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Street Food Safety: A Study on Hygiene Practices and Risk Factors among Vendors

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ABSTRACT

Background: Street food plays a crucial role in urban life, providing affordable and accessible meals in developing countries. However, food safety and hygiene concerns arise due to inadequate infrastructure, poor sanitation, and limited knowledge among street food vendors (SFVs). Ensuring proper food handling and hygiene practices is essential for safeguarding public health. This study aimed to assess the knowledge, attitudes, and practices (KAP) regarding food service, food safety and hygiene among SFVs of Surat City

Methods: A cross-sectional survey was conducted among 400 food handlers to evaluate their demographic characteristics, hygiene practices, inventory management, food preparation, waste disposal, and contamination prevention. Data were collected using a structured questionnaire and analysed using descriptive statistics.

Results: The results showed a predominantly male workforce (77.3%), mainly aged 27-35 years (43.8%), with primary (44.5%) or secondary (42.5%) education. Personal hygiene practices showed compliance in areas such as clean clothing (70.7%) and hand hygiene (65.7%), but gaps existed in hair covering (57.2%) and jewellery use (51.2%). Inventory management practices indicated supplier-based procurement (36.5%) and digital payments (Paytm: 33.2%, Google Pay: 21.2%). Taste (61.7%) was the primary factor influencing food preparation, with sunflower oil (38%) being the most commonly used. Waste disposal was mostly through bins (76.8%), though open disposal (13.2%) remained. Contamination prevention was widely practiced, including food covering (87.2%) and post-customer cleaning (74.7%).

Conclusion: The findings suggested a general awareness and adherence to food safety practices among food handlers. However, areas such as hand hygiene after handling money, complete hair covering, and proper waste disposal require targeted interventions. Strengthening training programs and enforcing stricter regulations can enhance food safety compliance, ultimately reducing the risk of contamination and foodborne illnesses.

Keywords: *Street Food, Food Vendors, Food Safety, Hygiene Practices, Knowledge, Attitudes, Consumers*

INTRODUCTION

Street food is an integral part of urban culture, offering affordable and convenient meals to millions worldwide. It includes a wide variety of ready-to-eat foods and beverages, as well as homemade items consumed in public spaces without additional preparation (Singh et al., 2016). Street food plays a significant socioeconomic role, meeting the food and nutritional needs of urban consumers, particularly those from lower- and middle-income groups. Additionally, it provides a vital source of livelihood and food security for a considerable portion of the population in many developing nations. Vendors and hawkers commonly sell these foods in streets, marketplaces, and other public areas (Khairuzzaman et al., 2014). Due to its affordability and accessibility, an estimated 2.5 billion people consume street food daily. However, concerns regarding food safety and hygiene practices among street vendors have raised significant public health challenges. Contaminated street food can lead to foodborne illnesses, posing risks to consumers and impacting overall community health.

One of the key issues affecting street food safety is the lack of essential infrastructure and equipment, such as proper storage facilities, food reheating devices, refrigeration, and waste disposal systems. The absence of these basic facilities increases the risk of food contamination and makes it difficult for vendors to adhere to safe food handling practices. Limited knowledge about food safety, coupled with inadequate infrastructure, further exacerbates the risks associated with street-vended foods (Nkosi & Tabit, 2021).

This study aims to assess the knowledge, attitude and practices regarding food service, hygiene, and sanitation among street vendors. Understanding these aspects is essential for developing effective interventions and policies that enhance food safety while ensuring the sustainability of street vending businesses. The findings of this research will provide valuable insights into improving hygiene standards and promoting public health.

RESEARCH METHODOLOGY

The study employed a cross-sectional survey to assess the knowledge, attitude, and practices (KAP) of street food vendors (SFVs) regarding food safety and hygiene in Surat city. The study was conducted in various key street food vending areas of Surat city. The study recruited 400 participants who were willing to join the study. Participants completed an informed consent form to enrol in the study. Data were collected using a pre-structured questionnaire on knowledge, attitude and practices among street vendors. The survey focused on demographic characteristics, hygiene behaviours, procurement and storage methods, food preparation techniques, and waste management practices. Statistical analysis was applied to derive valuable conclusions.

RESULTS & DISCUSSION

1. Demographic Distribution of Respondents

Table 1 showed the demographic detail of participants. The results revealed a predominant male respondent comprising 77.3%, with a notable concentration in the age group of 27-35 years (43.8%). Most respondents possess primary (44.5%) and secondary (42.5%) levels of education. Additionally, a significant portion of the sample is married (71.2%) and falls within the middle-income bracket of ₹20,000-₹25,000 (43.7%). Work experience is primarily concentrated in the 3-10 years range (55%), while only a small percentage of respondents have over 20 years of experience (3.5%). These demographic trends indicate a predominantly male, relatively young, moderately educated, and earning a middle income, with strong representation from individuals in the early to mid-stages of their careers. This distribution reflects the socio-economic characteristics of the study population but also highlights certain limitations, such as the underrepresentation of female, older, and high-income participants, which may impact the broader applicability of the findings.

Table 1 Demographic Distribution of Respondents

Parameters	Response options	Frequency (n=400)	Percentage (%)
Gender	Male	309	77.3
	Female	91	22.8
Age group	< 26 years	47	11.8
	27 – 35 years	175	43.8
	36 – 45 years	160	40
	> 45 years	18	4.5
Education Level	Primary	178	44.5
	Secondary	170	42.5
	Tertiary	35	8.7
	No formal education	17	4.3
Marital Status	Married	285	71.2
	Unmarried	68	17
	Divorced	28	07
	Separated	19	4.8
Monthly Income	₹10,000 - ₹15,000	30	7.5
	₹15,000 - ₹20,000	106	26.5
	₹20,000 - ₹25,000	175	43.7
	₹25,000 - ₹30,000	89	22.2
Work experience years	< 3 years	74	18.5
	3 – 10 years	220	55
	11 – 20 years	92	23
	> 20 years	14	3.5

2. Practice Regarding Personal Hygiene

The findings showed in table 2 highlighted essential hygiene practices among food handlers, noting both strengths and areas for improvement. A significant majority of respondents follow key hygiene protocols: 70.7% wear clean clothing, 65.7% maintain proper hand hygiene, and 64.5% ensure they are in good health while working. Additionally, 67% reported keeping work surfaces clean and free of personal items. However, certain aspects need more attention. Only 57.2% fully cover their hair during food handling, leaving 42.7% at risk of contamination. Additionally, 51.2% wear rings or bracelets, which can harbour bacteria. Smoking (48.2%) and handling money (48.7%) without subsequent handwashing are also concerning. While

61.7% keep their nails short and clean, 38.2% do not, presenting additional hygiene risks. These findings indicate that while there is general awareness of hygiene, stricter enforcement and improved training programs are needed to ensure full compliance with food safety standards.

Table 2 Practice Regarding Personal Hygiene

S.No.	Question	Yes	No
1.	Cover their hair completely during food handling.	229 (57.2)	171 (42.7)
2.	Wear appropriate and clean clothes.	283 (70.7)	117 (29.2)
3.	Never wear rings or bracelets.	195 (48.7)	205 (51.2)
4.	Never smoke in the work place.	207 (51.7)	193 (48.2)
5.	Have their nails short and cleans.	247 (61.7)	153 (38.2)
6.	Never spit, or sneeze in the work place.	219 (54.7)	181 (45.2)
7.	Be healthy during the work.	258 (64.5)	142 (35.5)
8.	Keep their hands clean.	263 (65.7)	137 (34.2)
9.	Clean surfaces and free of personal items.	268 (67)	132 (33)
10.	Does not handle money during the activity, and when handle wash hands before handling food.	205 (51.2)	195 (48.7)

***** Values in parenthesis are percentage (%)

3. Practice regarding inventory management

Procurement of Raw Materials: The results showed in table 3 that raw material procurement mainly occurs through suppliers (36.5%) and local stores (26.7%), followed by vegetable markets (15%) and online sources (8%). This indicates a strong preference for traditional, local procurement methods, with a growing adoption of online purchasing. Most respondents buy as needed (44.5%) or weekly (30.5%), purchasing 15–20 kg of perishables weekly (42.2%) indicating moderate to large-scale purchases. Payment preferences reflect a shift towards digital transactions, with Paytm (33.2%) and Google Pay (21.2%) being the most commonly used methods. The primary factors influencing purchasing decisions are overall quality (46.7%) and price (31.7%), while appearance (12%) and expiration date (9.5%) are less significant. These trends suggest that consumers prioritize cost-effective solutions while maintaining product quality, with increasing reliance on digital payment methods.

Storage Methods and Practices:

Respondents reported diverse storage methods, with cupboards (39.5%) and plastic containers (39%) being the most common, followed by storerooms (11%) and refrigerators (10.5%). A significant proportion of respondents clean their storage areas weekly (37.2%) or daily (30%), demonstrating a commitment to cleanliness. Cleanliness (35%) and stockroom organization (33%) are the most critical factors in storage, while 24.2% of respondents consider all factors equally important.

Inspection and Quality Control: Quality control is maintained through regular inspections, mostly twice a week (34.5%).or weekly (26.5%). Additionally, 38.2% of respondents utilize all three storage methods—dry, refrigerated, and frozen—while dry storage alone is the least used (14.7%), suggesting that perishable items are a key focus, necessitating stricter maintenance conditions.

Table 3 Practice regarding inventory management

Parameters	Response options	Frequency (n=400)	Percentage (%)
Procurement of Raw Materials			
Raw Material Purchases	Provisional store	60	15
	Local Store	146	36.5
	Vegetable Market	55	13.7
	Supplier	107	26.7
	Online	32	08
Frequency of Purchase	When old stock finishes	44	11
	As per need	178	44.5
	Weekly	122	30.5
	Daily	56	14
Amount of Perishable Raw Materials Purchased Weekly	5-10 kg	39	9.7
	10-15 kg	105	26.2
	15-20 kg	169	42.2
	20-25 kg	87	21.7
Payment methods	Cash	88	22
	Google pay	85	21.2
	Paytm	133	33.2

	Borrowed/Pending Payments	94	23.5
Factors Considered in buying	Appearance	48	12
	Price	127	31.7
	Overall quality	187	46.7
	Expiration date	38	9.5
Storage Methods and Practices			
Storage of Raw Materials	Cupboard	42	10.5
	Plastic Container	44	11
	Refrigerator	158	39.5
	Store Room	156	39
Cleaning Frequency of Storage Areas	Daily	120	30
	Weekly	149	37.2
	Twice a Month	100	25
	Thrice a Month	31	7.7
Factors Considered While Storing	Cool Temperature	31	7.7
	Cleanliness	140	35
	Stock Room Organization	132	33
	All	97	24.2
Inspection and Quality Control			
Frequency of Inspecting Stored Materials	Daily	68	17
	Once a Week	106	26.5
	Twice a Week	138	34.5
	Occasionally	88	22
Types of Food Storage	Dry Storage	59	14.7
	Refrigerated Storage	93	23.2
	Frozen Food Storage	95	23.7
	All Storage Methods Used	153	38.2

4. Practices related to Food Preparation

The result in table 4 revealed that taste is the top priority in food preparation (61.7%), surpassing cost, time, and nutrition. Health concerns influence 9.5%, while cost and time efficiency account for 16.7%. Sunflower oil is the most preferred (38%), followed by palm olein (15.5%) and peanut oil (14.5%), with canola (0.25%) and coconut oil (8.5%) reflecting regional dietary habits. Sunflower oil's popularity stems from its health benefits and neutral taste. In cooking techniques, 71.5% follow a combined approach of washing, peeling, and cutting, while individual steps like peeling (10.2%) and cutting (11.2%) are less common.

Table 4 Practices related to Food Preparation

Parameters	Response options	Frequency (n=400)	Percentage (%)
Essential Factors in Food Preparation	Taste	247	61.7
	Nutritional Value	38	9.5
	Cost & Time	67	16.7
	All Factors	48	12
Type of Cooking Oil Used	Peanut Oil	58	14.5
	Canola Oil	01	0.25
	Coconut Oil	34	8.5
	Sunflower Oil	152	38
	Palm Olein Oil	62	15.5
Basic Cooking Techniques Used	Washing	28	07
	Peeling	41	10.2
	Cutting	45	11.2
	All of the Above	286	71.5

5. Practices regarding Waste Disposal

The findings in table 5 indicated a significant majority (76.8%) of respondents use waste bins for disposal, reflecting responsible practices. However, 13.2% still dispose of waste in open areas like bushes and 9% in streets, contributing to environmental pollution. Drainage/gutters are the least utilized option (1%), indicating minimal contamination of water pathways. Dry trash cans with lids (46%) are the most preferred, ensuring proper waste containment. However, 31% use open trash cans, which pose hygiene risks, and 14% reported using broken trash cans, leading to improper disposal and

environmental hazards. The use of wet dustbins with lids is low (9%), suggesting a need for increased awareness about proper waste segregation and disposal.

Table 5 Practices regarding Waste Disposal

Parameters	Response options	Frequency (n=400)	Percentage (%)
Waste Disposal Methods	Street/Road	36	09
	Bush	53	13.2
	Drainage/Gutter	04	01
	Waste Bin	307	76.8
Type of Trash Cans Used	Wet Dustbin with Lid	36	09
	Dry Trash Can with Lid	184	46
	Open Trash Can	124	31
	Broken Trash Can	56	14

***** Values in parenthesis are percentage (%)

6. Attitude Regarding contamination Prevention

Table 5 indicates strong adherence to food safety practices. Most respondents (87.2%) prioritize covering food, and 86.5% ensure cooked food is protected. Daily sanitation of dispensers is followed by 67%, though 32.7% remain neutral, indicating potential gaps in routine cleaning practices. Cleaning after customers departures is widely practiced (74.7%), and 82.2% support discarding single-use dispensers reducing the risk of cross-contamination.

Table 7 Practice to prevent contamination.

No.	Question	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
1.	Cover food and beverages displayed for sale.	54 (13.5)	295 (73.7)	51 (12.7)	-	-
2.	Protect food after cooking to avoid contamination.	186 (46.5)	160 (40)	52 (13)	2 (0.5)	-
3.	Sanities reusable dispensers every day.	72 (18)	196 (49)	131 (32.7)	1 (0.25)	-
4.	The place clean after the customers leave.	68 (17)	231 (57.7)	98 (24.5)	3 (0.7)	-
5.	Plastic & paper dispensers thrown away after use.	118 (29.5)	211 (52.7)	71 (17.7)	-	-

***** Values in parenthesis are percentage (%)

CONCLUSION

The study analysed food handling, hygiene, inventory management, food preparation, waste disposal, and contamination prevention practices. The predominantly male workforce is young, moderately educated, and middle-income, with considerable experience. While hygiene practices are generally maintained, gaps remain in hair covering, jewellery use, and hand hygiene after money handling. Traditional procurement methods dominate inventory management, though digital transactions are rising. Storage and inspection emphasize cleanliness and organization. Taste takes priority in food preparation, with sunflower oil preferred. Waste disposal is mostly responsible, but open dumping persists. Contamination prevention is largely followed, though training is needed to improve compliance.

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