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Informal Catering and Food Safety and Hygiene Challenges in the City of Kenge (Democratic Republic of the Congo)

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Abstract: Informal street food catering constitutes an essential source of food for low-income populations in Kenge. However, its informal nature generates significant health risks due to inadequate food and environmental hygiene conditions. The study, conducted among customers of informal food outlets, shows that their patronage is mainly motivated by affordable prices, despite limited awareness of health risks, the use of non-potable water, and poor waste management practices. Although hygiene conditions are often perceived as acceptable by users, cases of illness following consumption are frequently reported. The study therefore highlights the need for institutional regulation, as well as awareness-raising and training measures, to sustainably improve hygiene without compromising the economic accessibility of this sector.

Keywords: Informal catering; Food hygiene; Environmental hygiene; Public health; Food safety; City of Kenge.

1. Introduction

Food safety and food and environmental hygiene represent major public health challenges in developing countries, where access to safe food remains limited for a large proportion of the population due to income inequalities (FAO et al., 2021). Hygiene deficiencies, particularly inadequate access to potable water and poor waste management, expose populations to significant health risks, especially in Africa (WHO, 2002).

In this context, informal food outlets, although they meet the dietary needs of low-income urban populations, present high risks of food contamination due to precarious preparation conditions and unsanitary environments. Foodborne diseases, responsible for more than 600 million cases and 420,000 deaths annually worldwide, highlight the inseparable link between food security and food safety (WHO, 2018; FAO & WHO, 2020).

In the Democratic Republic of the Congo, particularly in the city of Kenge, the proliferation of informal restaurants locally known as *Malewa*, mostly run by women, generally occurs outside compliance with food and environmental hygiene standards. Despite documented health risks such as diarrhea, amoebiasis, and typhoid fever (Bompengo, 2017), these establishments continue to attract increasing numbers of customers due to their very affordable prices, in a context characterized by urban unsanitary conditions and insufficient public intervention.

This study aims to analyze users' motivations for patronizing informal restaurants in the city of Kenge, assess their perception of hygiene conditions, and examine their level of awareness regarding the consequences of poor food and environmental hygiene practices on food safety, in order to contribute to a better understanding of public health challenges related to informal catering.

1.1 General Hypothesis

Informal restaurants known as *Malewa* provide meals at very affordable prices, thereby attracting the most disadvantaged segments of the population, despite generally poor food and environmental hygiene conditions, and consumers possess varying levels of knowledge regarding the health consequences of these poor hygiene conditions.

1.2 Specific Hypotheses

- The low income level of consumers and the affordable prices practiced in informal restaurants constitute the main factors of attractiveness of these establishments.
- Consumers are aware of the poor food and environmental hygiene conditions in informal restaurants and their consequences on food safety.

1.3 Objectives of the Study

1.3.1 General Objective

To determine users' motivations for patronizing informal restaurants, their level of appreciation of hygiene conditions, and their knowledge of the consequences of poor food and environmental hygiene on food safety.

1.3.2 Specific Objectives

- To identify users' motivations for patronizing informal restaurants;
- To analyze users' perception of hygiene conditions and their knowledge of associated health risks.

1.4 Justification and Relevance of the Study

The choice of a research topic always responds to both scientific and personal interest, linked to the researcher's prior training and mastery of fundamental knowledge in the field studied (Mayala et al., 1985). This study aims to provide baseline data that may guide future research on food hygiene and food safety, while contributing to awareness-raising among consumers and informal restaurant operators to improve hygienic practices.

1.5 Methodology

This study combined exploratory and descriptive methods to better understand food and environmental hygiene and food safety issues in the informal catering sector in Kenge, a field that remains poorly documented. The techniques used included surveys, interviews, direct observation, documentary review, and sampling.

2. Study Area, Materials, and Methods

The study area is the city of Kenge, the capital of Kwango Province, located approximately 275 km from Kinshasa along National Road No. 1. Founded in 1954 and granted city status in 2015, Kenge is divided into five municipalities. It is characterized by a humid tropical climate with two seasons, degraded Guinean savanna vegetation, poor sandy-clay soils, and a hydrographic network dominated by the Bakali and Wamba rivers.

The population, estimated at 285,877 inhabitants in 2023, is marked by strong ethnic diversity and high concentration in certain neighborhoods. The main socioeconomic activities include subsistence agriculture, small livestock farming, trade, services, motorcycle transport (*mototaxi*), and street food catering, which constitutes a major source of income and food for low-income populations.

Methodologically, the study adopted an exploratory and descriptive approach. Data collection relied on documentary review, a pre-survey, and a field survey. The tools used included an interview-administered questionnaire, an interview guide, and direct observation. The materials consisted of living material (customers of informal restaurants) and non-living material, including data collection instruments and logistical resources.

The study population consisted of customers of informal restaurants in the city of Kenge. Sampling was conducted based on clearly defined inclusion and exclusion criteria. Following the pre-survey, 45 informal restaurants were identified using the snowball sampling method. A total of 90 customers (two per restaurant) were interviewed, with proportional distribution across the concerned municipalities.

Ethical considerations were strictly respected, including obtaining the necessary authorizations, informed consent from participants, and ensuring anonymity and confidentiality of the collected information.

3. Presentation, Interpretation, and Discussion of Results

3.1.1 Age Groups of Respondents

Age Groups	Frequency	%
Under 18	8	8.8
19–29	23	25.5
30–39	27	30
40 and above	32	35.5
Total	90	100

Table 2 shows that among the 90 respondents, 32 (35.5%) are 40 years and older, 27 (30%) are between 30–39 years, 23 (25.5%) are in the 19–29 age group, and 8 (8.8%) are under 18 years old.

3.1.2 Gender of Respondents

Gender	Frequency	%
Male (M)	63	70
Female (F)	27	30
Total	90	100

Table 3 indicates that among the 90 respondents, 63 (70%) are male and 27 (30%) are female. Therefore, this study is not gender-balanced.

3.1.3 Marital Status of Respondents

Marital Status	Frequency	%
Married	38	42.2
Single	31	34.4
Divorced	5	5.5
Widowed	16	17.7
Total	90	100

Table 4 shows that among the 90 respondents, 38 (42.2%) are married, 31 (34.4%) are single, 5 (5.5%) are divorced, and 16 (17.7%) are widowed.

3.1.4 Socio-professional Categories of Respondents

Category	Frequency	%
State employee	12	13.3
Teacher	9	10.0
Lawyer	4	4.4
Motorcycle taxi driver	13	14.4
Health personnel	4	4.4
Trader	13	14.4
Student	10	11.1
Technician	14	15.5
Unemployed	11	12.2
Total	90	100

The table above shows that among the 90 respondents, 12 (13.3%) are state employees, 9 (10%) are teachers, 4 (4.4%) are lawyers, 13 (14.4%) are motorcycle taxi drivers, 4 (4.4%) are health personnel, 13 (14.4%) are traders, 10 (11.1%) are students, 14 (15.5%) are technicians, and 11 (12.2%) are unemployed.

3.1.5 Educational Level of Respondents

Education Level	Frequency	%
Primary	2	2.2
Secondary	31	34.4
Higher/University	34	37.7
No formal education	23	25.5
Total	90	100

Source: Our 2024 Surveys

As indicated above, among the 90 respondents, 2 (2.2%) have primary education, 31 (34.4%) have secondary education, 34 (37.7%) have higher or university education, and 23 (25.5%) have no formal education.

3.2 Data on Consumption in Informal Restaurants

3.2.1 Respondents' Frequency of Eating at Restaurants

Response	Frequency	%
Yes	36	40
No	54	60
Total	90	100

Table 7 shows that among the 90 respondents, 36 (40%) eat regularly at restaurants, while 54 (60%) do not.

3.2.2 Number of Times Regular Customers Eat at Restaurants per Week

Frequency per week	Frequency	%
1–3	13	36.1
3–5	7	19.4
5–7	16	44.4
Total	36	100

Table 8 reveals that among the 36 regular customers, 16 (44.4%) eat 5–7 times per week, 13 (36.1%) eat 1–3 times per week, and 7 (19.4%) eat 3–5 times per week.

3.3 Data on Hygiene and Health

3.3.1 Factors Influencing Choice of Restaurant

Factor	Frequency	%
Organoleptic quality of food	14	15.5
Cleanliness of food	11	12.2
Cleanliness of staff	1	1.1
Cleanliness of environment	6	6.7
Cleanliness of utensils	8	8.8
Price	7	7.7
All factors combined	43	47.7
Total	90	100

Table 9 shows that 43 (47.7%) of respondents consider multiple factors (food quality, cleanliness of food, staff, environment, utensils, and price) when choosing a restaurant. Other respondents prioritized individual factors such as food quality (14; 15.5%), cleanliness of food (11; 12.2%), price (7; 7.7%), cleanliness of utensils (8; 8.8%), cleanliness of the environment (6; 6.7%), and staff cleanliness (1; 1.1%).

3.3.2 Respondents' Assessment of Food Quality in Informal Restaurants

Quality	Frequency	%
Passable	46	51.1
Good	39	43.3
Very good	5	5.5
Less good	0	0
Poor	0	0
Total	90	100

Table 10 indicates that among the 90 respondents, 46 (51.1%) rated the food as passable, 39 (43.3%) as good, and 5 (5.5%) as very good.

3.3.3 Appreciation of Hygiene Conditions of Prepared Foods

Response	Frequency	%
Yes	62	68.8
No	28	31.1
Total	90	100

Table 11 shows that 62 (68.8%) respondents consider the hygiene of prepared foods appropriate, while 28 (31.1%) do not.

3.3.4 Knowledge of Consequences of Poor Food Hygiene

Response	Frequency	%
Yes	38	42.2
No	52	57.7
Total	90	100

Table 12 reveals that 52 (57.7%) respondents are unaware of the consequences of poor food hygiene, while 38 (42.2%) are aware.

3.3.5 Assessment of Restaurant Utensils

Assessment	Frequency	%
Clean	63	70
Very clean	12	13.3
Dirty	15	16.6

Very dirty	0	0
Total	90	100

Table 13 shows that 63 (70%) respondents consider utensils clean, 12 (13.3%) very clean, and 15 (16.6%) dirty.

3.3.6 Assessment of Drinking Water Quality in Restaurants

Response	Frequency	%
Potable	32	35.5
Not potable	58	64.4
Total	90	100

Table 14 shows that 58 (64.4%) respondents consider the drinking water non-potable, while 32 (35.5%) consider it potable.

3.3.7 Consumption of Presented Drinking Water

Response	Frequency	%
Yes	12	13.3
No	78	86.6
Total	90	100

Table 15 reveals that 78 (86.6%) respondents do not drink the water presented in restaurants, while 12 (13.3%) do.

3.3.8 Quality of Drinking Water Containers

Quality	Frequency	%
Clean	56	62.22
Very clean	20	22.2
Dirty	14	15.56
Very dirty	0	0
Total	90	100

Table 16 shows that 56 (62.2%) respondents consider the containers clean, 20 (22.2%) very clean, and 14 (15.5%) dirty.

3.3.9 Health Effects of Consuming at Informal Restaurants

Response	Frequency	%
Yes	27	30
No	63	70
Total	90	100

Table 17 reveals that 63 (70%) respondents have never fallen ill after eating at an informal restaurant, while 27 (30%) have.

3.4 Data on Environment, Waste Management, and Health

3.4.1 Assessment of Restaurant Surroundings

Assessment	Frequency	%
Clean	26	28.8
Slightly clean	34	37.6
Dirty	17	18.8
Very dirty	4	4.4
Very clean	9	10
Total	90	100

Table 18 shows that 34 (37.6%) respondents consider the surroundings slightly clean, 26 (28.8%) clean, 17 (18.8%) dirty, 9 (10%) very clean, and 4 (4.4%) very dirty.

3.4.2 Assessment of Restaurant Furniture

Assessment	Frequency	%
Clean	34	37.7
Slightly clean	36	40
Dirty	7	7.7
Very clean	13	14.4

Total	90	100

Table 19 shows that 36 (40%) respondents say furniture is slightly clean, 34 (37.7%) clean, 13 (14.4%) very clean, and 7 (7.7%) dirty.

3.4.3 Environment and Exposure of Clients to Diseases

Response	Frequency	%
Yes	55	61.1
No	35	38.8
Total	90	100

Table 20 shows that 55 (61.1%) respondents consider the environment as potentially exposing clients to diseases, while 35 (38.8%) do not.

3.4.4 Poor Waste Management and Exposure to Diseases

Disease	Frequency	%
Diarrhea	2	2.2
Typhoid fever	40	44.4
Intestinal worms	11	12.2
Tapeworm	4	4.4
Malaria	32	35.5
Amoebiasis	5	5.5
Yeast infection	4	4.4
Total	90	100

Table 21 indicates that 40 (44.4%) respondents associate typhoid fever with restaurant environments, 32 (35.5%) malaria, 11 (12.2%) intestinal worms, 5 (5.5%) amoebiasis, 4 (4.4%) tapeworm, and 2 (2.2%) diarrhea.

3.4.5 Impact of Informal Restaurants on the Environment

Response	Frequency	%
Yes	84	93.3
No	6	6.6
Total	90	100

Table 22 shows that 84 (93.3%) respondents believe informal restaurants have a negative impact on the environment, while 6 (6.6%) do not.

Discussion

The discussion of the results highlights consistency with previous works by FAO and WHO, which indicate that foods prepared and sold under precarious conditions pose a risk to public health. The findings also confirm that, despite awareness of health risks, economic constraints drive populations to continue patronizing these establishments, thereby validating the study's hypotheses.

Conclusion

This study highlights the realities of food and environmental hygiene in informal restaurants in the city of Kenge. These establishments, while essential for affordable food access and income generation, operate under often inadequate hygiene conditions, exposing consumers to significant health risks.

The results show that customers are generally aware of hygiene problems; however, economic constraints—particularly low purchasing power and the high cost of food prepared under compliant sanitary conditions—force them to rely on informal catering. This situation favors the emergence of foodborne and environmentally related diseases such as typhoid fever, diarrhea, and other so-called "dirty hands" diseases.

It is therefore necessary to establish appropriate regulation of informal restaurants through awareness-raising among operators and consumers, improvement of hygiene practices, and implementation of adapted environmental policies. The use of economic incentive instruments, such as taxes and subsidies, could help sustainably improve food and environmental hygiene while preserving the crucial socioeconomic role of these activities in the city of Kenge.

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