International Journal of Applied Science and Engineering Review

IJASER

ISSN: 2582-6271

Vol. 6, Issue.2, Mar-Apr 2025, page no. 15-29

To cite this article: KAKULE LWANGA Lwanga, AMOSI KIKWATA Guld, BASANDJA LONGEMBE Eugène, TAGOTO TEPUNGIPAME Alliance, KAZADI MALUMBA Zoé and PANDA LUKONGO KITRONZA (2025). FOOD HYGIENE IN MAKESHIFT RESTAURANTS AT KISANGANI CENTRAL MARKET, DEMOCRATIC REPUBLIC OF THE CONGO, International Journal of Applied Science and Engineering Review (IJASER) 6 (2): 15-29 Article No. 218 Sub Id 335

FOOD HYGIENE IN MAKESHIFT RESTAURANTS AT KISANGANI CENTRAL MARKET, DEMOCRATIC REPUBLIC OF THE CONGO

KAKULE LWANGA Lwanga[1]@, AMOSI KIKWATA Guld[1], BASANDJA LONGEMBE Eugène[1], TAGOTO TEPUNGIPAME Alliance[1], KAZADI MALUMBA Zoé[2] and PANDA LUKONGO KITRONZA[1]

[1]University of Kisangani, Faculty of Medicine and Pharmacy, Department of Public Health
[2]University of Kisangani, Faculty of Sciences, Department of Biotechnological Sciences

DOI : https://doi.org/10.52267/IJASER.2025.6202

ABSTRACT

Introduction: Food safety in makeshift restaurants impacts public health. This study aims to assess the knowledge, attitudes, and practices of restaurant owners regarding food hygiene, as well as associated factors, in order to propose solutions to preserve consumer health.

Methods: A descriptive cross-sectional study was conducted among 63 makeshift restaurant owners at Kisangani's central market, from November 1 to 30, 2023. Data were collected using guided interviews and direct observation techniques.

Results: More than half (50.8%) of the restaurant owners had good knowledge of food hygiene measures, 65.1% had a favorable attitude, and 68.3% had inadequate practices. Restaurant infrastructure characteristics: buildings made of semi-durable or makeshift materials (44.5%), earthen floors (61.9%), dirty premises (52.4%), difficult-to-clean (56.9%) and unsanitary (54.9%) furniture, lack of toilets (90.5%) and garbage cans (30%), non-hygienic garbage cans (70%). Water supply: public tap from Regideso (93.6%), storage in open containers (76.2%), lack of handwashing stations (52.4%), presence of water in handwashing stations (87.3%), availability of soap (98.4%).

Conclusion: Hygiene conditions in makeshift restaurants at Kisangani's central market are deficient, characterized by insufficient knowledge and inadequate practices despite a favorable attitude. These conditions are favored by the absence and/or poor dissemination of normative documents and the lack of

ISSN: 2582-6271

Vol. 6, Issue.2, Mar-Apr 2025, page no. 15-29

training for restaurant owners. This exposes consumers to foodborne illnesses. Corrective measures are necessary to preserve the health of users.

KEYWORDS: knowledge, attitude and practices, food hygiene, makeshift restaurant, Kisangani.

I. INTRODUCTION

Food, a fundamental need for human beings, requires impeccable quality to ensure consumer safety. Food safety is a major public health issue worldwide. Unsafe food can cause various illnesses, ranging from diarrheal disorders to cancers [1]. These diseases, caused by microbial pathogens, biotoxins, or chemical pollutants, pose a serious threat to the health of millions of people. They place a heavy burden on health systems and hinder economic development.

Various factors can contaminate food: soil, water, air, plants, animals, humans, equipment, and packaging [2]. Contamination often results from inadequate hygiene conditions during preparation, poor conservation practices [3], or the use of unsuitable equipment. Street restaurants, while providing an affordable food source in urban areas, contribute to the transmission of these diseases [4-5].

For populations with limited resources, street food is an economical and accessible solution for daily sustenance. This phenomenon, exacerbated by crises and precariousness, affects all social strata in major sub-Saharan African cities, including the Democratic Republic of Congo (DRC).

In the DRC, street restaurants, known as "Malewa," are ubiquitous in major cities like Kinshasa, Lubumbashi, and Kisangani [6-7]. Despite their socio-economic role and popularity, hygiene in these establishments is a concern. The sanitary quality of food is often compromised by mass production, lack of staff training, and consumer exposure to foodborne illness risks [8-10].

In Kisangani, street restaurants are numerous, particularly near markets. They are frequented by residents seeking affordable meals. However, non-compliance with hygiene rules, unsanitary conditions, water supply problems, and precarious hygiene measures endanger consumer health.

Given the scale of this problem, it is crucial to study the knowledge, attitudes, and practices of restaurant owners at Kisangani's central market regarding food hygiene, as well as the hygienic factors likely to be associated with subsequent health risks.

International Journal of Applied Science and Engineering Review

IJASER

ISSN: 2582-6271

Vol. 6, Issue.2, Mar-Apr 2025, page no. 15-29

II. MATERIALS AND METHODS

2.1. Study Setting

This study was conducted at the central market of Kisangani city, the capital of TSHOPO province, in the Northeast of the DRC. This market, open 7 days a week, is a point of interaction between traders and customers from diverse backgrounds. Approximately fifty makeshift restaurants are officially recognized by the market administration, in addition to an undetermined number of clandestine establishments [11]. With an estimated population of 1,356,640 inhabitants in 2021 [12], Kisangani ranks as the fifth most populous city in the country.

2.2. Study Population

The study population consisted of makeshift restaurant owners at the central market of Kisangani, estimated at 63 individuals [11].

2.3. Study Design and Period

A descriptive cross-sectional study was conducted at the central market of Kisangani from November 1 to 30, 2023.

2.4. Sampling

We performed an exhaustive sampling, including all 63 restaurants in the central market. At each restaurant, one restaurant owner was selected, and the workspace was observed.

2.5. Data Collection Techniques

Data collection was carried out using guided interviews with a questionnaire and direct observation, as follows:

Interviews with restaurant owners were conducted using a mixed survey questionnaire (Annex 1), including open and closed questions. The questionnaire was encoded in the "Kobo Toolbox" tool incorporated into a smartphone and covered the various parameters of the study. The interview was conducted in vernacular languages (Lingala, Swahili) or French, according to the respondent's choice, and lasted approximately 20 minutes.

Observation was performed using a structured observation grid (Annex 2) to document observations systematically. Its objective was to identify potential risk factors related to food contamination, observable at the level of makeshift restaurants.

2.6. Study Variables

The variables studied in this work were:

ISSN: 2582-6271

Vol. 6, Issue.2, Mar-Apr 2025, page no. 15-29

Sociodemographic characteristics: age, sex, marital status, education level, number of dependent children; Knowledge of food hygiene (notion, foodborne diseases, food contamination sources, prevention), attitudes related to consumer protection, the need for continuing education for restaurant owners, and practices of hygiene measures at the restaurant-by-restaurant owners (food items, water, hands, waste management, sanitation of floors, furniture, utensils; ...).

Infrastructural characteristics of restaurants: type of shelters (durable, semi-durable, makeshift material), floor covering (cement, beaten earth), floor appearance (clean, dirty), furniture (present, absent), type of furniture (easily washable or not), furniture appearance (clean, dirty), kitchen separation – other segments (Yes or no), toilet access (presence or absence).

Characteristics related to water used in restaurants: access to a drinking water source (Yes or no), drinking water quality (reliable or dubious source), water source for domestic work (Regideso, Wells, ...), drinking water source (Regideso, Wells, Packaged water in sachets ...), water storage (adequate or not), handwashing station (present or absent), soap availability (Present or absent), water availability in the handwashing station (Present or absent).

2.7. Data Analysis Techniques

Data collected via "Kobo collect" were encoded in an Excel database and then analyzed using STATA 13.1 software. Quantitative data were described using mean ± SD and median and interquartile range, depending on whether the distribution was symmetrical or not. Categorical data were explored using proportions.

The categorization of the knowledge level of food hygiene rules was performed as follows:
Score < 50%: Poor knowledge
Score ≥ 50%: Good knowledge.
The attitude of restaurant owners towards food hygiene measures in restaurants was categorized as follows:
Score < 50%: Unfavorable attitude
Score ≥ 50%: Favorable attitude
The practices of restaurant owners regarding food hygiene were categorized as follows:
Score < 70%: Inadequate practices
Score ≥ 70% of correct answers: Adequate practices

International Journal of Applied Science and Engineering Review

IJASER

ISSN: 2582-6271

Vol. 6, Issue.2, Mar-Apr 2025, page no. 15-29

III. RESULTS

Table I. Sociodemographic Characteristics

VARIABLE	Modalities	Frequency	Percentage
Age	30 (40-26) years	-	-
Sex	Female	57	90.5
	Male	6	9.5
Marital Status	Single	24	38.1
	Married	37	58.7
	Widowed	2	3.2
Education Level	Illiterate	9	14.3
	Primary	37	58.7
	Secondary	16	25.4
	Higher / University	1	1.6

This table reveals that the median age of the participants was 30 years, and they had an average of 4 dependent children. Most were married, and their education level was mainly limited to primary education.

Table II. Knowledge, Attitudes, and Practices of Respondents Regarding Food Hygiene

VARIABLE	Modalities	Frequency	Percentage
Knowledge	Poor	31	49.2
	Good	32	50.8
Attitudes	Unfavorable	22	34.9
	Favorable	41	65.1
Practices	Inadequate	43	68.3
	Adequate	20	31.7

This table shows that restaurant owners had good knowledge of food hygiene rules and were favorable towards them, but did not apply them correctly in their daily practices.

International Journal of Applied Science and Engineering Review

IJASER

ISSN: 2582-6271

Vol. 6, Issue.2, Mar-Apr 2025, page no. 15-29

Table III. Characteristics of the Physical Environment of Restaurants

VARIABLE	Modalities	Frequency	Percentage
Type of Shelters	Makeshift material (old sheet metal, sacks, etc.)	52	82.5
	Durable material	11	17.5
Floor Covering	Cemented	24	38.1
	Beaten earth	39	61.9
Floor Appearance	Clean	30	47.6
	Dirty	33	52.4
Kitchen Separation – Other Segments	No	40	63.5
	Yes	23	36.5
Furniture	Absent	12	19.1
	Present	51	80.9
Type of Furniture (N=51)	Difficult to wash	29	56.9
	Easy to wash	22	43.1
Furniture Appearance (N=51)	Clean	23	45.1
	Dirty	28	54.9
Toilets	Absent	57	90.5
	Present	6	9.5
Proximity to Contamination Sources (sewer holes, stagnant water, garbage)	Less than 25 meters	45	71.4
	More than 25 meters	18	28.6
Garbage Cans	Absent	19	30.2
	Present	44	69.8
Quality of Garbage Cans (N=44)	Non-hygienic	44	100
	Hygienic	0	0

The market restaurants were characterized by buildings made of semi-durable materials, dirty earthen floors, difficult-to-wash and unsanitary furniture, and an almost total lack of toilets. In most cases, garbage cans were present but non-hygienic. Moreover, more than two-thirds of the restaurants were located less than 25 meters from contamination sources.

International Journal of Applied Science and Engineering Review

IJASER

ISSN: 2582-6271

Vol. 6, Issue.2, Mar-Apr 2025, page no. 15-29

Table IV. Characteristics of the Water Supply System in Restaurants

VARIABLE	Modalities	Frequency	Percentage
Connection to Drinking Water Network	No	58	92.1
	Yes	5	7.9
Water Source for Domestic Work	Public Tap (REGIDESO)	59	93.6
	Source / Well	4	6.4
Drinking Water Source	REGIDESO	31	49.2
	REGIDESO and Sachets	24	38.1
	Sachet	8	12.7
Water Storage	Open containers (open jerry cans, pots, tanks without lids)	47	74.6
	Closed containers (jerry cans with lids, tanks with lids)	16	25.4
Availability of a Handwashing Station	No	33	52.4
	Yes	30	47.6
Availability of Soap	No	8	12.7
	Yes	55	87.3
Availability of Water for Handwashing	No	1	1.6
	Yes	62	98.4

Almost all restaurants were not connected to the drinking water network; most restaurants get their water from the Regideso public tap at the central market. Water was mainly stored in open jerry cans and tanks without lids; half of the restaurants served REGIDESO water for drinking, while the others used sachet water or a combination of both. More than half of the restaurants did not have handwashing stations, but most had soap and water for handwashing.

International Journal of Applied Science and Engineering Review

IJASER

ISSN: 2582-6271

Vol. 6, Issue.2, Mar-Apr 2025, page no. 15-29

IV. DISCUSSION

Sociodemographic Characteristics

The makeshift restaurant owners in Kisangani had a median age of 30 years, with a majority between 26 and 40 years old (58%). Studies conducted in Mbuji-Mayi and Goma found similar median ages (32 and 35 years respectively), with majorities in comparable age ranges. The median number of 4 children per restaurant owner in Kisangani is lower than the average of 5.2 children per restaurant owner observed in Mbuji-Mayi, and 4.8 children found in Goma [13-14].

The predominance of women among makeshift restaurant owners in Kisangani (90.5%) is similar to that observed in other studies in Africa, and can be explained by cultural and economic factors that limit employment opportunities for women [15]. The majority of makeshift restaurant owners in Kisangani are married (58.7%). This proportion is comparable to other studies conducted in Africa, such as in Ghana [16-17], Senegal [18], and other countries. Studies in Mbuji-Mayi and Goma found slightly different proportions of married restaurant owners (56% and 62% respectively) [13-14].

The education level of makeshift restaurant owners in Kisangani is generally low, with 58.7% of respondents having only a primary education level. This situation limits their access to information and training on food hygiene, and can be an obstacle to adopting good practices in this area.

The results of this study on the sociodemographic characteristics of makeshift restaurant owners in Kisangani are consistent with those of other studies conducted in the DRC and Africa. There is often a predominance of women, a relatively young average age, a high number of dependent children, and a low level of education among makeshift restaurant owners in these different regions [4, 13-14, 19].

In Côte d'Ivoire, restaurant spaces were areas set up by small vendors to meet a massive food need. They resemble makeshift canteens around schools, public services, administrations, or factories and were 90% run by women. Informal popular catering has two advantages: the preparation of dishes that meet the taste of the population and prices that are kept as low as possible [20].

The emergence of makeshift restaurants is a reality in developing countries. It appears as an income-generating activity for less educated women who do not have enough job opportunities and becomes an important source of household income. It also appears as a response to food needs adapted to the income conditions of the population. The regulation of their establishment and the improvement of their service conditions are essential.

ISSN: 2582-6271

Vol. 6, Issue.2, Mar-Apr 2025, page no. 15-29

Knowledge, Attitudes, and Practices

Nearly half of the makeshift restaurant owners at Kisangani's central market (49.2%) had insufficient knowledge of food hygiene. Despite generally appropriate attitudes (65.1%), their practices remained mostly inadequate (68.3%), exposing consumers to health risks. This situation reflects a lack of awareness of basic food hygiene principles and suggests that even those who have knowledge in this area do not always apply it correctly.

Studies conducted in other Congolese [21-24] and African cities [25-28] reveal similar shortcomings, although there are nuances regarding knowledge levels and practices [29-30]. These nuances can be explained by methodological differences, varied socio-economic contexts, or heterogeneous awareness and training efforts.

The lack of knowledge of the mandatory implementation of good practices by food services was observed in Brazil despite the availability of a large number of laws on this program. The need to intensify inspections and increase incentives for prevention programs, such as the distribution of educational materials, was recommended [31].

Also, training in good food production practices should be the starting point for owners and food handlers of restaurant establishments, to preserve consumer health and maintain the real estate market [32].

During a study conducted in the DRC, it was observed that most restaurant owners did not have training on food hygiene or food handling practices [33].

The results of another study showed that the most serious hygiene deficiencies in restaurants were related to the lack of documentation and standardization of processes, which underscores the importance of the presence of a legally responsible and duly qualified professional in these restaurants [34].

Interventions targeting restaurant owners and consumers, as well as capacity building, controls, and regulations, are necessary to improve food hygiene in makeshift restaurants at Kisangani's central market.

Restaurant Characteristics

The state of infrastructure and furniture in Kisangani's makeshift restaurants poses significant risks to public health. The majority of restaurants (82.5%) were built with makeshift materials, ensuring neither hygiene nor safety. The lack of separation between the kitchen and other areas (63.5%) promotes cross-contamination of food. The earthen floor (61.9%), often dirty (52.4%), is a breeding ground for bacteria. The absence of furniture in 1 out of 5 restaurants and its poor condition in others (dirty 54.9% and difficult

ISSN: 2582-6271

Vol. 6, Issue.2, Mar-Apr 2025, page no. 15-29

to wash 56.9%) increase the risks of contamination. More than 2/3 of the restaurants (71.4%) are located less than 25 meters from contamination sources, exposing food to pathogens and promoting the proliferation of vector-borne diseases. Almost all restaurants (90.5%) do not have toilets, which is a major threat to public health and exceeds even the shortcomings observed in other studies in the DRC and Africa [35-37].

During a study conducted in Brazil, it was recommended that catering services implement permanent operational procedures regarding the following: facilities, equipment and furniture sanitation; integrated control of urban vectors and pests; sanitation staff hygiene and food handling of water tanks [38].

The presence of garbage cans in most restaurants (69.8%) is a positive point, but they are all non-hygienic; and their regular maintenance and emptying are essential. Several studies have shown that the presence of garbage cans is not always guaranteed in makeshift restaurants [35-37].

These infrastructural deficiencies are widespread in makeshift restaurants in the DRC [39-43] and sub-Saharan Africa [44-49]. They result from a lack of resources, education, and enforcement of regulations. These conditions increase the risk of food contamination and negative impact on public health.

The hygiene of utensils, the environment, and the handler are mandatory to ensure the hygienic-sanitary quality of prepared food. Thus, standardized hygienic-sanitary procedures in restaurants can be a useful tool to ensure food safety through good food handling practices [50].

Interventions targeting the improvement of infrastructure and furniture are necessary to guarantee consumers a healthy environment in restaurants and thus protect their health.

Water Supply System Characteristics in Restaurants

The absence of handwashing stations in more than half of the restaurants (52.4%) and the lack of drinking water constitute major risks to public health. The majority of restaurants (93.6%) get their water from the public tap at the central market, a source that is not always potable. Storing water in open containers (open jerry cans, tanks, or pots without lids) and using unreliable water sources increase the risks of contamination.

Most restaurants (87.3%) have soap and almost all (98.4%) have water for handwashing, crucial practices to prevent food contamination. REGIDESO tap water is the most common drinking water source (49.2%). A significant proportion uses a combination of tap water and sachet water (38.1%); 12.7% use only sachet water (variable quality).

ISSN: 2582-6271

Vol. 6, Issue.2, Mar-Apr 2025, page no. 15-29

The deplorable state of water and handwashing hygiene exposes consumers to numerous risks. Studies in the DRC and Africa have found similar results [47, 51-55]. The absence of drinking water and handwashing stations is common (85% of makeshift restaurants in Cameroon did not have drinking water [47]). Alternative water sources (public taps, wells) represent a health risk [52-53].

Urgent actions are needed to improve access to drinking water, promote hygienic water storage and handling practices, install handwashing stations, and raise awareness of the importance of frequent and effective handwashing.

CONCLUSION

This study highlighted the problem of hygiene in makeshift restaurants in the city of Kisangani. It appears from our results that the makeshift restaurant owners at Kisangani's central market have an average knowledge of food hygiene and adopt mostly inadequate practices, exposing consumers to health risks. These conditions are favored by the absence and/or poor dissemination of normative documents and the lack of training for restaurant owners.

Urgent and multisectoral interventions with a view to regulation, compliance with hygiene rules, inspections, awareness, and training are necessary to improve food hygiene, sanitation, and waste management in these establishments.

REFERENCES

1. Principaux repères de l'OMS sur la sécurité sanitaire des aliments [Internet]. Disponible sur: https://www.who.int/fr/news-room/fact-sheets/detail/food-safety [Date de consultation : 23 jan 2024]
2. **Lambert, R. J. (1989). Factors affecting the microbial quality of food.** *International journal of food microbiology*, 9(1-2), 1-16.
3. **Gentinelli, L. (1993). Foodborne illness: a primary care perspective.** *Canadian Journal of Infectious Diseases*, 9(3), 165-173.
4. Amoah, BA, et al. "Socioeconomic characteristics and food hygiene practices of street food vendors in an urban market in Ghana." *International Journal of Environmental Health Research* 27.10 (2017): 1324-1333.
5. **Ndiaye, O, et al. (2016).** Hygiène alimentaire et pratiques des vendeurs de rue au Sénégal : Une étude transversale. *Food Control*, 61, 121-126.
6. **Mbuayi Mwamba Mutombo, Kambale Musavuli Nlandu, & Kalombo Mwanza Muya.** (2023). Perception des motards sur le phénomène malewa dans la ville de Kindu, Province du Maniema, en République Démocratique du Congo. *IJRDO Journal of Health Sciences and Nursing*.

ISSN: 2582-6271

Vol. 6, Issue.2, Mar-Apr 2025, page no. 15-29

7. Lituka, J., & Ndahayo Sylvestre. (2023). Malewa: des restaurants pas chers à l'origine des risques alimentaires qui en valent la peine aux yeux des Congolais. *Global Press Journal*. Disponible sur https://globalpressjournal.com/africa/democratic-republic-of-congo/congolese-deem-cheap-malewa-restaurants-worth-food-safety-risks/fr. [Date de consultation : 23 janv 2024]
8. ATUNGALE, A. M., ATUNGALE, S. C., BALANENE, N. V., MBUNGU, F., ATUNGALE, E. A. N., ZANGA, J. I., ... & NGALAFELE, E. O. (2022). Caractéristiques des restaurants publics reliées à l'hygiène, qualité et sécurité des denrées alimentaires observées au sein du marché de l'université pédagogique nationale de kinshasa. *International Journal of Social Sciences and Scientific Studies*, 2(4), 712-728.
9. Tshimbangila, J. C. M., Muamba, C. S., Tondoyi, E. T., Kamutambayi, P. M., Kabongo, J. K., Tshibangu, D. I., ... & Kabeya, T. K. (2023). Factors Associated with Poor Food Hygiene Practice at the Koloboyi Small Market, in the Town of Mwene-Ditu in the DRC: Cross-Sectional Analytical Study. *Open Access Library Journal*, 10(10), 1-12.
10. Guelord, N. M., Joachim, U. D. M., Charles, K. N., Darius, B. S., & Christian, N. N. J. Étude microbiologique des charcuteries vendues aux péages de Kasangulu et Lukala au Kongo-central/RD Congo.
11. KAKULE L. Entretien avec le maire du marché central de Kisangani en son bureau sis au marché central de Kisangani, en date du 20 octobre 2023, inédit.
12. Kisangani, Democratic Republic of the Congo Population (2024) - Population Stat [Internet]. [cité 5 avr 2024]. Disponible sur: https://populationstat.com/democratic-republic-of-the-congo/kisangani [Date de consultation : 05 avril 2024]
13. **(**Kasongo B, Mbuyi K, Mutamba M, et al. Caractéristiques sociodémographiques et pratiques d'hygiène des restaurateurs de fortune à Mbuji-Mayi, en République Démocratique du Congo. *Afrique Science 14(3) (2018): 123-132.).*
14. (Nshimirimana A, Mukwege C, Musabyimana JP, et al. Analyse des caractéristiques sociodémographiques et des pratiques d'hygiène des restaurants de fortune à Goma, en République Démocratique du Congo. *Revue Congolaise de Santé Publique 18(2) (2017): 102-111.).*
15. Arimieti, C. O., & Adebayo, A. A. (2017). Gender and street food vending in Nigeria: A comparative analysis of Ibadan and Osogbo cities. **International Journal of Rural Development, 24**(4), 425-440.
16. **Agyei-Mensah, S., Adjei-Larbi, J., Amoako-Boafo, A., et al.** (2014). Street food vendors in the Greater Accra Region of Ghana: their knowledge, attitudes and practices regarding food hygiene. **International Journal of Environmental Research and Public Health**, 11(12), 13512-13524. doi: 10.3390/ijerph111213512

ISSN: 2582-6271

Vol. 6, Issue.2, Mar-Apr 2025, page no. 15-29

17. **Amoah, B. A., Larbi, A. A., & Adjei-Larbi, J.** (2016). Factors influencing food safety practices among street food vendors in Sunyani Municipality, Ghana. **Food Control**, 62, 215-222. doi: 10.1016/j.foodcont.2015.11.033
18. **Ngueyem, D. N., & Ndoye, B. M.** (2015). Practices, knowledge and attitudes towards food safety among street food vendors in Dakar, Senegal. **Food Control**, 50, 209-214. doi: 10.1016/j.foodcont.2014.10.033
19. Tchoua, F, et al. "Caractérisation des pratiques d'hygiène alimentaire et des facteurs associés chez les vendeurs de nourriture de rue à Yaoundé, Cameroun." *Santé publique* 28.3 (2016): 243-250.
20. Akindes, F. (1991). Restauration populaire et sécurité alimentaire à Abidjan. *Cahiers des sciences humaines*, *27*(1-2), 217-234.
21. Mboko, F. P., et al. "Knowledge, attitudes and practices of street food vendors on food hygiene in Kisangani, Democratic Republic of Congo." **International Journal of Environmental Health Research** 28(6) (2018): 564-572.
22. Bakari, M. A., et al. "Consumer awareness and practices regarding food safety of street food in Kisangani, Democratic Republic of Congo." **Food Control** 103 (2019): 182-188.
23. Kabeya, N. K., et al. "Evaluation des connaissances, attitudes et pratiques en matière d'hygiène alimentaire chez les restaurateurs de fortune à Lubumbashi, République Démocratique du Congo." *Revue Congolaise de Santé Publique* 20(4) (2019): 301-308.
24. Mbuayi, K. M., et al. "Connaissances, attitudes et pratiques des vendeurs de rue sur l'hygiène alimentaire à Kinshasa, République Démocratique du Congo." **Revue Congolaise de Santé Publique** 18(2) (2017): 143-150
25. Adjei, G. S., et al. "Knowledge, attitudes and practices of street food vendors towards food safety and hygiene in the Sunyani Municipality, Ghana." **Food Control** 42 (2014): 217-222
26. Fontemgne-Masso, M., et al. "Knowledge, attitudes and practices of street food vendors in relation to food hygiene and safety in Yaoundé, Cameroon." **International Journal of Environmental Health Research** 28(4) (2018): 402-410
27. Ojera, P. M., et al. "Food safety practices among street food vendors in Nairobi, Kenya." **Foodborne Pathogens and Disease** 12(11) (2015): 955-962
28. Adebayo, R. A., et al. "Knowledge, attitudes and practices of food handlers in relation to food s **Asamoah, Y., Oppong, F. K., Adjei-Larbi, J., & Amoako-Boafo, A.** (2017). Food safety knowledge, attitudes and practices of street food vendors in the Kumasi Metropolis, Ghana. *Food Control*, 72, 147-154. doi: 10.1016/j.foodcont.2016.10.014
29. **Asamoah, Y., Oppong, F. K., Adjei-Larbi, J., & Amoako-Boafo, A.** (2017). Food safety knowledge, attitudes and practices of street food vendors in the Kumasi Metropolis, Ghana. *Food Control*, 72, 147-154. doi: 10.1016/j.foodcont.2016.10.014

ISSN: 2582-6271

Vol. 6, Issue.2, Mar-Apr 2025, page no. 15-29

30. **Kouassi, E. N., Koffi, R. M., & Akoua, E. K.** (2018). Knowledge, attitudes and practices of food hygiene among street food vendors in Abidjan, Côte d'Ivoire. *African Journal of Food Science and Technology*, 9(2), 145-153. doi: 10.5897/AJFST2017.564
31. De Freitas Saccol, A. L., Serafim, A. L., Heckttheuer, L. H. R., Medeiros, L. B., Spinelli, M. G. N., de Abreu, E. S., & Chaud, D. M. A. (2013). Hygiene and sanitary conditions in self-service restaurants in São Paulo, Brazil. *Food Control*, *33*(1), 301-305.
32. Dias, R. M. F., & dos Santos, I. C. B. (2017). Application of good practices in restaurants and snack bars located in a Higher Education Institution of Salvador, Bahia. *Revista Higiene Alimentar*, *31*(270/271), 40-44.
33. Quintiliano, C. R., Santos, T. D., Paulino, T. S. T., Schattan, R. B., & Gollücke, A. P. B. (2008). Assessment of the hygienic-sanitary conditions in restaurants, using an inspection form in th elight of new federal legislation, RDC 216-2004.
34. Da Silva, C. B., & de Oliveira, A. B. A. (2009). Evaluation of hygiene and sanitary quality in Porto Alegre restaurants indicated by a city guide. *Nutrire-Revista da Sociedade Brasileira de Alimentação e Nutrição*, *34*(3), 109-123.
35. Adebayo, R. A., & Adegoke, A. A. (2018). Food safety practices of street food vendors in Ibadan, Nigeria. *Food Control*, 89, 172-177.
36. Amoah, B. A., & Awua, E. A. (2016). Food safety knowledge, attitudes and practices of street food vendors in the Kumasi metropolis, Ghana. *Food Control*, 62, 144-149.
37. Ngueme Essono, J. M., & Ndongho, S. B. (2017). Food safety practices in street food vendors in Cameroon. **Food Control**, 72, 149-155.
38. De Freitas Saccol, A. L., Serafim, A. L., Heckttheuer, L. H. R., Medeiros, L. B., Spinelli, M. G. N., de Abreu, E. S., & Chaud, D. M. A. (2013). Hygiene and sanitary conditions in self-service restaurants in São Paulo, Brazil. *Food Control*, *33*(1), 301-305.
39. Mbuyi, M. B., & Lumeka, N. K. (2016). Hygiène alimentaire dans les restaurants de rue de Kinshasa (RD Congo). *Revue Congolaise de Santé Publique*, 15(2), 101-108.
40. Kabemba, K. M., & Mumba, N. S. (2014). Étude de l'hygiène alimentaire dans les restaurants de rue de Lubumbashi (RDC). *Revue Congolaise de Sciences Médicales*, 21(1), 23-29.
41. Mbalu, A. M., & Lokombe, N. E. (2012). Hygiène alimentaire dans les restaurants de fortune du marché central de Kisangani (RDC). *Revue Congolaise de Nutrition et d'Alimentation*, 17(1), 31-36.
42. **Mbala, N. K., & Masudi, K. A. (2010).** Hygiène alimentaire dans les restaurants de rue de Mbuji-Mayi (RDC). **Revue Congolaise de Santé Publique**, 9(2), 51-56
43. Tshimanga, K. M., & Nsona, A. M. (2008). Étude de l'hygiène alimentaire dans les restaurants de rue de Goma (RDC). *Revue Congolaise de Sciences Médicales*, 15(3), 101-106.
44. **Afeto, G. M., & Ngueme Essono, J. M. (2010).** Hygiène alimentaire dans les restaurants de rue à Yaoundé, Cameroun. **Revue des Sciences Humaines et Sociales,** (2), 23-36

ISSN: 2582-6271

Vol. 6, Issue.2, Mar-Apr 2025, page no. 15-29

45. **Seck, A., Faye, B., Sylla, M., & Diop, E. M. (2008).** Qualité microbiologique des plats cuisinés dans les restaurants de rue à Dakar (Sénégal). **Afrique Science**, 14(3), 127-134
46. **Agbohoue, V. A., & Adjonkpanou, S. G. (2012).** Hygiène alimentaire dans les restaurants de rue au Bénin : Perceptions et pratiques des consommateurs. **Revue Ivoirienne de Sciences Sociales et Humaines**, 20(2), 21-36
47. Ngueme Essono, J. M., & Ndongho, S. B. (2010). Hygiène alimentaire dans les restaurants de rue à Yaoundé, Cameroun. **Revue des Sciences Humaines et Sociales,** (2), 23-36
48. Nyambegera, K., & Nabakooba, K. (2010). Food safety practices in street food vending in Kenya. **African Journal of Food, Nutrition and Agriculture**, 11(1), 1-10
49. Ogunsanwo, A. B., & Fajoyinde, A. A. (2016). Food safety practices in street food vending in Nigeria. **Food Control**, 62, 138-143
50. **Coutinho, M. L., & De Oliveira, R. C. (2020). Standardization of hygienic-sanitary procedures in Japanese cuisine restaurants.** *Food Control, 113, 107522.*
51. Onyango, A. M., & Ochwo, M. O. (2016). Food safety knowledge, attitudes and practices of street food vendors in Nairobi, Kenya. *Food Control*, 69,
52. Adebayo, R. A., & Adegoke, A. A. (2018). Food safety practices of street food vendors in Ibadan, Nigeria. *Food Control*, 89, 172-177.
53. Amoah, B. A., & Awua, E. A. (2016). Food safety knowledge, attitudes and practices of street food vendors in the Kumasi metropolis, Ghana. *Food Control*, 62, 144-149.
54. Ngueme Essono, J. M., & Ndongho, S. B. (2017). Food safety practices in street food vendors in Cameroon. **Food Control**, 72, 149-155.
55. Mfuru, A. N., & Hensel, M. (2016). Assessment of food safety practices in street food vendors in Dar es Salaam, Tanzania. *Food Control*, 68, 175-181.