



A FOOD SAFETY KNOWLEDGE, ATTITUDE AND PRACTICES OF STREET FOOD VENDORS AND ASSOCIATED FACTORS IN URBAN KAKINADA

Community Medicine

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ABSTRACT

Background: Street food consumption is increasing worldwide due to its affordability and convenience. Street vending also serves as an important source of livelihood for the urban poor. However, the safety of street foods remains a concern because of frequent foodborne disease outbreaks. As food handlers play a key role in maintaining food hygiene, understanding their practices is essential. Hence, the present study was undertaken to assess the food safety knowledge, attitudes, and practices of street food vendors in Kakinada and to identify factors associated with their food safety practices. A cross-sectional study was conducted in 2024 among 120 street food vendors selected by convenience sampling. The sample size was calculated using the formula Z^2pq/l^2 , taking a prevalence of 81.1%. Data were collected using a pre-tested structured questionnaire and analyzed using MS Excel and SPSS version 21. Results showed that males constituted 71.6% of participants. About 93% were aware that hand hygiene prevents foodborne diseases. Although knowledge regarding utensil washing was high, unsafe practices such as uncovered food items were common. The study highlights the need to improve hygiene practices among street food vendors.

KEYWORDS

Street food vendors, Food safety, Food hygiene.

INTRODUCTION

Food-borne infections remain a major global public health challenge, with unsafe food causing an estimated 600 million illnesses and 420,000 deaths annually, of which children account for nearly one-third.(1) The associated morbidity and mortality are largely preventable through effective food safety measures. According to the Food and Agriculture Organization, street food refers to ready-to-eat foods and beverages prepared or sold in public places. Street foods have gained widespread popularity due to their affordability, convenience, accessibility, and role in providing livelihood opportunities, particularly in developing countries.(2)

With changing lifestyles and time constraints, increasing numbers of people depend on street foods, highlighting the importance of safe food handling practices. However, street food vending often occurs in open environments prone to contamination. Many vendors belong to lower socioeconomic groups with limited education, and inadequate hygiene practices among food handlers pose significant risks for the transmission of food-borne infections.(3) Additionally, the effectiveness of regulatory oversight and vendor training remains inconsistent in many developing settings.

Food handlers play a critical role in ensuring food safety, and assessing their knowledge, attitudes, and practices (KAP) helps identify gaps requiring intervention. Kakinada, a rapidly developing urban center in Andhra Pradesh, has experienced a rise in street food consumption due to urbanization, migration, and expansion of informal food markets. Understanding the food safety KAP of street food vendors in this

region is essential for designing targeted interventions and informing policymakers to improve public health outcomes.

MATERIALS AND METHODS

A cross-sectional analytical study was conducted in the urban area of Kakinada, Andhra Pradesh, India, from June to August 2024. The study population comprised street food vendors involved in the preparation and sale of cooked foods. Vendors who provided written informed consent were included. The sample size was calculated using the formula $n = 4pq/l^2$, assuming a prevalence of good food safety practices of 81.1% (2) and an allowable error of 7%, yielding a sample size of 120. Convenience sampling was used to recruit participants from different locations across the city.

Data were collected using a structured, pre-tested questionnaire adapted from a validated tool, containing 15 items each on knowledge, attitude, and practices related to food safety. Responses were scored and categorized as good ($\geq 50\%$) or poor ($< 50\%$). The questionnaire was administered in Telugu through face-to-face interviews. Data were analyzed using SPSS version 21. Chi-square test was applied to assess associations, with $p < 0.05$ considered statistically significant.

RESULTS

The study results of 120 street food vendors in Kakinada showed that majority of the participants were male (71.6%), most of them were Hindus. 41.67% were illiterates. The sociodemographic details were provide in the (Table:1)

Table: 1 Socio-demographic Profile Of The Study Participants

VARIABLE	CATEGORIES	FREQUENCIES (n) (%)	PERCENTAGE (%)
Age	21-30	30	25.00%
	31-40	43	35.83%
	>41	47	39.17%
Gender	Male	86	71.67%
	Female	34	28.33%
Religion	Hindu	98	81.67%
	Christian	13	10.83%
	Muslim	9	7.50%
Education	Illiterate	50	41.67%
	Primary school	33	27.50%
	Secondary school	35	29.17%
	Diploma and above	2	1.67%

Marital status	Single	29	24.17%
	Married	83	69.17%
	Divorced	5	4.17%
	widowed	3	2.50%
Food vending experience	<2 years	11	9.17%
	2-5 years	40	33.33%
	>5 years	69	57.50%
Food safety training	No	55	45.83%
	Yes	65	54.17%
Monthly income	< 10000	2	1.67%
	10000-20000	18	15.00%
	>20000	100	83.33%

Table :2 Assessment Of Knowledge Of Study Participants On Food Safety.

S.No.	Knowledge questions	Frequency (n=120)	
		NO	YES
1	Does hand washing before handling raw food reduce the risk of food contamination?	2 (1.67%)	118 (98.33%)
2	Does washing utensils with detergent or soap reduce food contamination?	0 (0.00%)	120 (100%)
3	Does personal protective equipment have a role in reducing food contamination?	3 (2.50%)	117 (97.50%)
4	Those of the food vendors who has cut on their hands could not touch the foods without using gloves?	6 (5.00%)	114 (95.00%)
5	Does dressed neatly is crucial while cooking?	2 (1.67%)	118 (98.33%)
6	When cooking, using clean fingernails is important for personal hygiene	7 (5.83%)	113 (94.17%)
7	Is wearing a cape while working and selling meals on the street considered personal hygiene?	9 (7.50%)	111 (92.50%)
8	Use of apron during food preparation and selling is part of personal hygiene?	9 (7.50%)	111 (92.50%)
9	Does the vulnerable individuals are more threatening of food poisoning?	7 (5.83%)	113 (94.17%)
10	Does typhoid fever count among the food-borne diseases?	5 (4.17%)	115 (95.83%)
11	Does Salmonella have the potential to be transmitted by a food-borne pathogen?	40 (33.33%)	80 (66.67%)
12	Does Hepatitis A virus can be transmitted by food contamination?	56 (46.67%)	64 (53.33%)
13	Does proper sanitation and cleaning of utensils decrease the risk of food contamination?	12 (10.00%)	108 (90.00%)
14	Does re-heating the cooked foods can decrease food contamination?	33 (27.50%)	87 (72.50%)
15	Do you know raw and cooked foods could be stored separately to reduce contamination?	5 (4.17%)	115 (95.83%)

Table :3 Assessment Of Attitude Of Study Participants On Food Safety.

S.No.	Attitude questions	Frequency (n=120)	
		NO	YES
1	Do you think that well-cooked foods are free of pathogens?	6 (5.00%)	114 (95.00%)
2	Can proper hand hygiene prevent foodborne disease?	8 (6.67%)	112 (93.33%)
3	Do you have a moral obligation to use clean utensils at all times?	22 (18.33%)	98 (81.67%)
4	Do you think improper storage of foods may be hazardous to your health?	12 (10.00%)	108 (90.00%)
5	Do you think safe food handling is an important part of your job responsibilities?	11 (9.17%)	109 (90.83%)
6	Do you think learning more about food safety is important to you?	8 (6.67%)	112 (93.33%)
7	Do you believe personal protective equipment and clothes reduce the risk of food contamination?	7 (5.83%)	113 (94.17%)
8	Do you think food vendors with wounds or cuts on their hands should not handle food?	6 (5.00%)	114 (95.00%)
9	Would you separate raw foods from cooked foods during storage?	5 (4.17%)	115 (95.83%)
10	Do you wear an apron and cap while preparing and serving the food?	82 (68.33%)	38 (31.67%)
11	Do you think food vendors can be a source of food-borne diseases?	26 (21.67%)	94 (78.33%)
12	Does paint fingers can contaminate the food?	12 (10.00%)	108 (90.00%)
13	Do you wear a face mask to reduce the risk of food contamination?	74 (61.67%)	46 (38.33%)
14	Do you check your health status regularly?	89 (74.17%)	31 (25.83%)
15	Did an environmental health practitioner checked or inspect regularly?	68 (56.67%)	52 (43.33%)

Table :4 Assessment Of Practices Of Study Participants On Food Safety

S.No.	Practice questions	Frequency (n=120)	
		NO	YES
1	Did you prepare food on-site?	13 (10.83%)	107 (89.17%)
2	Is there an adequate hand washing facilities available?	69 (57.50%)	51 (42.50%)
3	Are an adequate waste (like left-over food, wastewater etc.) disposal facilities available?	40 (33.33%)	80 (66.67%)
4	Did you cover the food items?	80 (66.67%)	40 (33.33%)
5	Did you wear accessories like bracelets and rings while cooking food?	49 (40.83%)	71 (59.17%)
6	Do you clean the working clothes?	33 (27.50%)	87 (72.50%)
7	Do you keep your hands and nails clean?	15 (12.50%)	105 (87.50%)
8	Does the vendor handle ready-to-eat food with bare hands?	26 (21.67%)	94 (78.33%)
9	Do you have a regular medical check-up?	81 (67.50%)	39 (32.50%)
10	Does the vending stall have protected from wind, sun and dust?	79 (65.83%)	41 (34.17%)
11	Does vendors with wounds/symptoms and cutaneous lesions are excluded from food preparation task?	29 (24.17%)	91 (75.83%)
12	Do you wear an apron while working and selling?	99 (82.50%)	21 (17.50%)
13	Do you wear a cape while working and selling?	103 (85.83%)	17 (14.17%)
14	Do you wear a mask while working and sales	105 (87.50%)	15 (12.50%)
15	Do you wash your hands with soap before and after cooking?	37 (30.83%)	83 (69.17%)

Table 5: Association Of Food Safety Practices With The Independent Factors Among The Street Food Vendors (n=120)

VARIABLE	CATEGORY	FOOD SAFETY PRACTICES			P -value	Chi-square Value
		POOR	GOOD	TOTAL (n=120)		
AGE	21-30	21(70%)	9(30%)	30(100%)	0.39	6.496
	31-40	18(41.9%)	25(58.1%)	43(100%)		

	>41	29(61.7%)	18(38.3%)	47(100%)		
GENDER	Male	47(54.7%)	39(45.3%)	86(100%)	0.479	0.502
	Female	21(61.8%)	13(38.2%)	34(100%)		
RELIGION	Hindu	52(53.1%)	46(46.9%)	98(100%)	0.023	7.443
	Christian	7(53.8%)	6(46.2%)	13(100%)		
	Muslim	9(100%)	0 (0%)	9(100%)		
EDUCATION	Illiterate	34(68%)	16(32%)	50(100%)	0.057	7.001
	Primary school	18(54.5%)	15(45.5%)	33(100%)		
	Secondary school	16(45.7%)	19(54.3%)	35(100%)		
	Diploma and above	0(0%)	2(100%)	2(100%)		
MARITAL STATUS	Single	18(62.1%)	11(37.9%)	29(100%)	0.523	2.321
	Married	45(54.2%)	38(45.8%)	83(100%)		
	Divorced	4(80%)	1(20%)	5(100%)		
	Widowed	1(33.3%)	2(66.7%)	3(100%)		
FOOD VENDING EXPERIENCE	<2 years	6(54.5%)	5(45.5%)	11(100%)	0.523	2.321
	2-5 years	24(60%)	16(40%)	40(100%)		
	>5 years	38(55.1%)	31(44.9%)	69(100%)		
FOOD SAFETY TRAINING	No	37(67.3%)	18(32.7%)	55(100%)	0.031	4.651
	Yes	31(47.7%)	34(52.3%)	65(100%)		
MONTHLY INCOME	<10000	0(0%)	2(100%)	2(100%)	0.001	11.113
	10000-20000	16(88.9%)	2(11.1%)	18(100%)		
	>20000	52(52%)	48(48%)	100(100%)		
KNOWLEDGE	POOR	2(100%)	0(0%)	2(100%)	0.212	1.555
	GOOD	66(55.9%)	52(44.1%)	118(100%)		
ATTITUDE	POOR	8(100%)	0(0%)	8(100%)	0.010	6.555
	GOOD	60(53.6%)	52(46.4%)	112(100%)		

Out of 120 participants 98.33% had good knowledge regarding food safety, 93.33% demonstrated a positive attitude toward hygienic food handling. Only 43.33% exhibited good food safety practices (Figure 1).



Fig 1: Distribution Of Study Subjects Based On Their Overall Knowledge, Attitude And Practices On Food Safety (n=120)

Results showed that the safe food handling practices were significantly associated with religion, food safety training, monthly income and attitude of the vendors. The association between food safety practices and various sociodemographic and occupational factors was assessed using the Chi-square test, were shown in the below table (Table – 2).

DISCUSSION

The present study among street food vendors in Kakinada identified a pronounced gap between knowledge, attitude, and food safety practices. Although most vendors possessed good knowledge of food safety and foodborne infections (98.33%) and showed positive attitudes toward food safety (93.33%), good food safety practices were observed in only 43.33% of participants. Similar discrepancies have been reported in studies from Maharashtra(5), Kolkata(4), Ghana(6), Addis Ababa(7), and Bangladesh. (3)

Food safety practices were significantly associated with religion, prior food safety training, monthly income, and attitude toward food safety, indicating the influence of cultural norms, economic capacity, and structured training on hygienic behavior. Vendors who had received training and those with higher income demonstrated better practices, consistent with findings from Northern Ethiopia and Nigeria.(8)

General hygiene knowledge was high, with 100% of vendors aware that washing utensils with soap or detergent reduces contamination, and over 95% recognizing the importance of hand hygiene, personal protective equipment, neat dressing, and clean fingernails. However, gaps in pathogen-specific knowledge persisted, as only 66.7% identified Salmonella and 53.3% recognized Hepatitis A as foodborne,

similar to reports from Ghana(6) and Nigeria.(8)

Despite positive attitudes—95% believing well-cooked food is safe and 93.3% acknowledging the role of hand hygiene—protective practices were poorly implemented. Only 31.7% used aprons or caps, 38.3% used masks, and 25.8% underwent regular health check-ups. Infrastructure constraints were evident, with only 42.5% having adequate handwashing facilities, though waste disposal was relatively better (66.7%). Overall, high awareness did not translate into practice, largely due to infrastructural limitations, resource constraints, and weak regulatory oversight, reflecting trends in other low- and middle-income settings.(9)(10)(11)(12).

CONCLUSION

The study shows that most street food vendors in Kakinada had good knowledge and positive attitudes toward food safety, but only a small proportion followed proper hygienic practices, indicating a clear gap between awareness and behavior that increases the risk of foodborne illnesses. Education level and prior food safety training were significantly associated with better practices, while age, gender, and years of experience showed no significant association. These findings highlight the need for targeted, practical interventions to improve safe food handling behaviors.

RECOMMENDATIONS

Regular surveillance by food safety officers, mandatory vendor training, awareness campaigns, licensing and certification, incentives for good hygiene, and provision of basic infrastructure such as clean water, waste disposal, and covered carts are essential to promote safe food handling practices among street food vendors.

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