



## **Street food safety and foodborne illness in Nigeria: An integrative review of epidemiology, vendor practices, and consumer behaviour**

**By**

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### **Abstract**

Foodborne illnesses remain a major public health concern in Nigeria, particularly regarding street-vended foods. They contribute to high morbidity and mortality rates and an economic burden. This review synthesises evidence on the epidemiology of foodborne illnesses, vendor hygiene practices, and consumer awareness of street food safety in Nigeria, highlighting critical gaps between knowledge and practice. A systematic search conducted on 8<sup>th</sup> February 2025 across PubMed and Google Scholar identified 1,290 records. After removing 377 duplicates, 913 titles and abstracts were screened, and 233 full-text articles were assessed for eligibility. A total of 86 studies met the inclusion criteria. The evidence points to widespread microbial contamination in street foods, including pathogens resistant to multiple antibiotics. Key risk factors include poor hygiene practices, unsafe preparation environments, limited access to clean water, and inconsistent application of food safety knowledge. Consumer awareness is uneven, with food choices influenced by demographic factors, perceived quality, cultural preferences, and visible hygiene conditions. Regulatory systems are often weak, and there is a clear gap between what vendors know and what they do in practice. Foodborne illness remains a serious public health issue in Nigeria. Improving vendor training, strengthening regulatory enforcement, enhancing infrastructure, and raising consumer awareness are critical steps toward safer food practices. Future research should focus on how interventions can close the gap between knowledge and practice in food safety.

**Keywords:** Food safety; Street food; Foodborne diseases; Hygiene practices; Consumer awareness; Public health

## **Introduction**

Food is essential to everyday life, as it is central to human health and closely tied to culture, social interaction, and economic activity (Fung et al., 2018). Access to safe and nutritious food is critical not only for individual health but also for wider social and economic well-being (Hortová-Kohoutková et al., 2021; WHO, 2015). Despite its importance, unsafe food continues to pose a serious public health problem. Globally, an estimated 600 million people fall ill each year from contaminated food, leading to about 420,000 deaths (WHO, 2015). In Africa, the burden is also high, with around 91 million cases and 137,000 deaths reported annually (WHO, 2022a). Nigeria, with its large and growing population, carries a substantial share of this burden. Available estimates suggest that unsafe food contributes to millions of cases of illness each year, including widespread diarrhoeal disease, and tens of thousands of deaths (Consumer Advocacy for Food Safety and Nutrition Initiative, 2020). Some reports place mortality figures much higher, exceeding 200,000 annually (Adediran et al., 2024; Ezirigwe, 2018; Odetokun et al., 2022; Okafor, 2024). These differences are linked to variations in data sources, reporting systems, and estimation methods.

Street food plays a major role in daily access to food across Nigeria. It is widely consumed in both urban and rural areas because it is affordable, accessible, and convenient. However, a large body of research points to recurring safety concerns along the food chain. Vendors do not always follow recommended hygiene practices such as proper handwashing, safe storage, and separation of raw and cooked foods (Cudjoe et al., 2022; Elfikrie et al., 2020; Kolawole et al., 2024; Rakib et al., 2019; Ukah et al., 2019). In many cases, food is prepared in environments that are not adequately clean, utensils are reused without proper washing, and cooking oil is used repeatedly (Adinya, 2024; Okafor, 2024). These challenges are compounded by weak regulatory systems and inconsistent enforcement of existing standards (WHO, 2015).

Although many studies have examined various aspects of food safety, their findings remain dispersed across disciplines and geographic regions, resulting in fragmented evidence. However, this evidence remains fragmented across studies and settings. This review synthesises these strands of research into a unified account, focusing on three linked areas: the burden and patterns of foodborne illness, hygiene practices among food vendors, and consumer awareness and behaviour. By examining these areas collectively, the review identifies common patterns, areas of agreement, and points where findings differ.

This review is important because street food is part of daily life for millions of people. When food is unsafe, the effects extend beyond individual illness to include reduced productivity, financial strain on households, and pressure on health services. By systematically consolidating available evidence, this study seeks to support practical efforts to improve food safety, strengthen monitoring systems, and promote safer practices in everyday settings.

## **Materials and Methods**

This study adopts an integrative review approach to synthesise evidence on the epidemiology of foodborne illness, hygiene practices among street food vendors, and consumer awareness of food safety in Nigeria. The aim was not only to summarise existing studies but also to examine how their findings relate to one another and what they suggest when considered collectively. The review followed a stepwise process: identifying the problem, conducting the

literature search, applying selection criteria, evaluating the evidence, and organising the material for synthesis.

### **Sources of data**

Relevant studies were drawn from peer-reviewed journal articles, government reports, and other credible and authoritative sources. The main databases used were PubMed and Google Scholar. PubMed was selected for its strong coverage of biomedical and public health research and its use of Medical Subject Headings (MeSH), which support more precise searches (Falagas et al., 2008). Google Scholar was included to widen the search and capture studies that may not appear in more selective databases, including locally published work and grey literature (Haddaway et al., 2015; Martín-Martín et al., 2021). Although databases such as Scopus and Web of Science offer wider indexing, access constraints limit their use. To reduce the likelihood of missing relevant studies, the reference lists of included articles were examined, and citation tracking was used to identify additional sources as needed.

### **Search strategy**

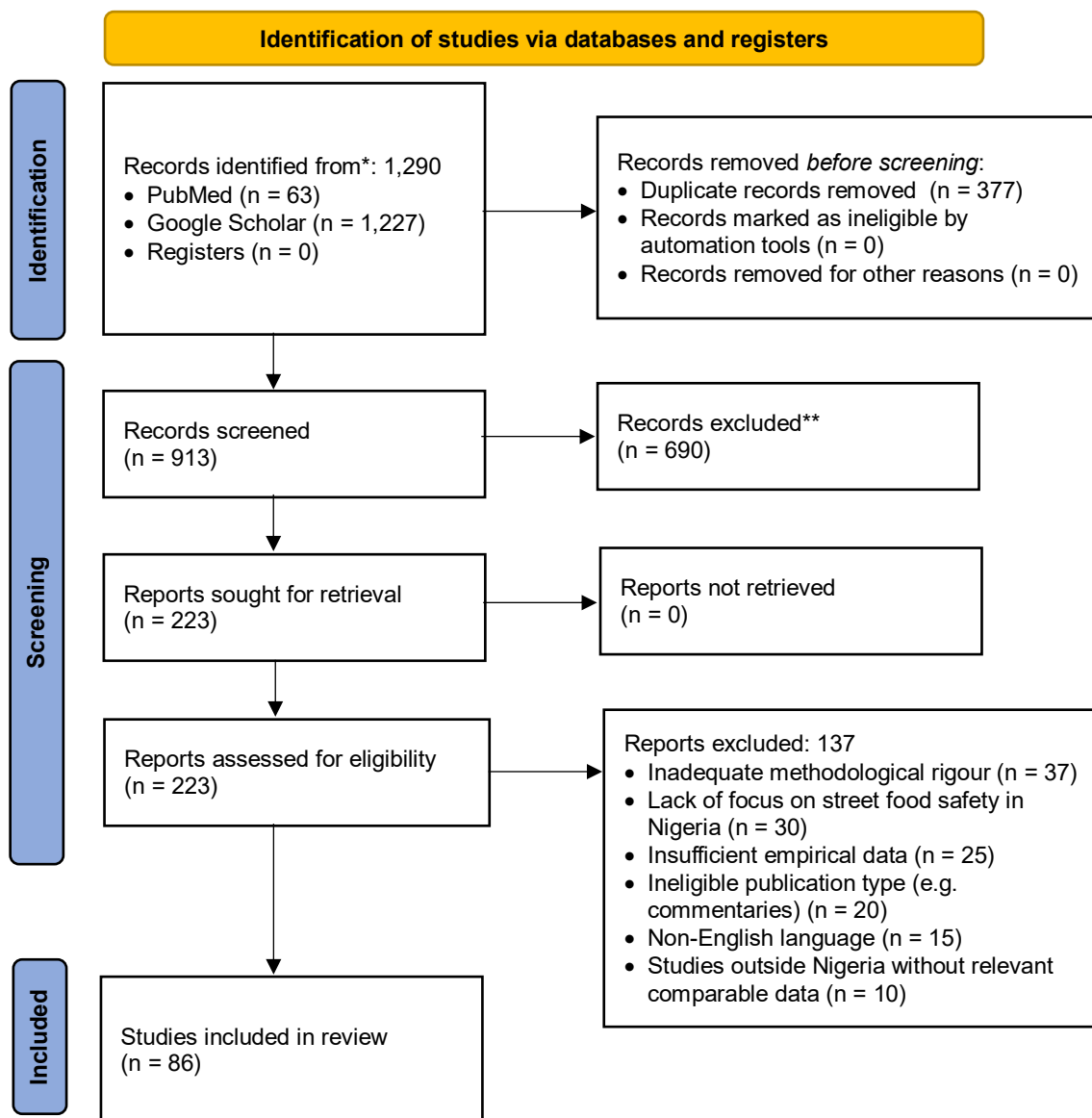
A systematic search conducted on 8<sup>th</sup> February, 2025, across PubMed and Google Scholar identified relevant studies. The search combined keywords and MeSH terms related to the core areas of interest: foodborne illness, street food, hygiene practices, and consumer awareness. These terms were linked using Boolean operators to improve coverage and ensure that studies addressing different aspects of the topic were captured. A typical search string included: ("foodborne diseases" OR "food poisoning" OR "foodborne illnesses") AND ("street food" OR "informal food sector" OR "ready-to-eat food") AND ("Nigeria" OR "West Africa") AND ("epidemiology" OR "prevalence" OR "incidence" OR "burden") AND ("food hygiene" OR "food safety practices" OR "vendor hygiene") AND ("consumer awareness" OR "perception" OR "attitude" OR "risk perception"). Search terms were adjusted across databases to align with indexing systems and improve retrieval. The search was limited to studies published between 2015 and 2025 and written in English to reflect current practices and ensure consistency in interpretation.

### **Selection criteria**

Studies were selected based on their relevance to street food safety and their contribution to the review questions. The process was informed by PRISMA guidance to ensure transparent reporting (Page et al., 2021) and aligned with the broader scope of an integrative review. Eligible studies reported original empirical data, including cross-sectional surveys, observational studies, and intervention research. Studies conducted outside Nigeria were included only where they offered useful comparisons within West Africa or closely related settings. Studies were excluded if they focused on areas not directly linked to street food safety, such as large-scale industrial food production or unrelated food hazards. Opinion papers, editorials, and studies lacking sufficient methodological detail were also excluded. Where multiple reports addressed the same dataset, the most complete version was retained.

### Study selection and evaluation

The search identified 1,290 records (63 from PubMed and 1,227 from Google Scholar). After removing 377 duplicates, 913 titles and abstracts were screened, leading to the exclusion of 690 studies that were either not relevant or lacked sufficient methodological clarity. A total of 223 full-text articles were assessed for eligibility, of which 86 studies met the inclusion criteria. The selection process is summarised in Figure 1, which uses a PRISMA flow diagram.



**Figure 1: PRISMA flow diagram for the review, including searches of databases**

Each included study was examined for relevance, methodological clarity, and contribution to the review themes. While formal quality-scoring tools were not used, attention was given to study design, sample size, and setting when interpreting the findings. This allowed differences in the strength of evidence to be considered during synthesis. The studies were then grouped by topic and compared across settings and methods. This approach made it possible to

identify recurring patterns, areas of agreement, and points of difference across the evidence. The aim was to move beyond listing individual findings and instead present a connected account of what the body of work suggests about street food safety in Nigeria.

### **Epidemiology of Foodborne Illnesses in Nigeria**

This section brings together evidence on the scale and nature of foodborne illness in Nigeria, drawing links between reported disease burden, patterns of contamination, and the conditions under which food is prepared and consumed. Rather than viewing these studies in isolation, a consistent picture begins to form: foodborne illness is widespread, driven by recurring environmental and behavioural factors, and sustained by gaps in surveillance and regulation.

### **Incidence and prevalence of foodborne illness**

Across the studies reviewed, foodborne diseases are repeatedly identified as a serious and persistent public health concern in Nigeria. Estimates vary, but most point in the same direction: high levels of illness and substantial loss of life. Annual deaths have been reported to exceed 200,000 in some reports (Ezirigwe, 2018; Opia, 2020), while outbreak data suggest millions of cases, many requiring hospital care (Raimi et al., 2019). Economic costs are also considerable, with losses from contamination running into hundreds of millions of US dollars (Sanni et al., 2023).

Although precise figures differ across sources, the variation appears to stem less from disagreement than from differences in measurement and reporting systems. Weak surveillance and underreporting mean that many cases never enter official records. Even so, the available evidence leaves little doubt about the scale of the problem.

Studies that examine specific food items provide a clearer view of how this burden is produced. Contamination is reported across a wide range of commonly consumed foods. For example, fresh shrimps from Ndibe Beach carry high microbial loads, particularly in the head region (Orji et al., 2016). Ready-to-eat cowhide sold in Lagos has been found to contain coagulase-positive *Staphylococcus aureus* with enterotoxigenic potential (David et al., 2023). In Abia and Imo States, contamination levels on meat and processing surfaces reach as high as 65.5% (Iro et al., 2019; Oladayo et al., 2023).

Similar patterns appear in beverages and dairy products. Locally prepared kunu drinks in Calabar contain multiple microbial contaminants (Etang et al., 2017), while yoghurt samples from Ota contain bacteria and fungi, some of which are resistant to antibiotics (Taiwo et al., 2018). Studies of roasted meat (suya), fresh produce, and ready-to-eat foods also report the presence of *Salmonella*, *Escherichia coli*, and Shiga toxin-producing strains, often with multi-antibiotic resistance (Dagah et al., 2024; Taiwo, 2016; Ugwu et al., 2021).

Even in settings where food safety controls are more formal, such as hotels, the picture is mixed. While many establishments meet recommended standards, the occasional detection of *E. coli* and *Salmonella typhi* points to lapses that can still pose health risks (Lateefat, 2021).

When these findings are considered together, a clear pattern emerges. Contamination is not limited to a single food type, location, or production system. Instead, it cuts across the entire food chain from raw ingredients to ready-to-eat meals. The presence of antibiotic-resistant



organisms adds a further layer of concern, suggesting that foodborne illness is not only widespread but also becoming harder to treat.

A recurring issue across the literature is the weakness of surveillance and regulatory systems. Several studies point to gaps in monitoring, inconsistent enforcement, and limited coordination between agencies (Ajayi & Oluwoye, 2015; Oladayo et al., 2022; Raimi et al., 2019; Beshiru & Igbiosa, 2023; Sanni et al., 2023). These gaps make it difficult to detect outbreaks early or respond effectively when they occur. As a result, the true burden of foodborne illness is likely higher than reported figures suggest.

### **Risk factors associated with microbial contamination in street-vended foods**

The studies reviewed point to a set of closely linked factors that explain why contamination persists. These factors fall broadly into three areas: everyday practices, environmental conditions, and structural constraints. First, hygiene practices at the point of food preparation play a central role. Many vendors are aware of basic food safety principles, yet this knowledge does not always translate into practice. Evidence from meta-analytical studies indicates that while knowledge and attitudes towards food safety are often adequate, only about half of vendors consistently apply proper hygiene measures (Desye et al., 2023; Grace, 2023). Field studies support this pattern. In Akure North, for instance, vendors often fail to wear protective clothing, and poor ventilation creates conditions where microorganisms can multiply easily (Oladayo et al., 2022; Raimi et al., 2019). Lapses such as inadequate handwashing, unsafe storage, and cross-contamination between raw and cooked foods are commonly reported across locations.

Second, the physical environment in which food is prepared and sold directly contributes to the risk of contamination. Many vending sites operate under poor sanitary conditions, with limited waste disposal systems and exposure to dust, flies, and other contaminants. Access to clean water is a recurring problem. In Gombe, only a small proportion of households have access to pipe-borne water, while most rely on sources that increase the risk of faecal contamination (Adeneye et al., 2016). Similar conditions have been reported in other low-income settings, where unsafe preparation and storage practices lead to high levels of contamination in foods prepared for children (Bick et al., 2020).

Third, broader economic and infrastructural constraints limit what vendors can do, even when they understand safe practices. Limited income, lack of access to basic facilities, and weak regulatory enforcement all play a part. Vendors may reuse cooking oil, operate without proper storage equipment, or work in spaces that do not support hygienic preparation, not necessarily out of negligence but because of practical limitations. Studies that call for improved training often also note that training alone is not enough. Without supportive infrastructure and consistent oversight, changes in behaviour are difficult to sustain (Ajayi & Oluwoye, 2015).

Collectively, these findings point to a persistent gap between knowledge and practice. This gap is not simply a matter of individual behaviour; it is tied to the conditions in which vendors work. Therefore, efforts to improve food safety must be extended beyond awareness campaigns. They must also address access to water, sanitation, and equipment, as well as regular inspection systems. Training remains important, but it is most effective when combined with practical support and clear regulatory follow-through.

## Hygiene Practices of Food Vendors and Adherence to Food Safety Standards

This section brings together evidence on how vendors understand and practise food safety, and why safe practices are not always followed. Rather than treating hygiene, environment, knowledge, and compliance as separate issues, the studies point to a connected set of conditions where behaviour, resources, and oversight interact in everyday food preparation settings.

### Hygiene practices among street food vendors

The studies present a mixed but fairly consistent picture of hygiene practices across Nigeria. In some settings, particularly in urban areas and formal establishments, vendors report good adherence to recommended practices. Research from Delta State and Calabar, for example, indicates that many food handlers follow basic hygiene routines such as handwashing, safe storage, and the use of protective clothing (Isibor, 2022; Uzoama et al., 2023). Similar patterns are reported in Ile Ife and other locations, where vendors separate raw and cooked foods and recognise the importance of personal hygiene (Faremi et al., 2018; Ujah et al., 2024). Studies from Ondo, Abia, and Abuja also describe careful utensil cleaning, proper storage, and attention to temperature control (Ojike & Salisu, 2023; Oladeji et al., 2023; Uzoama et al., 2023).

However, these accounts coexist with clear evidence of lapses. In several studies, vendors do not consistently wash their hands after handling money or engaging in other contaminating activities (Akuu et al., 2017; Salihu & Salihu, 2022). Even where food samples fall within acceptable microbial limits, closer examination often reveals weaknesses in handling practices. For instance, assessments of hotels indicate partial compliance with HACCP principles, with the presence of organisms such as *Escherichia coli* and *Salmonella Typhi* indicating gaps in routine safety procedures (Lateefat et al., 2018; Lateefat, 2021).

This contrast between reported good practice and observed lapses runs through much of the literature. Positive attitudes towards hygiene do not consistently translate into safe behaviour. In some cases, the issue lies less with awareness and more with the conditions under which vendors work. Studies note that inadequate facilities, limited space, and financial pressure can make it difficult to maintain safe practices, even when vendors understand the requirements (Ituma et al., 2018). The reuse of cooking oil among fried food vendors, for instance, is often linked to cost constraints rather than lack of knowledge (Kanu & Kanu, 2024). Similar concerns have been raised in neighbouring countries, where efforts to reduce costs lead vendors to compromise on input quality (Akuu et al., 2017; Salihu & Salihu, 2022).

There are also differences in how responsibility for food safety is viewed. Some studies involving consumers and tourists indicate that people rely heavily on visible cleanliness and vendor reputation when judging food safety, while expecting government agencies to ensure compliance behind the scenes (Nordhagen et al., 2022a; Oladeji et al., 2023). This creates a situation in which vendors operate under limited direct pressure to meet formal standards, especially when inspections are infrequent. Across these studies, a clear pattern appears. Good practices are present but uneven and often difficult to sustain. Hygiene is not simply a matter of individual choice; it is closely tied to working conditions, access to resources, and the level of oversight in a given setting.

### **Environmental and sanitary conditions of vending sites**

The physical conditions at food vending sites vary widely, and this variation directly affects food safety. In some areas, vendors maintain relatively clean environments. For example, studies report regular equipment cleaning and handwashing among vendors in Abuja, although these practices are not always consistent (Pepple, 2017). In Benin City, many vending sites appear orderly at first glance, yet closer inspection reveals flies and other pests that can contaminate food (Okojie & Isah, 2015).

Other studies point to more serious shortcomings. In Enugu, fewer than half of food handlers maintain acceptable environmental hygiene despite having basic knowledge of safety practices (Kassy et al., 2024). Similar conditions are reported in Ghana, where vending sites often lack proper waste disposal systems and are poorly maintained (Akuu et al., 2017; Dajaan et al., 2018). Evidence from South Africa suggests that only a small proportion of sites meet high sanitary standards, largely due to limited infrastructure and weak compliance systems (Nkosi & Tabit, 2021).

Intervention studies provide some indication of what can improve these conditions. In Kaduna, training programmes led to better sanitation practices among vendors, although the changes were modest (Umar et al., 2018). Work from Addis Ababa points to the importance of trained supervisors and regular inspections in maintaining cleaner environments (Mendedo et al., 2017). However, even in places where training has been introduced, problems can persist. Studies from Uyo and Osogbo report ongoing unsafe waste disposal practices in abattoirs and slaughterhouses, including dumping waste into nearby water sources (Edward & Akpabio, 2024; Olowoporoku, 2016). Some studies report more encouraging conditions, such as the availability of waste bins, soap, and hand-drying facilities (Alamo-Tonelada et al., 2018). Even so, these examples are not widespread. Many vending sites still operate in environments that make safe food handling difficult. The evidence indicates that while clean environments are possible to achieve and do exist, they are not the norm. Where sanitation is poor, it is often linked to limited infrastructure, weak supervision, and inconsistent enforcement of standards.

### **Knowledge and awareness of food safety regulations**

Most studies agree that food vendors in Nigeria have a reasonable level of knowledge about food safety. Surveys from different regions report that a large proportion of vendors understand basic hygiene principles, contamination risks, and the importance of safe food handling (Barnabas et al., 2024; Danimoh et al., 2022). In Abuja and Calabar, between 77.8% and 85.1% of food handlers are aware of foodborne diseases and how contamination occurs (Osuchukwu & Udom, 2022; Uzoama et al., 2023). Awareness of formal regulations is also fairly high in some areas, with nearly 90% of vendors in Oyo State reporting familiarity with relevant rules (Olajubutu et al., 2021).

However, this knowledge does not always translate into practice. Studies from Calabar and other locations report cases in which vendors understand the risks of contamination yet still fail to follow basic hygiene procedures (Etim et al., 2022; Grace, 2023). Inconsistent use of gloves and protective clothing is common, even among well-informed individuals (Barnabas et al., 2024; Danimoh et al., 2022). Similar patterns appear among cassava processors and dairy vendors, where gaps in practical hygiene knowledge affect everyday food handling (Badaru et al., 2017; Odetokun et al., 2024). There are also limits to what vendors know about broader food

safety systems. Many are unfamiliar with surveillance mechanisms designed to detect and respond to outbreaks. Usman et al. (2022) report that fewer than half of the respondents could explain how event-based surveillance works. This lack of understanding coexists with continued lapses in basic hygiene practices, which further increase risk (Etafa et al., 2021; Faremi et al., 2018).

Interventions have had some success. Training programmes in Kaduna improved vendors' knowledge levels, although awareness of formal systems such as HACCP remains uneven across regions (Umar et al., 2018; Lateefat, 2021). In some areas, even Environmental Health Officers have limited familiarity with these systems. Evidence from a broader meta-analysis supports these observations. In comparison, many vendors have good knowledge and positive attitudes; only about half consistently apply safe practices (Desye et al., 2023). Other studies suggest that both vendors and consumers often rely on visible cues, such as cleanliness and appearance, rather than formal safety procedures when judging food safety (Nordhagen et al., 2023). What emerges from this body of work is a clear, recurring gap between knowing and doing. Knowledge is present, but it is not always enough to guide behaviour, especially when other constraints come into play.

### **Factors influencing adherence to food safety standards**

The studies reviewed point to a range of factors that influence whether vendors follow safe food practices. These factors are closely linked and often reinforce one another.

Socio-demographic characteristics play a role. Older vendors and those with higher levels of education tend to have better knowledge of food safety and more positive attitudes towards hygiene (Adesiji et al., 2017; Barnabas et al., 2024; Odetokun et al., 2024; Uzoama et al., 2023). However, education alone does not guarantee safe behaviour. Several studies report little difference in actual practices between more- and less-educated vendors (Madaki & Bavorova, 2019; Ojike & Salisu, 2023; Osuchukwu & Udom, 2022).

Training and inspection are also important. Vendors who receive regular training or operate under routine supervision tend to follow better hygiene practices (Emmanuel et al., 2015; Iwu et al., 2017). Even so, training does not fully resolve the gap between knowledge and action. Many vendors continue to fall short of recommended standards despite being aware of them (Desye et al., 2023; Osuchukwu & Udom, 2022).

Sources of information matter as well. Vendors who receive information from media outlets or food safety agencies tend to have a better understanding of hygiene practices (Badaru et al., 2017; Barnabas et al., 2024; Etim et al., 2022; Odetokun et al., 2024). However, access to information alone does not remove practical barriers.

Economic and infrastructural conditions are among the most consistently identified factors. Limited income, high input costs such as cooking oil, and lack of access to clean water or proper storage facilities make it difficult for vendors to maintain safe practices (Iwar, 2017; Kanu & Kanu, 2024; Okwuanaso et al., 2025). Broader systemic issues, including weak regulatory systems and corruption, further complicate enforcement (Opia, 2020).

Cultural and social influences also play a part. In some settings, traditional beliefs and family practices influence how food is handled more strongly than formal guidelines (Iwar, 2017; Ojike & Salisu, 2023). Gender and marital status have also been linked to differences in behaviour, although findings vary across studies (Ojike & Salisu, 2023; Okwuanaso et al., 2025).



Within the wider food system, price pressures and limited accountability among stakeholders can affect how food is sourced and prepared (Opia, 2020). Some studies point to possible ways forward. Positive social norms and simple technologies for safer storage have been linked to better practices (Nordhagen et al., 2023). Still, the evidence suggests that no single solution is sufficient.

What becomes clear across these studies is that adherence to food safety standards depends on more than knowledge. A combination of personal, economic, and environmental factors shapes it. Efforts to improve food safety need to take all of these into account, rather than focusing on awareness alone.

### **Consumer Awareness and Perceptions of Street Food Safety in Nigeria**

This section draws together evidence on how consumers understand food safety and how those views influence what they buy and eat. The studies do not point in a single direction. Instead, they reveal a mix of awareness, uncertainty, and practical decision-making shaped by everyday realities.

#### **Consumer awareness and perceptions of food safety**

The level of consumer awareness reported across studies varies considerably. In some cases, consumers appear well informed about basic food safety practices. For example, workers in departmental stores in Awka were familiar with proper storage methods, including refrigeration. They understood the importance of hygiene practices such as handwashing and the use of protective clothing (Nomeh & Bamson, 2018). Similar patterns are reported in Southwest Nigeria, where households regularly wash hands, clean utensils, and maintain basic hygiene during food preparation (Fasoro et al., 2016). In Ile Ife, a large proportion of respondents also reported good knowledge and practices related to food safety (Oluwatosin, 2017).

However, this level of awareness is not consistent across settings. Other studies point to clear gaps in knowledge. In Ilorin, a notable proportion of consumers of milk and cheese lack adequate understanding of food safety practices (Odetokun et al., 2024). In Ogun State, both rural and urban households have limited knowledge of foodborne illness, with differences linked to location and marital status (Adebowale & Kassim, 2022). Similar findings have been reported among meat consumers in Ilorin, where fewer than half demonstrate adequate knowledge and safe practices (Odetokun et al., 2022).

These differences are not simply contradictions; they appear to arise from variations in study populations, settings, and methods. Some studies focus on more educated or urban groups, while others include rural or lower-income populations. This makes it difficult to draw a single conclusion about consumer awareness across the country. What is clear, however, is that knowledge is uneven and often incomplete. When it comes to perception, cleanliness is a central factor in how consumers assess food safety. Many studies indicate that people rely heavily on visible signs, such as the appearance of the vending site, waste disposal practices, and the general neatness of the environment (Nordhagen et al., 2022a; Oladeji et al., 2023). In formal settings such as hotels, attention to cleanliness in areas like dining spaces and restrooms strongly influences customer satisfaction and trust (Oladeji et al., 2023).

Visual and sensory cues play a strong role in everyday decision-making. In Benin Kiribi, for instance, consumers use sight and even smell to assess food safety, preferring vendors who maintain a clean and orderly appearance (Nordhagen et al., 2022b). Similar patterns are reported



across several countries, where personal experiences and awareness of unsafe practices, such as adulteration, can reduce trust in food vendors (Isanovic et al., 2023). In contrast, some settings, such as the beef market in Ghana, report more positive perceptions, with both vendors and consumers expressing confidence in existing practices (Yeboah et al., 2023). Across these studies, a consistent theme emerges. Consumers often depend on what they can observe directly rather than on formal certification or regulatory assurances. Clean surroundings, proper presentation, and familiar vendors tend to carry more weight in decision-making than official standards that may not be visible to the buyer.

### **Factors influencing consumer food choices**

A combination of personal, economic, and social factors shapes consumer food choices. These factors do not act independently; they interact in ways that make food choice a practical and often situational decision. Personal characteristics such as age, education, income, and marital status play a role. Studies suggest that these factors influence both food preferences and how consumers think about food safety. For example, higher levels of education and income are associated with greater awareness and more favourable views of hygiene practices (Yeboah et al., 2023; Udoh, 2020). Household size and age also affect consumption patterns, including preferences for certain foods (Okorejior et al., 2024; Udomkun et al., 2021). Everyday experiences within families and communities further shape how people understand and respond to food safety issues (Isanovic et al., 2023).

Beyond personal characteristics, the qualities of the food itself play a strong role in decision-making. Taste, familiarity, and price are consistently reported as key factors. In Uyo, for instance, consumers base their choices largely on taste and perceived value (Mfon & Uford, 2022). Other studies confirm that people tend to prefer foods they know and can afford (Ezeh & Ezeuduji, 2024; Uche et al., 2024; Umeanyika et al., 2021a). In the case of street food, quality and affordability often take precedence over service conditions or environmental cleanliness (Ayodele & Panama, 2016; Ezeh & Nkamnebe, 2022).

Cultural and social influences also shape food choices. Family traditions and shared practices play an important role in determining what people eat, particularly in household settings. For example, preferences for certain types of fish have been linked to family size and marital status (Jimoh et al., 2021). Cultural expectations also influence how frequently people patronise street food vendors (Ayodele & Panama, 2016).

Although food safety is a concern for many consumers, it does not consistently guide behaviour. Some studies report that consumers express concern about chemical residues and contamination but still rely on personal judgment rather than formal certification systems (Akinwehinmi et al., 2021; Akinwehinmi et al., 2022). Trust in official food control measures appears limited in some settings, which reinforces reliance on informal cues such as appearance and experience. There is also some evidence that education can influence food choices. Nutrition education programmes, for example, have been linked to improvements in dietary decisions (Okoro et al., 2015; Owolabi et al., 2020). However, such changes are often gradual and depend on sustained exposure to information.

Practical factors such as location and convenience, further shape consumer behaviour. The placement of vendors, ease of access, and the availability of ready-to-eat meals significantly affect purchasing decisions. Tourists, for instance, consider both location and perceived



healthiness when choosing street food (Nordhagen et al., 2023). In urban areas, demanding work schedules and time constraints increase the e convenient food options more attractive (Azman & Ahmad, 2024; Adeosun et al., 2022). Across these studies, food choice appears to be a balance among what people know, what they can afford, and what fits their daily routines. Food safety is part of this balance, but it often competes with taste, price, and convenience in shaping final decisions.

## **Conclusion**

This review consolidates a substantial body of evidence showing that foodborne illness remains a serious public health issue in Nigeria. Contamination is reported across many types of food, from street-vended meals to items sold in more formal settings. In several cases, the presence of antibiotic-resistant organisms heightens concern. The result is a sustained burden of illness, hospitalisation, and avoidable deaths, along with financial strain on households and the wider health system. The studies point to a set of conditions that keep these risks in place. Poor hygiene during food preparation, limited access to clean water, and poor sanitation at vending sites recur. These are closely linked with gaps in infrastructure and uneven enforcement of food safety regulations. Although many vendors are aware of safe practices, this knowledge is not always applied in daily work. In many cases, this is less about unwillingness and more about constraints such as cost, lack of equipment, and the absence of regular inspection.

Consumer behaviour adds another layer to this situation. Food choices are influenced by price, taste, convenience, and visible cleanliness. While safety is a concern for many consumers, decisions are often based on what can be seen or experienced directly rather than on formal certification or regulatory assurance. This places a greater burden on individual judgment in settings where reliable information is not always available. Drawing on evidence from numerous studies, this review integrates findings on contamination patterns, vendor practices, regulatory conditions, and consumer behaviour in one place. It also points to areas where the evidence is still thin. There is a need for more work in rural settings, where conditions may differ from those in urban centres. There is also limited evidence on how well existing interventions change behaviour over time, particularly those aimed at closing the gap between knowledge and practice. In addition, the role of newer surveillance tools and locally adapted strategies has not been examined in enough detail.

Looking ahead, efforts to improve food safety will need to go beyond awareness campaigns. Education remains important, but it is most effective when combined with practical support. This includes access to clean water, better waste management, affordable equipment, and consistent inspection systems. Attention should also be given to the social and economic conditions that influence how vendors and consumers act in everyday settings. Improving food safety in Nigeria will require coordinated action across these areas. Strengthening enforcement, improving basic infrastructure, and supporting behaviour change in practical ways are all part of the task. When these elements work together, there is a better chance of reducing illness and protecting public health.

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