

Investigating the Public Health Behavior Related to Street Food Consumption among Lubyayi Residents: Cross-Sectional Study

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Abstract

Street food consumption is a major public health and social problem confronting urban Residents. Strong public health and social behavior need to be integrated at all community educational levels. The objective of this cross-sectional study is to investigate the public health behavior of street food consumption and identify factors associated with safe food consumption practices. The study provides insight into the perceptions, experiences, and adaptation strategies to Street Food Consumption. A cross-sectional survey of 160 street food Consumers reveals significant awareness of the public health behavior of street food consumption, and factors associated with safe food consumption. The results show an equal gender distribution, with the majority of respondents falling between 25-34 years old, at 31%. Most respondents have a primary or secondary education, at 38%, and Half have a low-income level, at 50%. Most respondents consume street food weekly, 50%. The majority have inadequate food safety knowledge, 63%. 75% have experienced foodborne illnesses. And most of the respondents do not practice proper food handling practices, 63%. The food Taste is the most important factor, 63%. Half of the respondents consider price very important, 50%. Only 38% of respondents prioritize safety. Most respondents do not trust street food vendors, 63%. Most of the respondents do not perceive the street food environment as clean, 63%. Improper waste management is prevalent in 66%. And Most respondents do not have access to clean water, 59%. The findings of this study contribute to the existing body of knowledge on the public health behavior of street food Consumption.

Keywords: Public, Health, Behavior, Street, Food, Consumption.

Introduction

Street food consumption is a widespread practice globally, particularly in urban environments where it provides an affordable and convenient food option for many consumers [1, 3]. Access to sufficient amounts of safe and nutritious food is key to sustaining life and promoting good health. Unsafe food containing harmful bacteria, viruses, parasites, or chemical substances causes more than 200 diseases, ranging from diarrhea to cancers [2]. However, it poses significant public health risks due to food safety concerns [2, 4]. According to the World Health Organization (WHO), foodborne illnesses are a major public health

problem worldwide, with street food being a significant contributor to these illnesses [8]. Studies in various countries, including China, Egypt, and others, have highlighted the importance and necessity of addressing food safety risks in street food vending [28-30]. For instance, research in China has shown that food safety risks and control strategies for street food are very critical to preventing foodborne illnesses [28, 30], while studies in Egypt have emphasized the need for improved food safety knowledge and practices among street food vendors [29]. Studies conducted in some African countries, such as Nigeria and Morocco, have shown that the major street food

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vendors usually earn more than the country's minimum wage. In Nigeria, it is often cheaper to buy street food than to cook it at home [23]. Street foods also serve as a major source of nutrients for many adolescents [23]. Street food vending makes up a significant proportion of the informal sector of the economy of most developing countries [22]. The street food sector in urban areas lacks regulation, posing health risks to consumers [5, 6]. Key issues include food safety risks due to poor handling practices [4, 7], environmental concerns related to the availability of non-biodegradable packaging [14], and limited access to secure and clean water for food preparation and consumption [9, 24]. For example, studies in Ghana and Uganda found that street food vendors often lack knowledge about proper food handling practices and operate in unsanitary conditions, which can lead to food contamination and foodborne illnesses [10, 12, 22, 27]. Some existing solutions to address these problems include implementing food safety regulations [11, 16], promoting safe food handling practices among vendors [13, 15], and encouraging the use of biodegradable packaging materials [20]. Food safety training programs for street food vendors have been shown to improve their knowledge and practices in various countries, including South Africa and Cambodia [14, 15]. A comprehensive approach that combines regulatory measures, education, and infrastructure improvements is likely the best solution [21, 25]. This approach can include training programs for street food vendors, improved waste management systems, and increased access to clean water and sanitation facilities [26]. By addressing the main root causes of food safety risks, such an approach can help reduce the incidence of foodborne illnesses associated with street food consumption. This study may be limited by the sample size and representation of street food vendors, as well as the potential for biases in self-reported data [17, 18]. Additionally, the

effectiveness of food safety interventions may vary depending on the local context and cultural factors [19]. By implementing a comprehensive approach to address food safety risks in the street food sector, it is possible to achieve significant improvements in public health outcomes. Studies have shown that food safety training programs can lead to improved knowledge and practices among street food vendors, resulting in reduced risks of foodborne illnesses [14, 15]. Furthermore, increased access to clean water and sanitation facilities can help prevent contamination of food and reduce the risk of foodborne illnesses [9, 24]. By combining these interventions, it is possible to create a safer and healthier street food environment for all consumers.

Objectives

The objective of this cross-sectional study is to investigate the public health behavior of street food consumption and identify factors associated with safe food consumption practices.

To provide a thorough examination of the effects of public health behavior of street food consumption in city communities, focusing on Food Safety and proper food handling practices.

The Novel Contributions of the study are to provide quantitative evidence of the public health behavior of street food consumption and identify factors associated with safe food consumption practices. The study contributes to the limited body of knowledge on public health behavior of street food consumption in the Lubyayi city community, providing valuable insights for policymakers and practitioners.

The study's findings provide valuable insights for policymakers and practitioners seeking to support public health behaviors related to street food consumption in urban communities, specifically in Lubyayi city communities.

Materials and Methods

1. Description of the Site

Lubyayi is located in Kabongo Rural Health Zone (ZS), territory of Kabongo, Haut-Lomami province in the Democratic Republic of Congo. The Population of Lubyayi city is about 20799, served by 5 universities, 3 markets, and 1 general reference hospital. The population is made up of several ethnic groups, with various customs and dialects. It is mainly made up of the Baluba. Although there are different dialects, Swahili is the most widely spoken and heard national language. The climate is tropical with two alternating seasons: a dry season from mid-April to mid-August, and a rainy season from mid-August to mid-April. The majority of the population lives from agriculture, the main activity, but the population also lives thanks to the small livestock, small trade, hunting, artisanal fishing, and some seasonal activities (mushroom picking and the collection of caterpillars and winged ants, etc). The community is accessible by road and rail at about 12 km. Road accessibility is challenging during the rainy season, which consequently affects the population's income. And food becomes scarce as a result of the preparatory work of the fields, the abundant rains, and the sowing, which makes the markets more unstable and already causes an increase in the price of this food product, which is the staple food. Households have less access to this food and become more food insecure [31].

2. Description of the Experiment

A cross-sectional study design is designed to capture detailed information on the public health behavior of street food consumption, with a sample size of 160 respondents in the Lubyayi city community.

3. Description of statistical methods

The Study Population

A Descriptive statistic for categorical variables was carried out in the Lubyayi city of the Kabongo Health Zone Community, where the questionnaire was conducted following the target population for the study.

4. Sampling Method

The probability sampling approach in this study is recommended and used to ensure representativeness and reduce bias. The Random sampling method was used to select the 160 respondents for the study, and every respondent had an equal chance of being selected from a complete list of respondents.

5. Data Collection

A validated and standardized questionnaire was used for data gathering, and interview was conducted by the researcher and five interviewers to collect information on hardcopy and smartphones. The Types of Interviews were structured to enable the interviewers to ask each respondent the same questions in the same manner. All questions were set in advance, along with the possible answers. The interviewers adhered closely to the interview instructions, and the responses were noted or written down. Only interview those participants who fit the sampling criteria, in such a way that a limited range of responses is elicited.

6. Data Analysis

To analyze the data from the 160 samples, we used the frequency counts from our questionnaire and calculated the percentages, using Excel, which was carried out in tables and figures. The Frequency counts report the number of occurrences of each category or response in our data collection. Percentages convert these frequencies into proportions of the total sample, making it easier to interpret and compare. Tables and figures in this study complement each other by drawing attention to different features of the data collected.

Results

The results of the present study are presented in percentages from the frequency in the tables, and the table results are represented below in the charts. Out of 160 respondents who participated actively in the study questionnaire, here are the observations and findings collected from tables one to five.

Table 1 and Figure 1 enumerate the demographic information of the sample for the present research, by Sex, Age, level of education, and the level of respondents' Income. Males accounted for 80 (50 %), females 80 (50%), 18-24 years 40 (25%), 25-34 years 50 (31%), 35-44 years 30 (19%), 45-54 years 20 (13%), 55+ years 20 (13%). Education Level: Primary 60 (38%), Secondary 60 (38%), Tertiary 40 (25%), Low Income Level 80 (50%), Middle Income Level 60 (38%), and High-Income Level 20 (13%).

Table 2 and Figure 2 list the respondents' Frequency of Food Consumption Practices and Food Safety Knowledge: Daily food consumption accounted for 60 (38%), Weekly 80 (50%), Monthly 20 (13%), Adequate Food Safety Knowledge 60 (38%), and Inadequate Food Safety Knowledge 100 (63%).

Table 3 and Figure 3 list the Food Safety Risks and the Food Handling Practice: respondents experienced Foodborne Illnesses accounted for 120 (75%), not experienced Foodborne Illnesses 40 (25%), practiced Proper Food Handling Practices 60 (38%), and not practiced proper Food Handling Practices 100 (63%).

Table 4 and figure 4 lists Factors considered by respondents when Purchasing Street Food: Taste Purchasing Decisions account for 100 (63%), Price Purchasing Decisions 80 (50%), Safety Purchasing Decisions 60 (38%) and Consumer Trusting the street food 60 (38%) and Consumer not Trusting Street Food 100 (63%).

Table 5 and figure 5 lists the Environmental Factors about the Street Food Consumption: Clean environment of the Street Food Consumption account for 60 (38%), No Clean environment of the Street Food Consumption

100 (63%), Proper Waste Management 55 (34%), Improper Waste Management 105 (66%), Access to Clean Water 65 (41%), No Access to Clean Water 95 (59%).

Discussion

Out of 160 respondents of the study, the discussion has been conducted according to the objectives of the study and the study results. The objective of this cross-sectional study is to investigate the public health behavior of street food consumption and identify factors associated with safe food consumption practices.

The Interpretation of the results is as follows:

Table 1 and Figure 1 list the Demographic Information: there is an equal gender distribution: Males (50%) and females (50%) are equally represented. For the respondent's Age distribution, the majority of respondents are between 25-34 years (31%). For the level of Education, most respondents have primary (38%) or secondary education (38%), and Half of the respondents have a low-income level (50%).

Out of 160 participants, these are the observations and findings of the study represented in tables and figures.

Table 1 enumerates the demographic information of the sample for the present research, by Sex, Age, level of education, and the level of respondents' Income. Males accounted for 80 (50 %), females 80 (50%), 18-24 years 40 (25%), 25-34 years 50 (31%), 35-44 years 30 (19%), 45-54 years 20 (13%), 55+ years 20 (13%). Education Level: Primary 60 (38%), Secondary 60 (38%), Tertiary 40 (25%), Low Income Level 80 (50%), Middle Income Level 60 (38%), and High-Income Level 20 (13%).

Table 1. Demographic Characteristics of Street Food Consumers

Variables	Characteristic	Frequency	Percentage (%)
Sex	Male	80/160	50%
	Female	80/160	50%
Age	18-24	40/160	25%

	25-34	50/160	31%
	35-44	30/160	19%
	45-54	20/160	13%
	55+	20/160	13%
Education	Primary Education	60/160	38%
	Secondary Education	60/160	38%
	Tertiary Education	40/160	25%
Income	Low Income Level	80/160	50%
	Middle Income Level	60/160	38%
	High Income Level	20/160	13%

Note: demographic characteristics: gender, age range, education, and income level. -Frequencies represent the number of respondents in each category. - Percentages are calculated from the total sample size (N=160).

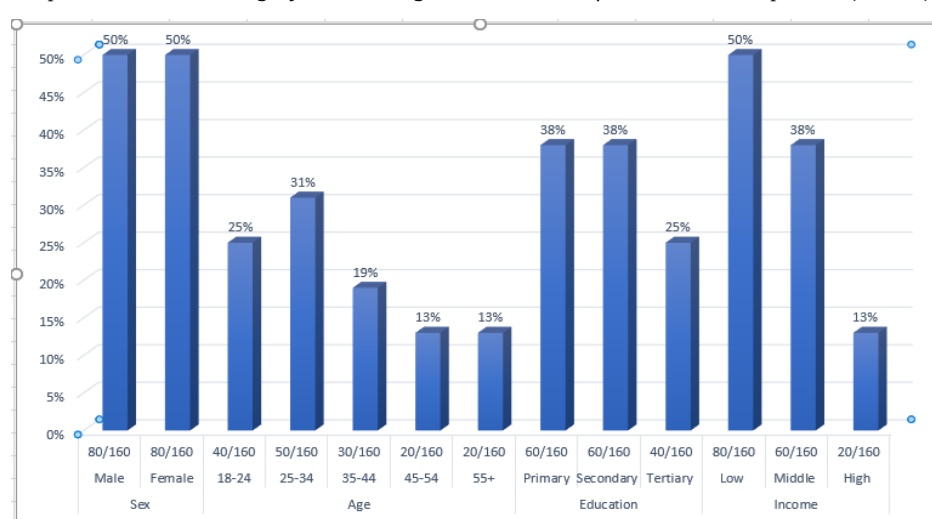


Figure 1. Demographic Characteristics of Street Food Consumers

Note: study sample (N = 160). - distribution of respondents by sex, age group, education level, and income level. Males and females each accounted for 80 respondents (50%). Age groups included 18-24 years (25%), 25-34 years (31%), 35-44 years (19%), 45-54 years (13%), and 55+ years (13%). Education levels were primary (38%), secondary (38%), and tertiary (25%). Income levels were low (50%), middle (38%), and high (13%).

Table 2 and Figure 2 enumerate Food Consumption Practices and Food Safety Knowledge: for the Frequency of food consumption, it is observed that Most respondents consume street food weekly (50%). For Food safety knowledge, the majority of respondents or consumers have inadequate food safety knowledge (63%).

Table 2 lists the respondents' Frequency of Food Consumption Practices and Food Safety Knowledge: Daily food consumption accounted for 60 (38%), Weekly 80 (50%), Monthly 20 (13%), Adequate Food Safety Knowledge 60 (38%), and Inadequate Food Safety Knowledge 100 (63%).

Table 2. Food Consumption Practices

Variables	Characteristic	Frequency	Percentage (%)
Time	Daily	60/160	38%
	Weekly	80/160	50%
	Monthly	20/160	13%

Safety	Adequate Safety Knowledge	60/160	38%
	Inadequate Safety Knowledge	100/160	63%

Note: Frequencies represent the number of respondents in each category. -Percentages are calculated from the total sample size (N=160). - Categories under Food consumption practices: dietary intake & safety knowledge.

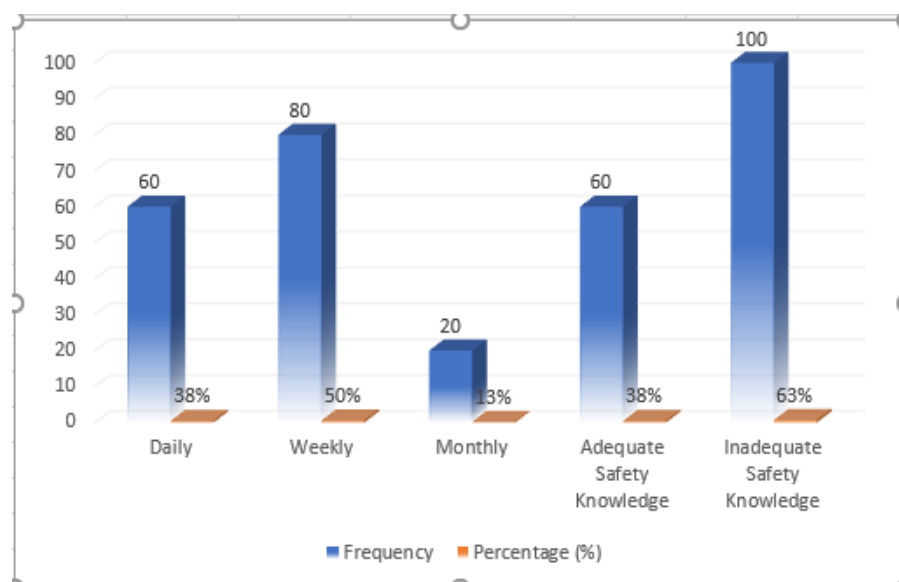


Figure 2. Food Consumption Practice

Note: illustrates the frequency of food consumption and levels of food safety knowledge among respondents (N = 160). Daily consumption accounted for 60 respondents (38%), weekly consumption for 80 respondents (50%), and monthly consumption for 20 respondents (13%). -Regarding food safety knowledge, 60 respondents (38%) demonstrated adequate knowledge, while 100 respondents (63%) had inadequate knowledge.

Table 3 and Figure 3 list Food Safety Risks and Food Handling Practices: for the Foodborne illnesses, 75% of respondents have experienced foodborne illnesses. And for the Food handling practices, most of the respondents do not practice proper food handling practices, with 63%.

Table 3 lists the Food Safety Risks and the Food Handling Practice: respondents experienced Foodborne Illnesses accounted for 40 (25%), did not experience Foodborne Illnesses 120 (75%), practiced Proper Food Handling Practices 60 (38%), did not practice proper Food Handling Practices 100 (63%).

Table 3. Food Safety Risks

Variables	Characteristic	Frequency	Percentage (%)
Foodborne Illnesses	Foodborne Illnesses (Yes)	120/160	75%
	Foodborne Illnesses (No)	40/160	25%
Food Handling Practices	Proper Food Handling Practices	60/160	38%
	Improper Food Handling Practices	100/160	63%

Note: Frequencies represent the number of respondents in each category. - Percentages are calculated from the total sample size (N=160). - Categories under Food safety Risks: sickness & manipulation.

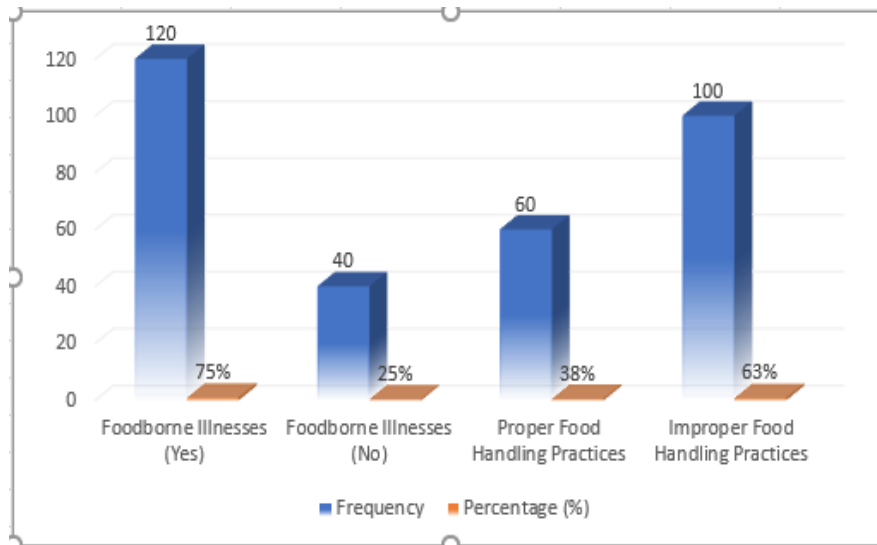


Figure 3. Food Safety Risks

Note: This figure illustrates the prevalence of foodborne illness experience and food handling practices among respondents ($N = 160$). Twenty-five percent (40 respondents) reported experiencing foodborne illnesses, while 75% (120 respondents) did not. Proper food handling practices were reported by 38% (60 respondents), whereas 63% (100 respondents) did not practice appropriate food handling.

Table 4 and Figure 4 enumerate factors influencing purchasing Decisions: the food Taste is recorded to be the most important factor in purchasing decisions, with 63%. For the food Price, half of the respondents consider price very important in the food purchasing decisions, representing 50%. For the Safety in purchasing decisions, only 38% of respondents prioritize safety. And for Trust in food

purchasing decisions, most respondents do not trust street food vendors, representing 63%.

Table 4 lists Factors considered by respondents when Purchasing Street Food: Taste Purchasing Decisions account for 100 (63%), Price Purchasing Decisions 80 (50%), Safety Purchasing Decisions 60 (38%) and Consumer Trusting the street food 60 (38%), and Consumer not Trusting Street Food 100 (63%).

Table 4. Factors Considered When Purchasing Street Food

Variables	Characteristic	Frequency	Percentage (%)
Food Purchasing	Food Taste	50/160	31%
	Food Price	70/160	44%
	Food Safety	40/160	25%
Consumer Trust	Consumer Trust (Yes)	60/160	38%
	Consumer Trust (No)	100/160	63%

Note: Frequencies represent the number of respondents in each category. - Percentages are calculated from the total sample size ($N=160$). - Categories under Factors considered in purchasing: taste, price, safety, trust.

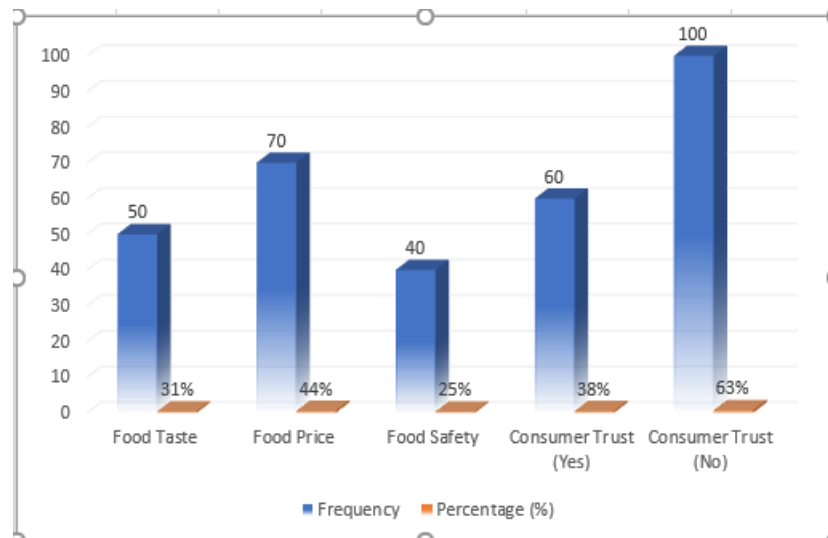


Figure 4. Factors Considered when Purchasing Street Food

Note: This figure illustrates the key factors influencing street food purchasing decisions among respondents ($N = 160$).

Taste influenced 100 respondents (63%), price influenced 80 respondents (50%), and safety influenced 60 respondents (38%). Regarding consumer trust, 60 respondents (38%) trusted street food vendors, while 100 respondents (63%) did not.

Table 5 and Figure 5 list the environmental factors: for the clean environment, most of the respondents do not perceive the street food environment as clean, representing 63%. For Waste management, it is noted that Improper waste management is prevalent with 66%. And for Access to clean water, most of the respondents do not have access to clean water, representing 59%. This finding suggests that farmers in the study area are diversifying their

crops to reduce the risks associated with climate change.

Table 5 lists the Environmental Factors about the Street Food Consumption: Clean environment of the Street Food Consumption account for 60 (38%), No Clean environment of the Street Food Consumption 100 (63%), Proper Waste Management 55 (34%), Improper Waste Management 105 (66%), Access to Clean Water 65 (41%), No Access to Clean Water 95 (59%).

Table 5. Environmental Factors

Variables	Characteristics	Frequency	Percentage (%)
Cleanliness	Cleanliness (Yes)	60/160	38%
	Cleanliness (No)	100/160	63%
Waste Management	Proper Waste Management	55/160	34%
	Improper Waste Management	105/160	66%
Access to Clean Water	Access to Clean Water (Yes)	65/160	41%
	Access to Clean Water (No)	95/160	59%

Note: Frequencies represent the number of respondents in each category. - Percentages are calculated from the total sample size ($N=160$). - Categories under Environmental Factors: Cleanliness, Waste handling, water quality for usage.

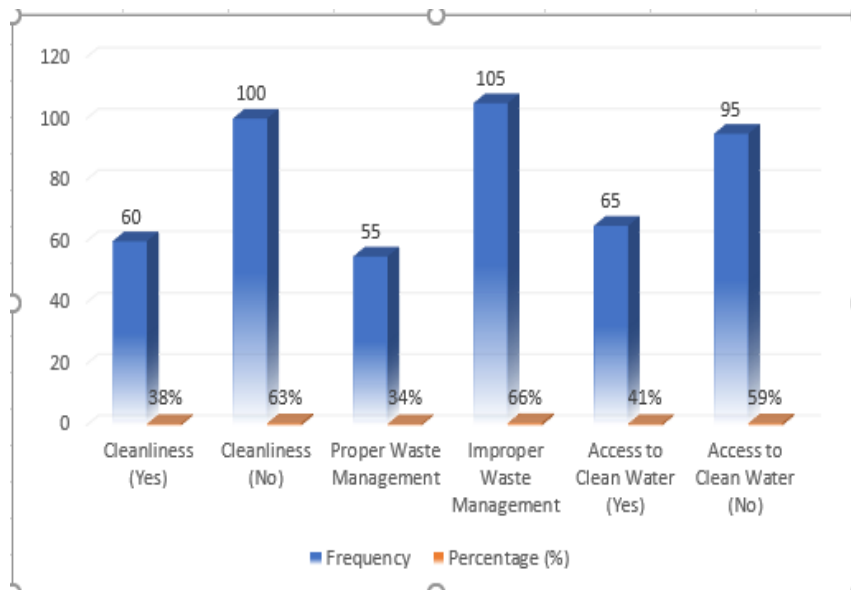


Figure 5. Environmental Factors

Note: This figure presents environmental conditions related to street food consumption among respondents ($N = 160$). A clean environment was reported by 60 respondents (38%), while 100 respondents (63%) indicated an unclean environment. Proper waste management was practiced by 55 respondents (34%), with 105 respondents (66%) reporting improper waste management. Access to clean water was available to 65 respondents (41%), whereas 95 respondents (59%) lacked access.

Conclusion

The study provides insights into the effects of the public health behavior of street food consumption among people living in Lubyayi city, Kabongo Health Zone, and identifies factors associated with safe food consumption practices. The study summarized the key findings and recommendations for improving food safety and reducing health risks associated with street food consumption. The study concluded that Inadequate food safety knowledge and poor food handling practices are common. The food Taste and price are prioritized over safety in purchasing decisions. The surrounding environmental factors, such as cleanliness and waste management, are very concerning. The consumers' trust in street food vendors is low. To support consumers in the study environment, it is recommended to provide consumers with accurate and timely food safety education to inform their decision-making. Provide Consumers and Vendors access to clean water and improve waste management habits. Provide Consumers and Vendors with training and capacity-building

programs to enhance their knowledge and skills in proper food handling practices. Promote accountability and transparency among street food vendors and strengthen regulations and enforcement.

Source of Information

Questionnaire 2025.

Ethical Approval

Informed consent was obtained from the study respondents, and approval was obtained from the head office of the Rural Community Farmers Network (00516042025).

Conflict of Interest

No conflict of interest is attached to this article.

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