

Safety of Street Foods and Consumer Preference: A Bibliometric Analysis in Ghana

Ntiamoah Ebenezer, Acheampong George Gyimah

Akenten Appiah Menka University of Skills Training and Entrepreneurial Development, Ghana

DOI: <https://doi.org/10.51244/IJRSI.2025.1210000042>

Received: 02 Oct 2025; Accepted: 10 Oct 2025; Published: 01 November 2025

ABSTRACT

Street food vending is a common economic and social activity in developing countries; however, it poses potential risks to public health if proper hygiene practices are not followed. This study assessed the safety of street foods and consumer preferences in Ghana through a survey of food vendors using simple random sampling. Data collected were analyzed by tallying the respondents to each question item and percentage of responses. The data was analyzed using IBM SPSS version 26. From the data collected and analyzed, 98% of the respondents knew the essence of medical screening while 2% did not know of its importance. 16% of food vendors served food with bare hands whilst 84% served food with ladle. The findings also revealed that 78% wash their hands with soap and water before and after handling food, 20% wash their hands with water only and 2% does not wash their hands at all. Again 96% cover their head before serving food while the remaining 4% does not cover their head. 98% protects food from flies and dust in other to prevent contamination whilst the remaining 2% partially covers it. The findings highlight that, although most vendors demonstrate awareness of food hygiene practices, a small proportion still fail to adhere to basic standards. Therefore, there is a pressing need for stricter enforcement of hygiene regulations, regular medical screening, and continuous education of food vendors to safeguard consumer health and ensure food safety in Ghana.

Key words: Hygiene, Food, Public health, Safety.

INTRODUCTION

Street foods are very well patronized in many developing countries since they are affordable, easily accessible and also serve as an important source of income (Steyn et al., 2014). It is often sold from a portable food booth, food cart, or food truck and meant for immediate consumption. Some street foods are regional, but many have spread beyond their region of origin. Most street foods are classed as both finger food and fast food and are cheaper on average than restaurant meals. According to the Food and Agriculture Organization (FAO), approximately 2.5 billion people consume street foods daily, with women comprising 70-90% of vendors globally as cited by (Sezgin & Şanlıer, 2016). However, the lack of regulation and oversight in this sector often leads to significant health risks, including foodborne illnesses. Today, people may purchase street food for several reasons, such as to get flavorful food for a reasonable price in a sociable setting, to experience ethnic cuisines, or for nostalgia. However, these street foods largely do not meet proper hygienic standards and can therefore lead to morbidity and mortality due to food borne illness, and concomitant effects on trade and development. There is a noticeable increase of food vendors in Mampong Municipality in the Ashanti Region of Ghana as a result of dwindling and unemployment. Also, there have been rapidly growing and changing food demands by the urban dwellers needing cheaper food in the face of a harsh economy. Types of vending sites encompass stalls, a variety of push-carts, roadside stands, and hawkers depending upon the ingenuity of the individual, resources available, type of food sold and the availability of other facilities (FAO 1990). In spite of the numerous advantages offered by street foods, there are also several health hazards associated with this sector of the economy. Multiple lines of evidence reveal that food exposed for sale on the roadside may become contaminated either by spoilage or pathogenic micro-organisms (Moloi, 2019). Evidently, street vended foods have shown epidemiological links with illness (Rane, 2011). FAO (1997) further stipulates that foods raise concern with respect to their potential for serious food poisoning outbreaks. The rise of street food vending has created health problems like improper and unhygienic handling of food (Chukuezi, 2010).

According to studies done in Africa on street foods, their tremendous unlimited and unregulated growth has placed a severe strain on city resources, such as water, sewage systems and interference with the city plans through congestion and littering which adversely affect daily life (Canet & N'diaye, 1996).

According to the World Health Organization (WHO), unsafe food containing harmful bacteria, viruses, parasites, or chemical substances causes more than 200 diseases ranging from diarrhea to cancer. In developing countries, the prevalence of foodborne illnesses is particularly high due to inadequate food safety regulations and poor hygiene practices among vendors (World Health Organization, 2020). The ability of food-handling personnel to transmit disease is related to the degree of contact that they are likely to have with particular sorts of food. Investigations of outbreaks of food borne disease throughout the world show that, in nearly all instances, they are caused by failure to observe satisfactory standards in the preparation, processing, cooking, storing or retailing of food (Nigusse & Kumie, 2012). Organisms may be introduced into the food chain from a variety of sources and at different stages. Gastrointestinal pathogens may originate from animal sources, the environment, or occasionally from humans (WHO, 2023). Many raw foods, particularly of animal origin, are heavily contaminated with various organisms. Efforts to reduce microbial loads at different production stages often fall short due to systemic challenges. Consequently, eliminating pathogenic organisms depends largely on the proper application of advanced processing technologies. Techniques such as pasteurization, irradiation, cooking, freezing, and pickling at the industrial, retail, and domestic levels are essential in reducing risks. Furthermore, the prevention of foodborne disease outbreaks hinges on rigorous adherence to time and temperature controls, proper storage, and the prevention of cross-contamination (WHO, 2023). Recent advancements include automated monitoring systems that ensure compliance with safety measures and reduce human error.

MATERIALS AND METHODS

Description of Study area

The study was conducted in Mampong Municipality in the Ashanti Region of Ghana. Mampong Municipal is part of the savannah transitional zone of Ghana, with the vegetation being savanna woodland, with patches of tall elephant grass. It is bounded to the south by Sekyere South District, to the East by Sekyere Central and East by Ejura Sekyedumasi District. The capital for the Municipal is Mampong. It is also located within longitude 0°05" W and 1°30" W and latitudes 6°55" N and 7°30" N. The Municipal covers an area of about 782km² with 79 settlements of which about 61% is rural (Blay & Abunyuwah, 2024). The major towns within the Municipal are Mampong, Krobo, Dadease, Asaam, Kofiase, Adidwan and Apaah. The Municipal area has a projected total population of 116,632, with an annual growth rate of 1.3% (Ghana Statistical Service, 2021)

 The image part with relationship ID r189 was not found in the file.

Figure 1: Map of the study area

A structured and modified interview schedule was developed. A descriptive survey design was also used to extract answers to questionnaires concerning the current status of safety on street foods in Ghana. Food safety and rating scale were determined by the use of structured interviews, semi-structured questionnaires as well as observations. A descriptive cross-sectional study was used to assess the hygienic practices among vendors in Mampong Municipality. The study involved finding out hygienic practices of the food vending industry as a social unit. A census was conducted to obtain the list of food vending establishment in Mampong town. A proportional sample size was determined and the food service establishments were randomly selected.

RESULTS AND DISCUSSION

Table 1 shows the distribution of socio-demographic characteristics of the study respondents. Generally, the vendors in the study areas were predominantly females encompassing 84% of all respondents. The gender distribution of street food vendors in this study contrast with that reported by Muinde and Kuria 2005 in Kenya where street food vendors were found to be subjugated by males. It is however, consistent with (Marutha & Chelule, 2020): (Monney, Agyei, Ewoenam, Priscilla, & Nyaw, 2014) where it was dominated by female. The variation might be as a result of the geographical region in question. Most of the food vendors representing 60% were married. The vendors' level of education ranged from primary school to tertiary. Even some never attended school which recorded 12%. A little above half of the respondents attended senior high school which recorded 52%. Almost all the food vendors had registered with Municipal Assembly which represents 88%.

Table1. Demographic characteristics of the street food vendors (n=25)

Variable	Level	Frequency	Percentage (%)
Sex	Female	21	84
	Male	4	16
Age	18-25	6	24
	26-30	4	16
	31-50	12	48
	51-60	3	12
Marital status	Single	7	28
	Married	15	60
	Widowed	3	12
Education	Primary	1	4
	JHS	13	52
	SHS	7	28
	Tertiary	1	4
	Never went to school	3	12

Registration with Municipal	Yes	22	88
	No	3	12
Years of selling food	0-5	10	40
	6-10	4	16
	11-15	4	16
	16-20	2	8
	>20	5	20

From table 1 above, most food vendors (52%) in this study attained junior high school education. This corroborates that of the findings in (Apanga, Addah, & Sey, 2014) in a rural Northern Ghana where most of the vendors representing 32% attained junior high education. It however opposes the study reported by (Odonkor, Adom, Boatın, Bansa, & Odonkor, 2011) in Accra metropolis where vendors level of education predominated by those who attended senior high school. This could be due to the fact that in Ghana, as in many other developing countries, educated individuals tend to flock to the capital city in search of better job opportunities and higher paying employment including food vending. In this study, most of the vendors had registered and followed food vending regulations. This is opposed by the study done by (Reddy, Ricart, & Cadman, 2020) in China where about one-third of the vendors had registered to run food vending shops. This could be as a result of different geographical locations.

Figure 2 shows the comparative analysis between trained and untrained vendors on food hygiene. 23 respondents representing 92% had been trained on food hygiene whilst the remaining 2 respondents representing 8% had received no training. This is in contrast with findings in studies conducted by (Iwu et al., 2017) who noted that only 32% food vendors had received training on food hygiene practices, a concern that seems to be widespread in many developing countries as studies from Nigeria, Ethiopia and Thailand indicated that minority of food vendors, ranging from just 12% to 39%, have received training on proper food hygiene practices (Afolaranmi et al, 2015; Kibret and Abere 2012; Cuprasittrut et al, 2011; Musa and Akande 2003)

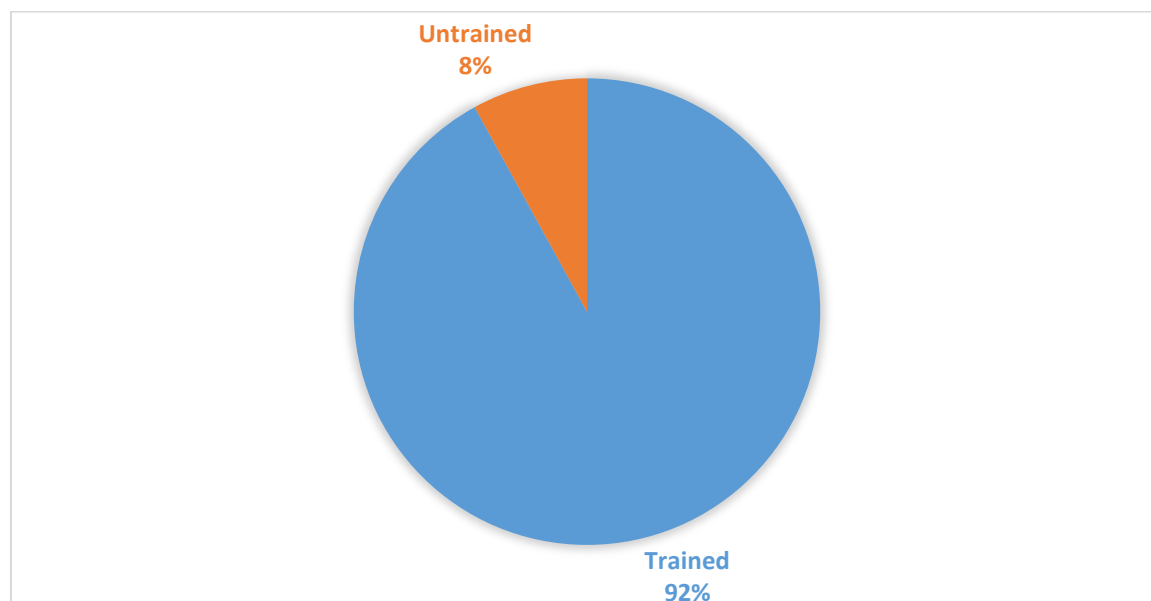
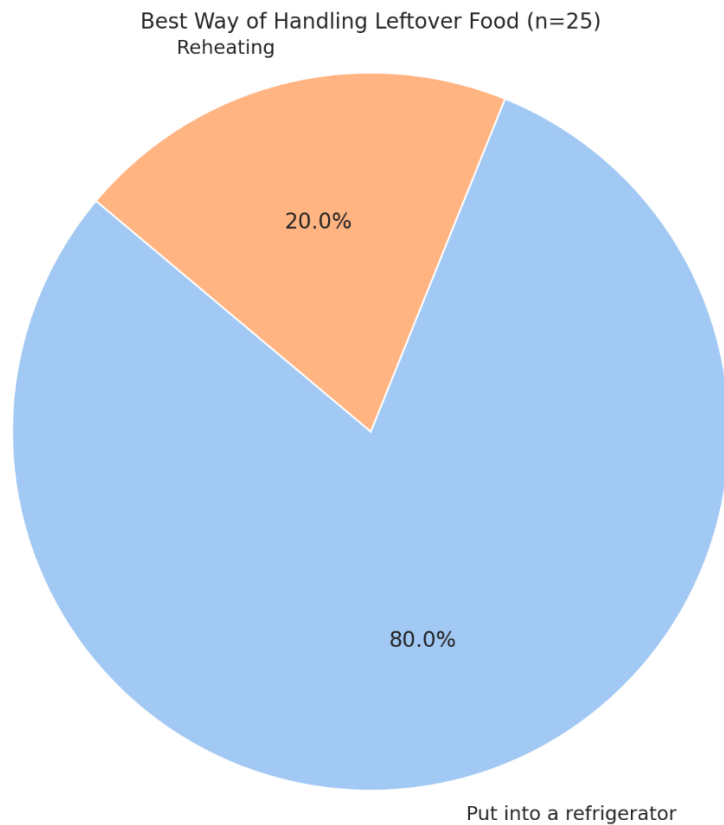


Figure 2: Comparative analysis between trained and untrained vendors on food hygiene

Table 2. Level of knowledge on food hygiene and safety practice. (n=25)

Study parameter	Responds	Frequency	Percentage (%)
Relevance of medical screen	Yes	24	96
	No	1	4
Relevance of covering of hair	Yes	23	92
	No	2	8
Relevance of reheating cold food during sale	Yes	22	88
	No	3	12
Is it good to serve food with bare hands?	Yes	1	4
	No	24	96
Is it important to protect food from flies and dust?	Yes	25	100
	No	0	0
Is it necessary to wash your hands with soap and water?	Yes	24	96
	No	1	4

The results from table 2 shows that 24 respondents representing 96% knew the relevance of medical screening whilst 1 respondent representing 4% did not know the relevance of medical screening. 23 respondents representing 92% had their hair concealed using head scarf. 24 out of the 25 respondents representing 96% knew the essence of washing their hands with soap and water. Rane reported that Salmonella, non-typhoidal Salmonellae, Campylobacter and E. coli can survive on finger tips and other surfaces for different periods of time and in some instances even after hand washing. It is therefore, imperative food vendors always wash their hands with soap and water so that they do not serve as vehicles for transmission of pathogens. The proportion of food vendors without hair restraints, as found in this study, is in contrast with the findings of (Musa & Akande, 2003), but corroborates with those reported by (Muinde & Kuria, 2005) who reported a relatively high level of hair protection by food vendors. The World Health Organization (WHO) has, however, asserted that as practice, the importance to protect food from flies and dust and hair restraints by food vendors has more to do with food aesthetics and stimulating consumer assurance than food safety. Furthermore, 22 respondents (92%) indicated that they reheated food when it became cold, while 3 respondents (8%) did not reheat their food prior to sale. The hands of food vendors are usually the most critical means of transmitting pathogens from contaminated places and items and hence could result in cross contamination upon contact with food. The study showed that, 24(96%) representing vendors who do not serve food with their bare hands, while 1 representing (4%) served food with their bare hands. Particularly, in the case where vendors used the same hands to handle money from consumers, as this can further aggravate the situation due to possible accumulation of dirt on the money and can contaminate the food.



The Pie chart respondent's best way of handling left over food

Table 3 Respondents best way of handling leftover food

Safety practice	Frequency(n=25)	Percentage (%)
Put into a refrigerator	20	80
Reheating	5	20
Total	25	100

Table 3 showed that 20 vendors representing 80% keeping left over food in refrigerators is highly recommendable whilst the remaining 5 vendors which represent 20% chose to reheat leftover foods. (Marshall, 2022) stated that, the best way to keep leftover food is by refrigerating which corroborate with the findings in this research work. (Gojard, Masson, Blumenthal, & Véron, 2021) on the other hand asserted that leftover food, when reheated is enjoyable.

Table 4: Observation checklist

Observed parameter	Response	Frequency (n=25)	Percentage (%)
	Clean	21	84

Environmental cleanliness	Unclean	4	16
Protection of food from flies and dust	No flies	23	92
	Flies	2	8
Conditions of finger nails	Neatly trimmed	20	80
	Not trimmed	5	20
Hair covering	Nicely covered	20	80
	Not covered	5	20
Food debris observed on food vendors hands	Yes	3	12
	No	22	88
Jewelries worn by food vendors	Yes	520	20
	No	20	80
Food covered with tight fitting lid	Yes	20	80
	No	5	20
Availability of water	Yes	22	88
	No	3	12
Presence of hand washing facility	Yes	20	80
	No	5	20
Dedicated bowl for doing dishes	Yes	18	72
	No	7	28
Prompt dishing of plates/bowls and spoons	Yes	23	92
	No	2	8
Storage of plates/bowls and spoons	Yes	23	92
	No	2	8

From table 4, 21 food vendors representing 84% were having clean environment. This corroborates with finding in the study by (Okojie & Isah, 2014) in Benin City, Nigeria where (90.5%) of the food vendors had clean environment. However, a study conducted by (Amaami, Dominic, & Collins, 2017) in Techiman Municipality of Ghana, indicated that, most of the food vending environments (68%) were dirty. This could be as a result of poor environmental factors such as garbage and waste water disposal near vending site and providing nutrients and breeding grounds for rodents. Most of the food vendors (92%) used a protective shield to prevent their food from flies and dust in this study. (Hassan, Islam, Salauddin, Zafr, & Alam, 2017) reported that, presence of flies was observed on food and surroundings of 33% of the stalls in Dhaka, Bangladesh. In food service facilities, two most prevalent small sly species that breed are the red-eyed fly (*Drosophila melanogaster*) and the dark-eyed fly (*Drosophila repleta*) (Black, Hinrichs, Barcay, & Gardner, 2018). The

flies go through a four-stage metamorphosis-egg, larva, pupa and adult- and can live up to 1 month as adults. Interestingly, they possess advanced sensory capabilities that help them pinpoint ideal breeding sites (Triplehorn & Johnson, 2005); Once a suitable site is found, female flies will lay eggs, starting a larval population. The ideal breeding site is typically moist, with decaying organic matter, which often leads to biofilm formation. This environment provides shelter and nutrients for the larvae. With females capable of laying up to 500 eggs, the fly population can explode rapidly if left unchecked (Triplehorn & Johnson, 2005).

80% had a well-kept finger nails (short nails) without any paint on it in this study. This corroborates with the findings in the study conducted by (GHARTEY & ANTWI, 2019) where 99.2% and 95.2% food vendors at Komenda Edina Eguafio Abrem municipal and Ajumako Enyan Essiam District, Ghana respectively had short finger nails. According to (Suriptiastuti & Manan, 2011), parasitic infections are often spread through contaminated objects, such as food, water, human hands, particularly under fingernails, which can harbor a high number of microorganisms and are challenging to clean. Food vendors, in particular, can be a significant source of infection transmission, as they handle food for consumption, potentially spreading intestinal parasites and protozoa. 12% of the vendors were having debris on their hands whiles (88%) observed with no debris. Most food vendors (80%) per observation, were not wearing jewelries on fingers whiles (20%) were wearing jewelries. In all, (88%) were seen to have portable water available. (80%) were observed with hand washing facility whiles the (20%) did not have it. A total of 20(80%) were seen to sell with well-fitting lid of bowl whiles (20%) selling in an open bowl. Out of the 25 respondents 20(80%) were having hand washing facilities on their premises (72%) have a dedicated bowl for washing of plates. Using unhygienic water to wash utensils can lead to foodborne illnesses. Ensuring access to clean water is a key goal of the Sustainable Development Goals (SDG), which consist of various universal goals by 2030 to balance the three dimensions of sustainable development: environment, social, and economic.

A Hygiene Ratings Color-Coded Map Of Mampong Street Food Overview

A color-coded map of street food vendors in Mampong highlights hygiene levels. The image below shows an example of such a map, which uses GPS data to display vendor locations alongside their hygiene ratings. This visual representation enhances the understanding of hygiene distribution across the region and supports both consumer choices and regulatory oversight:

Green: Excellent hygiene practices.

Blue: Very good hygiene practices.

Yellow: Good hygiene practices.

Red: Poor hygiene practices.

Figure: 4.1 Map Of Mampong Ashanti



Figure 4.10 This map allows consumers to make informed decisions while assisting regulatory bodies in pinpointing areas that require improvement. It can be incorporated into public health tools or mobile applications, providing real-time updates on vendor hygiene ratings for easy access. Furthermore, these tools could include user feedback systems and analytics dashboards to enhance regulatory oversight and boost consumer engagement.

The map provides a clear depiction of the locations and hygiene ratings of street food vendors in Mampong Township, reflecting their adherence to hygienic practices based on consumer preferences. It employs a color-coded system indicating safety levels in the vending industry:

Red (Bad): Signifies very poor hygiene practices.

Yellow (Good): Indicates satisfactory hygiene practices.

Blue (Very Good): Represents high standards of hygiene, suggesting a lower risk of infection and contamination.

Green (Excellent): Highlights vendors with exemplary hygiene practices, ensuring a safe eating experience with minimal risk of foodborne illnesses.

The map also shows that most vendors are concentrated around the Lorry (trotro) station, a key area for travelers and the general public conducting business.

Color Coding System

<u>Vendors color tags</u>	<u>Number of Street Vendors</u>
Red star 	: 2 (0 - 35) Bad
Yellow star 	: 3 (36 - 45) Good
Blue Star 	: 7(46 - 75) Very Good
Green Star 	: 13(76+) Excellent

Table 4.10 presenting the scoring and rating with color code of food vendors

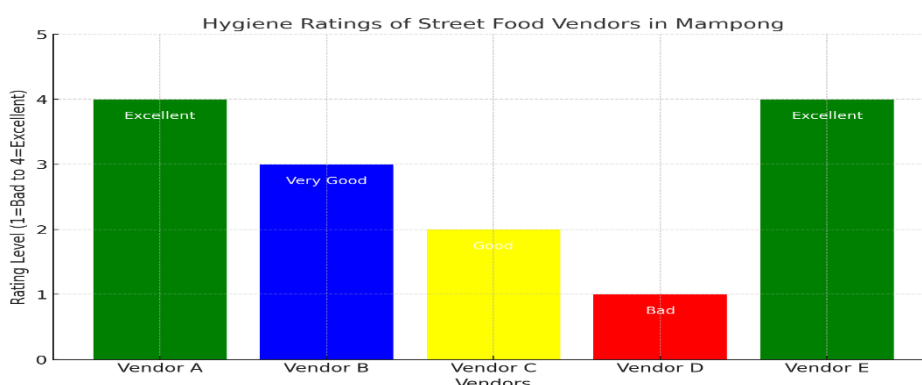
No	GPS COORDINATES	NAME OF FOOD	SCORE	color 	rating   
1.	LMAG-VYY	Gari and Beans	86%		
2.	KMZF-UQU	Banku and Rice ball	83%		
3.	LMAH-X3L	Rice and Stew	45%		
4.	LMAH-JNF	Bread and Tea	53%		
5.	LMAH- JRV	Awaakye	83%		
6.	LMAG-BOM	Fried Yam	53%		
7.	LMAG-XEM	Kebab	36%		
8.	LMAI - 898	Fufu and Soup	73%		

9.	LMAH-GMR	Roasted meat Kebab	26%	★			
10.	LMAH-GWN	Rice and Stew	76%				★
11.	LMAH – KTP	Banku and Soup	33%	★			
12.	LMAI – QRE	Gari and Beans	88%				★
13.	LMAH-LF7	Rice & Stew	80%				★
14.	LMAH-CXK	Roasted pork	73%			★	
15.	KMYE – 6JB	Banku and Rice ball	83%				★
16.	LMAH – X6D	Kenkey	85%				★
17.	LMAH – X6D	Porridge	75%				★
18.	LMAH-NAS	Roasted pork	60%			★	
19.	LMAG – BBV	Waakye	45%		★		
20.	LMAH - JRV	Rice & Stew	73%			★	
21.	LMAH – 6CM	Jollof Rice	73%			★	
22.	LMAH-MMA	Fast Food	76%			★	
23.	LMAH-07Y	Rice & Stew	70%			★	
24.	KMYE – 9RO	Rice & Stew	83%				★
25.	LMAH- 4VV	Pork and kenkey	69%			★	

Color Keys

- Red star ★ : (0 - 35) Bad
- Yellow star ★ : (36 - 45) Good
- Blue Star ★ : (46 - 75) Very Good
- Green Star ★ : (76+) Excellent

Figure 4.2 Bar Chart of Color-coding rating Scores



The bar chart illustrates the hygiene ratings of street food vendors in Mampong, categorized into four levels: Excellent, Very Good, Good, and Bad. Each vendor is represented by a bar colored to reflect their hygiene rating:

Green (Excellent): Vendors A and E achieved the highest hygiene standards, indicating full compliance with food safety protocols.

Blue (Very Good): Vendor B maintains a commendable level of hygiene, though there are minor areas for improvement compared to the "Excellent" category.

Yellow (Good): Vendor C demonstrates adequate hygiene practices but has deficiencies in key areas, necessitating improvements to enhance standards.

Red (Bad): Vendor D exhibits significant hygiene issues, reflecting non-compliance with basic food safety measures, which poses potential risks to consumers.

The vertical axis quantifies the rating levels (1 = Bad to 4 = Excellent), while the horizontal axis lists the vendors. This chart effectively visualizes the distribution of hygiene ratings, highlighting areas of concern (Vendor D) and showcasing examples of best practices (Vendors A and E). This visualization is instrumental for monitoring food safety compliance and guiding targeted interventions.

Author contributions

All the authors contributed by conceiving, designing the research, analyzing the data, and critically reviewed and approved the final version of the manuscript.

REFERENCES

1. Afolaranmi, T.O., Hassan, Z.I., Bello, D.A. and Misari, Z. (2015). Knowledge and Practice of Food Safety and Hygiene among Food Vendors in Primary Schools in Jos, Plateau State, North Central Nigeria. *Journal of Medical Research*, 4, 16-22.
2. Amaami, A. J., Dominic, D., & Collins, D. (2017). Factors associated with poor food safety compliance among street food vendors in the Techiman Municipality of Ghana. *African Journal of Food Science*, 11(3), 50-57.
3. Apanga, S., Addah, J., & Sey, D. R. (2014). Food safety knowledge and practice of street food vendors in rural northern Ghana.
4. Black, E., Hinrichs, G., Barcay, S., & Gardner, D. (2018). Fruit flies as potential vectors of foodborne illness. *Journal of food protection*, 81(3), 509-514.
5. Blay, J. K., & Abunyuwah, I. (2024). Implications of land use and land cover change in Mampong municipality, Ghana. *Sustainable Environment*, 10(1), 2345442.
6. Canet, C., & N'diaye, C. (1996). Street food in Africa.
7. Chukuezi, C. O. (2010). Food safety and hygienic practices of street food vendors in Owerri, Nigeria. *Studies in sociology of science*, 1(1), 50.
8. GHARTEY, A. F., & ANTWI, B. K. (2019). Hand hygiene practices among street food vendors. *Food and Environment Safety Journal*, 18(2).
9. Gojard, S., Masson, M., Blumenthal, D., & Véron, B. (2021). To keep or not to keep? Sorting out leftovers from a refrigerator. *Appetite*, 165, 105312.
10. Hassan, M. Z., Islam, M. S., Salauddin, M., Zafr, A. H. A., & Alam, S. (2017). Food safety knowledge, attitudes and practices of chotpoti vendors in Dhaka, Bangladesh. *Journal of Enam Medical College*, 7(2), 69-76.
11. Iwu, A. C., Uwakwe, K. A., Duru, C. B., Diwe, K. C., Chineke, H. N., Merenu, I. A., . . . Ohale, I. (2017). Knowledge, attitude and practices of food hygiene among food vendors in Owerri, Imo State, Nigeria. *Occupational Diseases and Environmental Medicine*, 5(1), 11-25.
12. Marshall, M. (2022). The refrigerator as a problem and solution: Food storage practices as part of sustainable food culture. *Food and Foodways*, 30(4), 261-286.

13. Marutha, K. J., & Chelule, P. K. (2020). Safe food handling knowledge and practices of street food vendors in Polokwane Central Business District. *Foods*, 9(11), 1560.
14. Moloji, M. (2019). The Prevalence Of Antibiotic-Resistant Bacteria In Street-Vended Foods.
15. Monney, I., Agyei, D., Ewoenam, B. S., Priscilla, C., & Nyaw, S. (2014). Food hygiene and safety practices among street food vendors: an assessment of compliance, institutional and legislative framework in Ghana.
16. Muinde, O. K., & Kuria, E. (2005). Hygienic and sanitary practices of vendors of street foods in Nairobi, Kenya. *African Journal of Food, Agriculture, Nutrition and Development*, 5(1).
17. Musa, O., & Akande, T. (2003). Food hygiene practices of food vendors in secondary schools in Ilorin. *Niger Postgrad Med J*, 10(3), 192-196.
18. Nigusse, D., & Kumie, A. (2012). Food hygiene practices and prevalence of intestinal parasites among food handlers working in Mekelle university student's cafeteria, Mekelle. *Global Advanced Research Journal of Social Science*, 1(4), 65-71.
19. Odonkor, S. T., Adom, T., Boatın, R., Bansa, D., & Odonkor, C. J. (2011). Evaluation of hygiene practices among street food vendors in Accra metropolis, Ghana. *Elixir Online Journal*, 41, 5807-5811.
20. Okojie, P., & Isah, E. (2014). Sanitary conditions of food vending sites and food handling practices of street food vendors in Benin City, Nigeria: implication for food hygiene and safety. *Journal of environmental and public health*, 2014(1), 701316.
21. Rane, S. (2011). Street vended food in developing world: hazard analyses. *Indian journal of microbiology*, 51(1), 100-106.
22. Reddy, A. A., Ricart, S., & Cadman, T. (2020). Driving factors of food safety standards in India: learning from street-food vendors' behaviour and attitude. *Food Security*, 12(6), 1201-1217.
23. Sezgin, A. C., & Şanlier, N. (2016). Street food consumption in terms of the food safety and health. *Journal of Human Sciences*, 13(3), 4072-4083.
24. Steyn, N. P., Mchiza, Z., Hill, J., Davids, Y. D., Venter, I., Hinrichsen, E., . . . Jacobs, P. (2014). Nutritional contribution of street foods to the diet of people in developing countries: a systematic review. *Public health nutrition*, 17(6), 1363-1374.
25. Suriptiastuti, S., & Manan, W. S. (2011). Intestinal parasites from fingernails of sidewalk food vendors. *Universa Medicina*, 30(2), 120-125.
26. Triplehorn, C., & Johnson, N. F. (2005). *Borror and delong's introduction to the study of insects*. Brooks. Cole, Belmont, California, USA.