

A Study on the Quality and Hygiene of Street Fast Food Sold in Muzaffarpur Town, Bihar

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Abstract—

Background: Street fast food constitutes a major component of urban diets in developing countries, yet concerns regarding its quality and hygiene pose significant public health risks.

Objective: This study aimed to assess the quality, hygiene practices, and consumer awareness related to street fast food sold in Muzaffarpur Town, Bihar.

Methods: A cross-sectional analytical study was conducted among 40 street food vendors and 80 consumers selected through purposive sampling. Data were collected using observation checklists and structured questionnaires. Descriptive statistics, including frequency and percentage, were used for data analysis.

Results: The findings revealed that a majority of vendors did not follow adequate hygiene practices. Only 32.5% of vendors maintained overall satisfactory hygiene, and food items were frequently exposed to dust and flies (70%). Chi-square analysis demonstrated a statistically significant association between vendor hygiene status and consumer-reported illness ($\chi^2 = 6.12$, $p < 0.05$). Although 60% of consumers were aware of potential health risks, regular consumption persisted due to affordability and convenience.

Conclusion: The study highlights poor hygiene and food safety practices among street food vendors in Muzaffarpur Town. Strengthening food safety training, regulatory monitoring, and consumer awareness programs is essential to reduce foodborne health risks.

Keywords — Street food, food quality, hygiene, food safety

I. INTRODUCTION

Street fast food is an integral part of urban food culture in India. It provides quick, affordable, and easily accessible meals to people from different socioeconomic backgrounds. In towns such as Muzaffarpur, Bihar, street foods like chaat, samosa,

chowmein, momos, fried snacks, and sweets are widely consumed by students, workers, and daily commuters. Despite its popularity, street food is often prepared and sold under unhygienic conditions, which may pose serious health risks to consumers.

Food contamination may occur due to improper handling, poor sanitation, lack of clean water, and inadequate storage facilities. Several studies have reported the presence of microbial contamination in street foods, leading to foodborne illnesses such as diarrhea, typhoid, and gastroenteritis. According to the Food Safety and Standards Authority of India (FSSAI), maintaining hygiene and food safety is essential to protect consumer health.

In Bihar, limited research has been conducted on the quality and hygiene of street fast food at the town level. Therefore, the present study attempts to assess the quality, hygiene practices, and consumer awareness regarding street fast food sold in Muzaffarpur Town.

II. REVIEW OF LITERATURE

Mensah et al. (2002) reported that street foods sold in urban areas often contain high levels of microbial contamination due to poor hygiene practices. Muinde and Kuria (2005) emphasized that lack of clean water and inadequate waste disposal significantly affect food safety among street vendors. Choudhury et al. (2011) found that most Indian street food vendors lacked formal training in food safety and hygiene.

Rane (2011) highlighted that street food vending contributes to employment and food security but poses public health risks if safety standards are not maintained. FAO (2016) stressed the importance of educating vendors and implementing food safety regulations to reduce foodborne diseases. Studies by Gupta et al. (2018) revealed that consumers are often aware of hygiene issues but prioritize taste, cost, and convenience.

These studies indicate a strong need for localized research to understand street food quality and hygiene conditions, especially in smaller towns like Muzaffarpur.

III. OBJECTIVES OF THE STUDY

1. To assess the hygienic conditions of street fast food vendors in Muzaffarpur Town.
2. To evaluate the quality and safety of commonly sold street fast food items.
3. To study food handling and storage practices adopted by vendors.
4. To assess consumer awareness regarding food safety and hygiene.
5. To suggest measures for improving the quality and safety of street fast food.

IV. MATERIALS AND METHODS

Study Design

The study adopted a cross-sectional analytical research design to assess the quality, hygiene practices, and food safety conditions of street fast food sold in Muzaffarpur Town, Bihar. This design was considered appropriate to capture existing hygiene practices and consumer awareness at a single point in time.

Study Area

The research was conducted in selected areas of Muzaffarpur Town, Bihar, India, where street food vending is commonly practiced. These locations included busy markets, roadside vending zones, and areas with high pedestrian movement.

Study Population

The study population comprised street fast food vendors involved in the preparation and sale of food

items and consumers who regularly consumed street fast food in the study area.

Sample Size and Sampling Technique

A total of 40 street food vendors and 80 consumers were included in the study. Participants were selected using a purposive sampling technique, based on their availability and willingness to participate. The sample size was determined considering feasibility and consistency with similar street food safety studies.

Data Collection Tools

Data were collected using two primary tools: An observation checklist to assess hygienic conditions, food handling practices, sanitation, and environmental cleanliness at vending sites. A structured questionnaire administered to vendors and consumers to collect information on food safety practices, awareness of hygiene, and health-related experiences.

Data Collection Procedure

Data collection was carried out through direct observation of vending sites and face-to-face interviews with vendors and consumers. Observations were recorded systematically, and questionnaires were completed with the consent of the participants.

Data Analysis

Collected data were entered into Microsoft Excel and analyzed using descriptive statistical methods, including frequency and percentage distribution. Additionally, the Chi-square test was applied to examine the association between vendor hygiene status and consumer-reported illness. A p-value of less than 0.05 was considered statistically significant.

V. RESULTS

Table 1: Hygienic Conditions of Street Food Vendors

Hygienic practices	Respondents (N=40)	
	Frequency	Percentage
Clean preparation area	14	35
Availability of clean water	16	40
Use of gloves /cap/apron	10	25
Proper waste disposal	12	30
Overall satisfactory hygiene	13	32.5

Table 1 describes the hygienic conditions observed among street fast food vendors in Muzaffarpur Town. Only 35% of vendors maintained a clean food preparation area, while 40% had access to clean water at their vending sites. The use of personal protective measures such as gloves, caps, or aprons was

reported by only 25% of vendors. Proper waste disposal practices were followed by 30% of vendors. Overall, only 32.5% of vendors demonstrated satisfactory hygiene, indicating that the majority of street food vendors operated under substandard hygienic conditions.

Table- 2: Quality and Safety of Street Fast Food Items ()

Quality Indicators	Respondents (N=40)	
	Frequency	Percentage
Fresh ingredients used	18	45
Proper cooking temperature	20	50
Food covered after preparation	15	37.5
Presence of flies/dust	28	70

Table 2 presents the quality and safety indicators of street fast food items sold in the study area. Fresh ingredients were used by 45% of vendors, while only half (50%) ensured cooking food at appropriate temperatures. Food covering after preparation was practiced by just 37.5% of vendors. A major concern

observed was the exposure of food items to environmental contaminants, as 70% of vendors had food exposed to flies and dust. These findings suggest considerable risks related to food contamination and compromised food safety.

Table- 3: Food Handling and Storage Practices of Vendors

Handling Practices	Respondents (N=40)	
	Frequency	Percentage
Hand washing before handling food	17	42.5
Use of bare hands	29	72.5
Proper storage containers	14	35
Reuse of leftover food	22	55

Table 3 highlights food handling and storage practices among street food vendors. Proper handwashing before food handling was observed in 42.5% of vendors. However, a large proportion (72.5%) handled food with bare hands, increasing the

risk of contamination. Only 35% of vendors used appropriate storage containers, while 55% reported reusing leftover food. These practices reflect inadequate food handling and storage behaviors that may contribute to foodborne illnesses.

Table-4 : Consumer Awareness Regarding Street Food Safety

Awareness Level	Respondents (N=80)	
	Frequency	Percentage
Aware of health risks	48	60
Not aware of health risks	32	40
Experienced illness after consumption	26	32.5

Table 4 depicts consumer awareness regarding street food safety. Sixty percent of consumers were aware of potential health risks associated with street food consumption, whereas 40% lacked such awareness. Notably, 32.5% of consumers reported experiencing

illness after consuming street fast food. Despite moderate awareness levels, the occurrence of illness indicates that unsafe food practices continue to affect consumer health.

Table-5 : Association Between Vendor Hygiene Status and Consumer Health Complaints (Chi-Square Test)

Vendor Hygiene Status	Consumers Reporting Illness	Consumers Not Reporting Illness	Total
Satisfactory hygiene	6	24	30
Unsatisfactory hygiene	20	30	50
Total	26	54	80

Chi-square value (χ^2) = 6.12

Degrees of freedom (df) = 1

p-value < 0.05

Table 5 shows the association between vendor hygiene status and consumer-reported illness using the Chi-square test. Among consumers purchasing food from vendors with satisfactory hygiene, only 6 reported illness, whereas 20 consumers reported illness after consuming food from vendors with unsatisfactory hygiene. The Chi-square value ($\chi^2 = 6.12$, $df = 1$, $p < 0.05$) indicates a statistically significant association between vendor hygiene status and consumer health complaints. This result suggests that poor vendor hygiene significantly increases the likelihood of food-related illness among consumers.

VI. DISCUSSION

The findings of the present study demonstrate inadequate hygiene and food safety practices among street food vendors in Muzaffarpur Town. Similar observations were reported by Gupta et al. (2018) and Rane (2011), who identified poor personal hygiene, lack of protective clothing, and unsafe food handling as major contributors to food contamination in urban India.

The high exposure of food items to dust and flies observed in this study is consistent with findings by Mensah et al. (2002), indicating increased risk of microbial contamination. Although a moderate level of consumer awareness was observed, consumption patterns remained unchanged, reflecting findings by Choudhury et al. (2011), where convenience and affordability outweighed health concerns.

These findings emphasize the need for structured vendor training programs and strict enforcement of food safety regulations to mitigate public health risks.

VII. LIMITATIONS

The study was limited by a relatively small sample size and reliance on self-reported data from vendors and consumers, which may be subject to reporting

bias. Laboratory analysis of food samples was not conducted, which limits the assessment of microbial contamination.

VIII. CONCLUSION

The present study assessed the quality, hygiene, and food safety practices of street fast food sold in Muzaffarpur Town, Bihar, and examined consumer awareness regarding associated health risks. The findings revealed that a majority of street food vendors operated under inadequate hygienic conditions, with poor personal hygiene, unsafe food handling practices, and exposure of food items to environmental contaminants such as dust and flies. Only a small proportion of vendors demonstrated satisfactory overall hygiene.

Although a moderate level of consumer awareness regarding food safety was observed, regular consumption of street fast food continued due to affordability and convenience. The statistically significant association between vendor hygiene status and consumer-reported illness, as demonstrated by the Chi-square test, highlights the direct impact of poor hygiene practices on public health. Overall, the study underscores the urgent need for improved food safety measures, regular monitoring, and targeted interventions to ensure the safety and quality of street fast food and to protect consumer health in urban settings.

IX. RECOMMENDATIONS

Based on the findings of the study, the following recommendations are suggested:

Food Safety Training: Regular training and capacity-building programs should be organized for street food vendors to improve knowledge and practices related to food hygiene and safety.

Regulatory Monitoring: Local health authorities should strengthen routine inspection, licensing, and

monitoring of street food vending sites to ensure compliance with food safety standards.

Infrastructure Support: Provision of clean water supply, proper waste disposal facilities, and hygienic vending spaces should be ensured by municipal authorities.

Consumer Awareness: Public awareness campaigns should be conducted to educate consumers about the health risks associated with unhygienic street food and encourage informed food choices.

Policy Implementation: Strict enforcement of Food Safety and Standards Authority of India (FSSAI) guidelines should be prioritized to improve the overall quality and safety of street fast food.8.

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