mean scores for food safety knowledge of food service personnel

Particulars	N	Minimum	Maximum	Mean	SD
Knowledge assessment on food safety	100	8	10	9.60	.696

The mean scores for knowledge assessment on food safety was 9.60 with a standard deviation of 0.696.

A study conducted by Park *et al.* (2010) [11] examined the extent of improvement of food safety knowledge and practice of employees through food safety training. Employee knowledge and practice of food safety were evaluated before and after the food safety training program. Employee knowledge showed a significant improvement in their score, increasing from 49.3 before the training to 66.6 after training.

4. Conclusion

Imparting of knowledge on food safety will lead to better attitude and practices of food safety. This will lead to higher standards of personal hygiene, and food preparation and service, thereby ensuring safe food for the consumers.

Therefore, a sound knowledge, positive attitude and healthy food safety practices is beneficial for food service personnel as it mainly helps to keep food borne illnesses at bay, which is very much needed in today's world.

5. Recommendations

Comparison of the knowledge, attitude and practice of food safety among food service personnel working in food service establishments in different cities in Tamil Nadu or India.

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7. Reference

1. Bryan FL. Hazard analysis critical control point: What the system is and what it is not. *Journal of Environmental Health*. 1991; 50(7):400-407.
2. Clayton DA, Griffith CJ, Price P, Peters AC. Food handlers' beliefs and self-reported practices. *International Journal of Environmental Health Research*. 2002; 12(1):25-39.
3. Egan MB, Raats MM, Grubb SM. A review of food safety and food hygiene training studies in the commercial sector. *Food Control*. 2007; 18(10):1180-1190.
4. Grujic R, Ivanovic M, Antonic B. Implementation of

quality management system in process of food production and food handling. *Quality of Life*. 2010; 1(2):114-120.

5. Jevšnik M, Hlebec V, Raspor P. Food safety knowledge and practices among food handlers in Slovenia. *Food Control*. 2008; 19(12):1107-1118.
6. Ko WH. Food suppliers' perceptions and practical implementation of food safety regulations in Taiwan. *Journal of Food and Drug Analysis*. 2015; 23(4):778-787.
7. Manes MR, Kuganatham P, Jagadeesan M, Laxmidevi M, Dworkin MS. A Step Towards Improving Food Safety in India: Determining Baseline Knowledge and Behaviours Among Restaurant Food Handlers in Chennai. *Journal of Environmental Health*. 2016; 78(6):18-25.
8. Manes MR, Liu LC, Dworkin MS. Baseline knowledge survey of restaurant food handlers in suburban Chicago: Do restaurant food handlers know what they need to know to keep consumers safe? *Journal of Environmental Health*. 2013; 76(1):18-26.
9. Michaels B, Keller C, Belvins M, Paoli G, Ruthman T, Todd E, Griffith CJ. Prevention of food worker transmission of foodborne pathogens: Risk assessment and evaluation of effective hygiene intervention strategies. *Food Service Technology*. 2004; 4:31-49.
10. Olsen SJ, Hansen GR, Bartlett L, Fitzgerald L, Sonder A, Manjrekar R, Riggs T, Kim J, Flahart R, Pezzin G. An outbreak of *Campylobacter jejuni* infection associated with food handler contamination; the use of pulsed-field gel electrophoresis. *The Journal of Infectious Diseases*. 2001; 183(1):164-167.
11. Park SH, Kwak TK, Chang HJ. Evaluation of the food safety training for food handlers in restaurant operations. *Nutrition Research and Practice*. 2010; 4(1):58-68.
12. Seaman P, Eves A. Food hygiene training in small to medium-sized care settings. *International Journal of Environmental Health Research*. 2008; 18(5):365-74.
13. Taylor E. HACCP in small companies: benefit or burden? *Food Control*. 2001; 12(4):217-222.
14. Worsfold D, Griffith CJ, and Worsfold P. A survey of environmental health officers' views of food hygiene training. *British Food Journal*. 2004; 106(1):51-64.