

## Food Handling and Hygiene Practices of Street Food Vendors - A Case Study

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### Abstract: -

Street food refers to ready-to-eat food and beverages that are prepared and sold by vendors in public places, such as streets, markets, and roadside stalls. It is typically served from food carts, stalls, or kiosks and consumed on the go. Street food is widely popular due to its affordability, convenience, and variety of flavours. Indian street food stalls sold famous local foods like Pani Puri, Vada Pav, Momos, Pav Bhaji, Chaat, Chowmein, Chicken Pakoda, etc, all food items are much in demand and lovable choices for the consumers. Nowadays street food stalls are making a good income strategy; however it's a major concern about food safety and hygiene persist due to inadequate food handling practices, lack of proper sanitation, and exposure to environmental contaminants. This study assess the food handling and hygiene practices of street food vendors, focusing on personal hygiene, food preparation, storage, environmental sanitation, etc. The study was conducted in the Jharsuguda district of Odisha. Under this research study, five famous food stalls from Jharsuguda town were selected. Findings suggest that enhancing food safety knowledge, implementing strict hygiene protocols, and providing training to vendors can significantly improve food quality and consumer health. The study emphasises the need for regulatory enforcement and public awareness initiatives to ensure safe and hygienic street food practices.

**Keywords:** - Food Handling, Hygiene Practices, Environmental Hygiene, Health Hazards

### INTRODUCTION

Street food vending is an integral part of the urban and semi-urban food culture, providing affordable and convenient meals to a large segment of the population. In the current scenario, street foods are more popular because they're easy to access for office-going people, students, low-income groups, etc. Street food is available at a reasonable price and delicious in taste; all people prefer to eat food items from street food corners for morning breakfast and evening snacks. However, the safety and hygiene of street food remain a significant concern due to improper food handling practices, lack of sanitation, and limited regulatory oversight.

Food borne diseases resulting from contaminated street food are a growing public health issue. Inadequate personal hygiene, unsanitary cooking environments, improper food storage, and the use of unsafe water contribute to microbial contamination and food poisoning. Street vendors often operate in open spaces exposed to dust, pollution, and pests, further increasing health risks. Moreover, the lack of awareness and formal training on food safety regulations exacerbates these issues.

### Objectives of the Study:-

1. To assess the socio-demographic profile of street food vendors, including age, gender, education level, economic status, and years of experience in the business.
2. To evaluate the food handling and hygiene practices of street food vendors, focusing on personal hygiene, cleanliness of food preparation areas, use of protective gear and waste disposal methods.
3. To examine the food preparation practices of street food vendors, including the ingredients used, cooking methods, and adherence to food safety regulations.
4. To investigate the use of artificial colorants and other food adulterants in street food, assessing vendors' awareness and practices related to food safety and quality.

## **METHODOLOGY**

### **Study Area:-**

This study was conducted in Jharsuguda district, Odisha, focusing on roadside food vendors operating in different locations. Jharsuguda, known for its growing urbanization and commercial activities, has a thriving street food culture that caters to a diverse consumer base, including daily wage earners, office-goers, students, and travellers. Given the popularity of street food, it is crucial to assess the vendors' food handling and hygiene practices to ensure consumer safety.

### **Research Design:-**

A qualitative case study approach was adopted to gain in-depth insights into the socio-demographic characteristics, food handling, hygiene practices, and food adulteration concerns among roadside food vendors. The study was designed to capture real-life food preparation and vending conditions through direct engagement with vendors.

### **Sample Selection and Size:-**

A total of five case studies were conducted with selected roadside food vendors from different parts of Jharsuguda district. The vendors were chosen based on the following criteria:

- Type of food sold (e.g., snacks, beverages, full meals)
- Location and foot traffic (vendors in market areas, bus stands, near schools/offices, etc.)
- Hygiene and infrastructure setup (vendors operating with/without proper stalls)

### **Data Collection Methods:-**

The study employed a combination of interviews, self-structured questionnaires, and observational surveys to obtain data on various aspects of street food vending.

#### **1. Interview and self-structured Questionnaires:-**

Vendors were interviewed using a self-structured questionnaire that included open-ended substantive questions related to:

- **Socio-economic and demographic profile** (age, gender, education level, family background, and economic status).
- **Occupational traits** (years of experience, reasons for choosing food vending, daily income, and business challenges).
- **Food vending stall characteristics** (fixed or mobile stall, availability of clean water, waste disposal facilities).
- **Food handling and preparation practices** (sourcing of ingredients, hygiene measures during cooking, and use of preservatives or artificial colors).
- **Water usage and consumption** (source of water for food preparation, washing utensils, and serving customers).
- **Serving and storage practices** (methods of packaging, duration of food storage, contamination risks).
- **Personal hygiene of food handlers** (use of gloves, aprons, hand washing habits).
- **Environmental hygiene** (cleanliness of surroundings, waste disposal, pest control).

## **2. Observational Survey:-**

In addition to interviews, a direct observational survey was conducted to assess:

- The actual hygiene conditions of the vending stalls.
- Food handling practices and storage methods.
- The vendor's adherence to food safety standards (e.g., use of protective gear, proper waste disposal).
- The presence of potential health hazards, such as cross-contamination, improper storage, and unhygienic surroundings.

## **Data Analysis:-**

The collected data was analyzed qualitatively to identify:

- Common patterns and variations in food handling and hygiene practices.
- Gaps between vendors' reported practices and observed hygiene standards.
- Potential risks associated with food preparation and storage methods.
- The extent of food adulteration and vendors' awareness of food safety regulations.

## **Ethical Considerations:-**

- All vendors were informed about the purpose of the study before participation.
- Confidentiality was maintained by ensuring that no vendor was personally identified in the report.
- The study was conducted without disrupting vendors' daily business operations.

## **CASE STUDY 1:-**

### **Background and Business Overview:**

- **Name:** Gautam Mandal
- **Location:** Janda Chowk, Jharsuguda district, Odisha
- **Age:** 26 years
- **Educational Background:** Illiterate
- **Business Start Year:** 2010
- **Monthly Earnings:** ₹15,000
- **Popular Dishes:** Chowmein and Manchurian
- **Customer Base:** Primarily teenage boys and girls

#### **Food Preparation and Ingredient Use:**

- Customers prefer extra sauce and chicken items.
- Uses Lall's ketchup and Mahakosh oil, which is low-quality refined oil.
- Cooking water source: Regular municipal water (potential contamination risk).
- Frequently uses Chinese salt (MSG) to enhance taste, unaware of its health risks.
- Adds artificial food colours (red for Manchurian, yellow for Chowmein), without awareness of potential health hazards.

#### **Hygiene and Sanitation Practices:**

##### **Personal Hygiene:**

- Does not use aprons or gloves while handling food.
- Pays some attention to personal hygiene, but lacks formal knowledge of food safety.

##### **Environmental Hygiene:**

- Uses a dustbin for disposing of paper plates.
- Steel plates are not properly washed—only dipped in water instead of being cleaned with soap.
- The stall surroundings are unhygienic, with garbage littering the area.
- Unaware of the risks of E. coli and Salmonella bacteria, which may spread due to unsanitary conditions.

#### **Health and Food Safety Concerns:**

- **Use of Low-Quality Ingredients:** Chinese salt (MSG), artificial food colours, and low-grade refined oil can pose serious health risks.
- **Lack of Proper Hygiene Practices:** Not using gloves, aprons, and soap for dishwashing increases the risk of food borne illnesses.

- **Unhygienic Cooking Environment:** Garbage accumulation and improper waste disposal create a breeding ground for bacteria.
- **Lack of Awareness:** Vendor is unaware of food safety regulations and health risks associated with ingredient choices.

**Recommendations for Improvement:**

- **Food Safety Awareness:** Train vendors on safe cooking practices, dangers of MSG, and the impact of artificial colours on health.
- **Better Hygiene Practices:** Encourage use of aprons, gloves, soap for washing utensils, and clean cooking areas.
- **Ingredient Quality Enhancement:** Promote use of healthier cooking oils and natural food enhancers.
- **Government Support & Inspections:** Implement routine health inspections and workshops to educate street food vendors.

**CASE STUDY 2:-****Background and Business Overview:**

- **Name:** Rahul Parmath
- **Age:** 40 years
- **Educational Qualification:** Bachelor of Commerce
- **Start Business :** 15 years ago
- **Monthly Earnings:** ₹30,000
- **Popular Food Items Sold:** Dabeli, Dhokla, Vada Pao, and Bhelpuri
- **Sauce & Chutney Preparation:** Prepares red and green chutneys himself to serve with Dabeli and Dhokla.

**Food Preparation and Hygiene Practices:-****Environmental Sanitation Issues:**

- The surrounding area is unhygienic, with litter on the roadside.
- Customers stand behind the stall and consume food, unaware of health risks from microbial contamination.
- Poor waste disposal practices attract flies, insects, and rodents, which can carry infections.
- No proper drainage or garbage disposal systems, violating FAO (2009) food safety recommendations.

**Personal Hygiene & Food Handling:**

- Does not wear aprons or gloves, citing inconvenience in handling food quickly.
- Openly displays food without covering it, leading to dust contamination.
- Precooked food is stored at room temperature, increasing the risk of bacterial growth.
- Uses unhygienic work surfaces that may contain harmful microorganisms like Salmonella and E. coli.

#### **Food Adulteration & Health Concerns:**

- **Chutney Sample Testing:** Found to be adulterated with harmful food colorants.
- **Health Risks of Adulteration:**
  - Toxic substances in adulterated food can lead to nutrition deficiency diseases.
  - Increased risk of kidney disorders, heart diseases, and liver failure.
  - Violates WHO recommendations on food safety and handling.

#### **Health & Safety Concerns Identified:**

- **Improper Waste Management:** Lack of proper drainage and waste disposal facilities increases the risk of contamination.
- **Unhygienic Food Storage:** Exposed food and precooked meals stored at room temperature encourage bacterial growth.
- **Lack of Personal Hygiene Practices:** Handling food without gloves or aprons raises concerns about food borne illnesses.
- **Food Adulteration with Artificial Colours:** Chutneys were tested positive for adulteration, posing serious health hazards.

#### **Recommendations for Improvement:**

- **Adopt Better Waste Disposal Methods:** Install designated dustbins to manage food waste properly.
- **Ensure Proper Food Storage & Covering:** Use airtight containers and proper refrigeration for precooked meals.
- **Improve Personal Hygiene Practices:**
  - Encourage the use of gloves, aprons, and clean utensils.
  - Regularly wash hands before handling food.
- **Reduce Food Adulteration:** Educate vendors on the health risks of artificial colorants and encourage natural food ingredients.
- **Government Regulations & Monitoring:** Strengthen food safety inspections and training programs for vendors.

#### **Outcomes and interventions:-**

Rahul Parmath case highlights serious food safety risks, including poor waste management, hygiene lapses, and food adulteration. While he earns a good income from his business, his lack of awareness regarding hygiene and food safety poses health risks to consumers. Implementing proper hygiene practices, food safety guidelines, and waste disposal systems will help ensure safer food for the public.

### **CASE STUDY 3:-**

#### **Background and Business Overview:**

- **Name:** Maneswar Sahu
- **Age:** 60 years
- **Educational Background:** Illiterate
- **Business Type:** Fast food stall (Chowmein)
- **Monthly Earnings:** ₹20,000
- **Popular Food Items Sold:** Chowmein with extra sauce and colourful food additives

#### **Food Preparation and Hygiene Practices: -**

##### **Food Ingredients & Safety Issues:**

- Uses “Rag Gold” refined oil, which may be low-quality and unhealthy.
- Frequently uses Chinese salt (MSG) to enhance flavour, without awareness of its health risks.
- Adolescents prefer extra sauce, artificial colours, and Chinese salt, making the food potentially harmful in the long term.

##### **Personal Hygiene Practices:**

- Does not use gloves or aprons while handling food.
- Does not maintain proper personal hygiene, which increases the risk of contamination.
- Customers continue to buy food despite visible unhygienic conditions.

##### **Environmental Hygiene & Sanitation Issues:**

- The stall surroundings are very dirty, with visible garbage and waste accumulation.
- Customers ignore hygiene conditions, prioritizing taste over safety.

##### **Observations on Hygiene Practices:**

- Unlike other vendors, he covers food with plastic to prevent dust contamination.
- Does not wash hands with soap, only rinses with water after toilet use.
- Handles money and food without washing hands, which increases the risk of bacterial contamination (E. coli, Salmonella).

- Findings are consistent with previous studies (M. Wove et al., 2020) that report poor personal hygiene among street food vendors.

**Health & Safety Concerns Identified:**

- **Use of Low-Quality Ingredients:** Chinese salt (MSG), low-grade oil, and artificial colours can lead to health problems like hypertension, allergies, and digestive issues.
- **Lack of Proper Hygiene Practices:** Not washing hands with soap, handling money and food simultaneously, and avoiding gloves pose serious contamination risks.
- **Unhygienic Food Preparation Environment:** Garbage accumulation and poor sanitation may contribute to food borne illnesses.

**Recommendations for Improvement:****Promote Healthier Cooking Practices:**

- Encourage the use of higher-quality oils and natural flavouring alternatives.
- Limit or eliminate artificial food colours and MSG.

**Improve Personal Hygiene Practices:**

- Vendors must wash hands with soap after using the toilet and handling money.
- Use gloves and aprons to reduce direct contact with food.

**Enhance Environmental Hygiene:**

- Proper waste disposal methods should be enforced.
- Regular sanitary inspections and vendor training to improve hygiene awareness.

**Government Support & Training:**

- Implement food safety training programs for street vendors.
- Strengthen public awareness campaigns on the health risks of consuming unhygienic street food.

**Outcomes and interventions:-**

Maneswar Sahu case highlights critical hygiene issues in street food vending, particularly lack of hand washing, poor sanitation, and reliance on unhealthy food additives. While customers continue to buy from such stalls, the risk of food borne illnesses and long-term health effects remains high. Stronger regulations, vendor education, and improved hygiene practices are necessary to ensure food safety and consumer health.

**CASE STUDY 4:-**

This case study highlights the food safety and hygiene issues associated with street food vending.



**1. Business and Earnings:**

- Rabi Sharma, a 30-year-old street vendor, has been running a fast food stall since 2002, selling samosas and sweets.
- He earns between ₹12,000 to ₹15,000 per month.

**2. Food Preparation Practices:**

- Uses artificial colours in chutney and sauce to enhance appearance.
- Mahakosh name refined oil is used, with 10-12 litres everyday for frying 1,500-2,000 pieces of samosas.
- Reheats leftover oil from previous days, which increases carcinogenic compounds and free radicals, leading to potential health risks such as heart disease, obesity, and diabetes.
- Leftover reheated oil is also used for making samosa masala, further increasing health hazards.

**3. Hygiene and Sanitation Issues:**

- Does not wear gloves or an apron, citing inconvenience and tradition.
- Stall surroundings have flies and discarded garbage, creating an unhygienic environment.
- Utensils are not washed with soap, but simply dipped in a water-filled bucket, increasing contamination risks.

**4. Microbial Contamination and Health Risks:**

- The study suggests *Escherichia coli* (E. coli) and *Salmonella* spp. bacteria may develop due to contaminated water usage.
- Handling money while preparing food and cleaning utensils in unclean water increase the risk of bacterial contamination.
- Improper food handling is a significant factor in *Salmonella* outbreaks, as observed in previous studies (Jay, 1992).

**Outcomes and interventions:-**

- Strict hygiene measures should be implemented to improve food safety.
- Proper food handling training for street vendors is necessary.
- Regular monitoring of oil usage to prevent reheating.
- Use of clean water and soap for utensil cleaning.
- Proper waste disposal and pest control to maintain hygiene.

This case study emphasizes the urgent need for better street food safety regulations, education, and enforcement to protect public health.

**CASE STUDY 5:-****1. Business Overview:**

- The Royal Hotel has been operating for 20 years in Jharsuguda.
- It is famous for veg and non-veg biryani and other fast food items like chicken pakoda, egg roll, chowmein, and chicken kabab etc.
- Monthly earnings range from ₹40,000 to ₹50,000.
- The hotel attracts customers of all age groups, with adolescents being the most frequent consumers due to the taste.

**2. Food Preparation & Hygiene Practices:**

- Local refined oil and butter are used for cooking.
- The kitchen is moderately clean, but workers do not wear gloves, aprons, or hair coverings while preparing food.
- Vendors handle food with bare hands, increasing the risk of contamination.

**3. Hygiene & Food Safety Risks:**

- Vendor cleanliness is crucial for preventing contamination (WHO, 2010).
- Poor personal hygiene among food handlers can transfer harmful pathogens to customers.
- Short and clean nails were not maintained, leading to potential bacterial contamination.
- Salmonella spp. and Escherichia coli can survive on fingertips for extended periods, sometimes even after washing (Rane, 2011).

**Outcomes and interventions:-**

- Strict hygiene protocols should be enforced, including mandatory gloves, aprons, and hair coverings.
- Regular hand washing and sanitization practices should be adopted to prevent bacterial transmission.
- Kitchen cleanliness should be improved further to ensure food safety.
- Training programs for food handlers on proper hygiene and food safety should be conducted.
- Regular health check-ups and inspections should be implemented to monitor food safety standards.

This study highlights the critical role of personal hygiene in food safety, emphasizing the need for better sanitation and awareness among food vendors to prevent health risks for consumers.

### **CONCLUSIONS:-**

The study evaluates food safety and hygiene practices among fast food street vendors, particularly their awareness, food handling, and sanitation standards. It highlights significant gaps in knowledge, training, and government intervention, which impact food safety and public health.

#### **1. Limited Food Safety Awareness:**

- Street vendors have an average understanding of food safety but lack proper training in sanitation, food preparation, and quality standards (WHO, 2010).
- Their handling practices contribute to food borne disease outbreaks (Sharif et al., 2013).

#### **2. Need for Training Programs:**

- None of the street vendors in the study had received formal food safety training.
- Lack of government efforts to educate vendors on food safety (Loukieh et al., 2018).
- Training programs should focus on basic sanitation, safe food preparation, and hygiene practices to help vendors adopt proper techniques.

#### **3. Poor Hygiene Practices Observed:**

- Vendors do not trim nails, cover their hair, or wear aprons and gloves.
- Improper hand washing techniques, increasing bacterial contamination.
- Food is handled in unsanitary conditions, leading to pathogen growth.

#### **4. Government Negligence in Food Safety Enforcement:**

- Authorities have not taken adequate steps to ensure food handling and vending compliance.
- Vendors are unaware of state food safety guidelines, leading to unsatisfactory hygiene practices.



#### **RECOMMENDATIONS:-**

- Mandatory food safety training for vendors to improve hygiene awareness and food handling.
- Regular government inspections to monitor and enforce hygiene regulations.
- Promotion of proper hygiene practices, such as hand washing, nail trimming, and protective clothing.
- Improved waste management and sanitation at food stalls to reduce contamination risks.

This study underscores the urgent need for better training, stricter regulations, and government involvement to ensure safer street food for consumers.

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