

**A Study to Assess the Knowledge, Attitude and Practice of Food Hygiene among Food Vendors****B. Prabakaran<sup>1\*</sup>, S. Srinivasan<sup>2</sup>**<sup>1</sup>Senior Assistant Professor, Department of Community Medicine, Madras Medical College, Chennai - 600003.<sup>2</sup>Associate Professor, Department of Community Medicine, Government Ariyalur Medical College & Hospital, Ariyalur-621713

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Conflict of interest: Nil

**Abstract:**

**Background:** One of the frequent problems in the sale of street foods is their actual and potential hazard caused by bacterial contamination. Investigations of outbreaks of food-borne disease throughout the world show that, in nearly all instances, they are caused by the failure to observe satisfactory standards in the preparation, processing, cooking, storing or retailing of food. Only few recent studies are available on KAP on food hygiene among street food vendors. Hence this study was conducted with the purpose to shed light on knowledge, attitude and practice on food hygiene among street food vendors in Urban population in South Indian City.

**Methodology:** This study was conducted as a cross sectional quantitative study design done among urban population in a south Indian city in Tamilnadu. Around 110 food vendors were interviewed and included in this study. The Questionnaire was developed keeping in mind the objectives of the study. It had 5 Parts including demographic characteristics, assessment of personal hygiene and assessment of Knowledge, Attitude and Practice on food hygiene.

**Results:** Only 16.3% had adequate level of knowledge on cooking process. 43.6% and 40% of the vendors had moderate and inadequate levels of knowledge on cooking process respectively. In our study 50% (55) of the study population had more positive attitude towards food hygiene. Also in our study, 75.4% (83) had good level of attitude in serving area hygiene among the study population. 76.3% (84) of the study population had good level of practice in food safety.

**Conclusion:** Food vendors should be adequately educated on the role of food in disease transmission as well as on rules of personal hygiene and approved practices in handling street food. Along with administrative support, Promotion of awareness and increasing understanding of food safety issues among the general public would pave path for better food handling techniques. This also should be promoted with health education and training programs.

**Keywords:** Food hygiene, KAP, Food vendors.

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**Introduction**

The term "street food" refers to a wide variety of ready-to-eat foods and beverages sold and sometimes prepared; in public places. The street vendors provide a source of inexpensive, convenient and comparatively nutritious food. They are conveniently situated, either in the living areas, near the workplaces or en route for thousands of commuters. [1,2]

One of the frequent problems in the sale of street foods is their actual and potential hazard caused by bacterial contamination. The conditions under which street vendors operate are often undesirable for both the preparation and the selling of food. Food-borne related illnesses have increased over the years, and negatively affected the health and

economic well-being of many developing nations. [3] Mishandling and disregard of hygienic measures on the part of the food handlers may enable pathogenic bacteria to come into contact with food and in some cases survive and multiply in sufficient numbers to cause illness in the consumer. [4] There is inadequate supervision and proper monitoring by food safety officers and the enforcement of food hygiene regulation is weak; lack of training in food safety and good hygiene practices is also rife among food handlers. [5]

Studies by FAO recorded poor knowledge, practices in food handling in the assessment of microbial contamination of food sold by vendors. The hands of food service employees can be

vectors in the spread of food borne diseases because of poor personal hygiene or cross-contamination. Poor personal hygiene frequently contributes to foodborne illness which indicates that food handlers' knowledge and handling practices needs to be improved. [4]

Investigations of outbreaks of food-borne disease throughout the world show that, in nearly all instances, they are caused by the failure to observe satisfactory standards in the preparation, processing, cooking, storing or retailing of food. [6] Only few recent studies are available on KAP on food hygiene among street food vendors. Hence this study was conducted with the purpose to shed light on knowledge, attitude and practice on food hygiene among street food vendors in Urban population in South Indian City.

### Methodology:

This study was conducted as a cross sectional quantitative study design done among urban population in a south Indian city in Tamilnadu. Raja Muthiah medical college and hospital (RMMCH) under Annamalai university located in this scenic place. This particular study carried out in urban Chidambaram. Street food vendors located in Chidambaram town were included in this study. Vendors mainly operate around bus stand, near temple and markets. These locations had the highest concentrations. The study was carried out for a period of 6 months. Food handlers who were not willing to participate were excluded from this study. Around 110 food vendors were interviewed and included in this study.

The Questionnaire was developed keeping in mind the objectives of the study. Initially an English version of the questionnaire was developed and questions were interviewed in local language for better understanding of food vendors. The questionnaire was adjusted accordingly to make it clear and include the most relevant aspects of food vending in Chidambaram. The final questionnaire had 79 questions and was divided into 5 Parts including demographic characteristics, assessment of personal hygiene and assessment of Knowledge, Attitude and Practice on food hygiene. The questionnaire was administered through face to face interviews.

Part I designed to determine the food handlers' "socio-demographic characteristics". Part II was framed for "assessment of personal hygiene" and included personal and observed habits of street food vendors which include 22 questions.

Part III of the questionnaire included 19 questions to determine the food handlers' "knowledge towards food safety". The score range was between 0 to 12. Part IV of the questionnaire consists of 12 questions to assess the "attitude of food handlers".

A 5-point rating Likert scale was used. The score range was between 12 to 60. The scores were converted to 100 points. Part V of the questionnaire was developed to identify "Practice on food safety". It includes 26 Questions to assess practice in kitchen and serving area, food safety and personal hygiene. Based on Practice scores, the vendors were divided into 2 categories viz., Good and Bad level of Attitude.

Ethical approval and clearance was obtained. Verbal informed consent was obtained from prospective respondents by explaining the purpose of the study and giving assurances about the confidentiality of the data. The data were captured in Microsoft excel spread sheets and imported into the statistical package for social sciences (SPSS), Version 24.

### Results

In our study 50 (45.5%) of the study participants belonged to the age group between 20 and 29 years followed by 30-39 years age group (n=34) and 23 vendors were more than 40 years age group. 75 (68.2%) were males. 74 (67.3%) studied up to higher secondary. 75 (68.2%) were married.

In our study 67 (61.1%) of the shops sold meals/breakfast and rest sold chat items. 46 (41.8%) had experience between one to five years, 36 had experience of 6-10 years and rest 23 had experience more than 10 years. 27 (24.5%) earned less than 30,000 rupees per month and rest earned more than 30000 per month.

### Knowledge

To start with knowledge on cooking process, majority 98.2% had knowledge that vegetables should be washed before cutting. 92.7% thought it can be washed more than once. 66.4% reported only tap water could be used for washing and 71.8% reported that drinking water should be used for cooking. 37.3 % thought food can be reheated as many times required and 45.5% thought oil can be reused again many times.

Majority 94.5% believed cleaning of cooking area should be performed. Only 29.1 % thought cleaning of service area was always required. Most (97.3%) thought food and water containers should be kept closed. Only 20.9% thought protection against insects and pests should be ensured. Majority 98.2% thought proper method of waste disposal was essential.

87.3 % believed it was important to wear head cap, slippers and Gloves. 92.7% thought care of wound was essential. 98.2% had Knowledge that frequent hand washing was must. 80.9% believed abstinence from work during illness. 87.3% thought using alcohol, smoking, chewing Betel nuts while cooking is prohibited. Majority 94.5% believed disease

could occur due to unhygienic Practices and 98.2% believed insects and cockroaches could cause food

Poisoning. Only 21.2 % thought food could transmit disease.

**Table 1: Distribution of Overall Knowledge Score**

Sl.	Scores (in %)	Level of Knowledge	Cooking Process	Kitchen Area	Personal Protection	Diseases	Food Hygiene
1	<50	Inadequate	44	2	5	6	2
			40%	1.80%	4.50%	5.50%	1.80%
2	50-80	Moderate	48	36	39	20	47
			43.60%	32.70%	35.40%	18.20%	42.70%
3	>80	Adequate	18	72	66	84	61
			16.30%	65.50%	60%	76.40%	55.40%

Only 16.3% had adequate level of knowledge on cooking process.43.6% and 40% of the vendors had moderate and inadequate levels of knowledge on cooking process respectively.

65.5 % had adequate level of knowledge regarding kitchen area hygiene. 60% of the food vendors had adequate level of knowledge on personal protection. 76.4% had adequate level of knowledge regarding diseases transmitted due to improper food handling. 55.4% (61) had adequate overall knowledge score on food hygiene.

**Attitude:** In our study, 73.6% of vendors strongly agree that safe food handling is their responsibility.70% strongly agree to the importance

of food storage.33.6% strongly agree to reheating and reuse of excess food.

Only 0.9% strongly disagrees to the cleanliness of kitchen. Majority (78.2%) strongly agree that personal hygiene and hand washing is essential. 40.9% agree to seek medical attention during illness.

Only 0.9% strongly disagree that diseases are transmitted through poor employee hygiene and another 0.9% strongly disagree to proper disposal of leftovers and garbage. In our study 50% (55) of the study population had more positive attitude towards food hygiene.

**Table 2: Distribution of Level of Attitude on Food Hygiene**

Sl. No.	Scores (in %)	Frequency (%)	Level of Attitude
1	<40	2 (1.8%)	Negative
2	40-50	53 (48.2%)	Positive
3	>50	55 (50%)	More Positive

### Practice

In our study 96.4% of vendors had practice of cleaning the kitchen area regularly. Only 10% don't wash vessels used for cooking .Majority (92.7%) closed food and water containers to prevent contamination.88.2% of vendors had separate bins for waste disposal and insects, pests were absent in and around majority (86.4%) of the street food vending sites.90.9% used tap water for cooking. Majority (72.7%) of shops, hand washing area is provided. Only 39.1% of food vending sites was free from dust and pollution. Also in our study 80% (88) of the participants had good level of practice

on food hygiene in kitchen area. 89.1% (98) of study Participants maintained clean and tidy serving area and 90.9% (100) regularly cleaned serving dishes. 90% (99) practiced hand washing and 81.8% (90) practiced proper waste disposal. 75.5% (83) had no measures to avoid insects and pest disturbances.

Among the participants 84.5% (93) practiced the habit of covering the food items properly. 66.4%(73) had the practice of washing vegetables prior to chopping and 59.1% (65) did not practice long time storage of chopped and cooked food.

**Table 3: Distribution of Level of Practice on Food Hygiene**

Sl. No.	Level of practice	Serving Area	Food Safety
1	Bad	27	26
		24.50%	23.70%
2	Good	83	84
		75.50%	76.30%

Also in our study, 75.4% (83) had good level of attitude in serving area hygiene among the study population. 76.3% (84) of the study population had good level of practice in food safety.

**Table 4: Correlation Analysis of Knowledge, Attitude and Practice on Food Hygiene**

	Knowledge Cooking Process	Knowledge Kitchen area	Knowledge Personal Protection	Knowledge Disease	Attitude
Attitude	-0.035	0.397**	0.301**	0.537**	1
Practice Kitchen Area	-0.226	0.108	0.091	0.116	0.286**
Practice Serving Area	-0.060	-0.029	-0.003	-0.128	0.090
Practice Food Safety	-0.035	-0.113	-0.281**	-0.210*	-0.118
Practice Personal Hygiene	0.058	-0.295**	0.060	-0.277**	-0.079

Attitude of the study population is positively correlated with knowledge of kitchen area hygiene, personal protection and diseases caused due to unhygienic food practices, whereas it is negatively correlated with knowledge on cooking area hygiene. Attitude is positively correlated with practice of kitchen area and serving area hygiene but negatively correlated with food safety and personal hygiene practices.

### Discussion

This was a cross sectional study conducted to assess knowledge, attitude and practice regarding food hygiene among street food vendors in urban Chidambaram. Majority of the population arrives for livelihood and belongs to low-socio-economic background. Street food plays an integral part in their daily diet, as they are affordable and easily available.

### Knowledge

Majority 98.2% of the study participants in the present study had knowledge that vegetables should be washed before cutting and 92.7% thought it can be washed more than once.

66.4% of the study participants in the study reported only tap water could be used for washing and 71.8% reported that drinking water should be used for cooking. 37.3 % of the study participants thought food can be reheated as many times required and 45.5% thought oil can be reused again many times. Only 16.3% of the study participants in this study had adequate level of knowledge on cooking process.

Majority, 94.5% of the study participants in the study believed cleaning of cooking area should be performed and only 29.1 % thought cleaning of service area was required. Most (97.3%) of the study participants thought food and water containers should be kept closed. Similarly, Akabanda et al, states that proper cleaning of the instruments/utensils were agreed by 86.4% of the study participants. [7]

Only 20.9% of the participants in this study thought protection against insects and pests should be ensured. Majority, 98.2% of the study participants thought proper method of waste disposal was essential and 65.5 % of the study participant had

adequate level of knowledge regarding kitchen area hygiene. In our study 87.3 % of the participants in this study believed it were important to wear head cap, slippers and Gloves. Contrastingly in the study by Lues et al, none of the food handlers indicated that they wore gloves.8 Also 92.7% of the study participants thought care of wound was essential. 98.2% of the study participants had Knowledge that frequent hand washing was must but in the study by Lues et al, only two (4%) of the study participants reported washing their hands with soap and water, while the rest only used water. [8]

Majority 94.5% of the study participants in this study believed disease could occur due to unhygienic Practices. Similarly in the study done by Iwu et al, majority (85.6%) of the study participants knew that lack of good food hygiene practice could cause disease [9]. Mohd zain et al, in their study states that most of the food handlers had adequate knowledge about mode of transmission (82.1%) and mode of prevention (83.3%) of food-borne diseases. [10]

55.4% (61) of the study participants had adequate overall knowledge score on food hygiene among study population. Similarly, in the study by Iwu et al, the aggregate score of the level of knowledge showed that 81% of the respondents had a good level of food hygiene knowledge It was observed that knowledge of the food vendors with regard to food hygiene was adequate for a majority of the respondents (55.4% ) in the present study, and this observation was similar to some other studies done by Afolaranmi et al [11]. But on the contrary, majority of the food vendors had poor level of food hygiene knowledge in studies done by Tesseme et al [12]

It is tempting to say that the level of good knowledge among the majority of food vendors in the present study could be related to the fact that a majority of the respondents had either a higher secondary level of education, which could have formed the basis for increased comprehension of food hygiene information and therefore improved knowledge. According to Kalua et al [13], knowledge, positively influences attitude formation and in other words, attitude can be said to be a reflection of knowledge which is linked to personal beliefs and previous personal experiences and this

probably could explain the observation in the present study where a majority of the respondents had adequate level of knowledge (55.4%) and also an accompanying good level of positive attitude (80%) towards food hygiene.

### Attitude

In the present study, 73.6% of vendors strongly agree that safe food handling is their responsibility and 70% of the study participants strongly agree to the importance of food storage. 33.6% participants in the present study strongly agree to reheating and reuse of excess food and only 0.9% of the study participants strongly disagree to the cleanliness of kitchen.

Nearly 40.9% of the study participants in the present study agree to seek medical attention during illness. In this study, only 0.9% of the study participants strongly disagree that diseases are transmitted through poor employee hygiene and another 0.9% of the study participants strongly disagree to proper disposal of leftovers and garbage.

In the study by Zain et al, Attitude towards food-borne diseases was good almost in all aspects like awareness of seriousness, belief as a curable disease, belief as a preventable disease and belief of the importance of training program except in awareness of personal hygiene. 50% (55) of the participants in the present study had more positive attitude towards food hygiene.

In the study by Murat bas et al, the attitude scores toward foodborne diseases prevention and control was poor ( $44.2 \pm 13.2$ )<sup>14</sup>. But in the present study, only 1.8% of the study participants were with negative attitude, which is similar to the study done by Iwu et al, where majority of the respondents (71%) had a good level of positive attitude towards food hygiene. [9]

### Practice

According to Aiken et al, practices refer to the ways in which people demonstrate their knowledge and attitude through their actions. [15] In this study, 96.4% of the study participants had practice of cleaning the kitchen area regularly. Only 39.1% of food vending sites was free from dust and pollution. Around 80% (88) of the participants had good level of practice on food hygiene in kitchen area.

89.1% (98) of study Participants maintained clean and tidy serving area and 90.9% (100) of the study participants regularly cleaned and closed the serving dishes. This is similar to study done by Okojie et al, which reported a higher proportion, 259 of the observed vending sites clean. [16]. Two hundred and seventy were observed to vend food from containers with cover while 31 sold food to

customers from containers without cover. Iwu et al, in their study revealed, about half of the respondents (49.5%) rinse the plate with water once after use. [9]

In this study, 90% (99) of the study participants practiced hand washing and 81.8% (90) of the study participants practiced proper waste disposal. In the study by Iwu et al, majority of respondents had clean wash hand basin with soap and towel with adequate supply of water and at the same time maintaining a clean service table and surrounding. [9]

In present study, 75.5% (83) of the study participants had no measures to avoid insects and pest disturbances. In study by Okojie et al, the number of food vending sites with flies was 118 (41.3%), and with rats/cockroaches were 7 (2.4%). [16]. Iwu et al, states that majority of the respondents protected both prepared (62.5%) and stored (59.5%) food from flies and rodents. [9]

In this study, 75.4% (83) of the study participants had good level of attitude in serving area hygiene among the study population. 76.3% (84) of the study participants in the present study had good level of practice in food safety. But to the contrast, in the study by Murat bas et al, the food safety practice scores of food handlers were very low ( $48.4 \pm 8.8$ )<sup>14</sup>. In our study only 23.7% of the study participants were with bad level of practice on food safety. In this study, the level of practice on food safety is good in most respondents.

### Conclusion

With rapidly increasing number of food vendors especially in the urban areas and their access to a rapidly growing consumer base, there is a need for increased vigilance and control of the food vendor's practices through the enforcement of regulations, proper hygienic practices and food safety control measures by local authorities that are empowered to perform their functions without constraints, with the aim of preventing and controlling the potential risks and spread of disease.

Making safe food a top priority to prevent foodborne diseases, protect the health of your family and community, and being confident about the safety of the food you eat is utmost important. Food vendors should be adequately educated on the role of food in disease transmission as well as on rules of personal hygiene and approved practices in handling street food. Along with administrative support, Promotion of awareness and increasing understanding of food safety issues among the general public would pave path for better food handling techniques. This also should be promoted with health education and training programs.

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