

FOOD SAFETY KNOWLEDGE AND PRACTICES AMONG FOOD HANDLERS IN LAGOS, NIGERIA: EVIDENCE AND POLICY OPTIONS FOR FOOD INDUSTRIALISATION

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Abstract

This study investigated the relationship between food safety knowledge and practices among food handlers in Lagos State, Nigeria, with a view to assessing whether food safety knowledge translates into safe food handling practices. The study adopted a descriptive cross-sectional design and utilized a structured questionnaire administered to 200 food handlers selected from five Local Government Areas/Local Council Development Areas in Lagos East Senatorial District. Data were analysed using descriptive statistics, Pearson Product Moment Correlation, and the t-test. The findings revealed that food handlers possessed a generally high level of food safety knowledge, with an overall mean knowledge score of 3.02 (SD = 0.99). High proportions of respondents correctly recognized the importance of food safety systems (88.5%), cleanliness of food processing premises (86.0%), and personal hygiene practices (74.5%). However, notable knowledge gaps existed in critical areas, as only 49.5% recognized the need for separate utensils for raw and cooked foods, while only 45.0% demonstrated correct knowledge of coughing and sneezing etiquette. Food safety practices were moderately high, with an overall mean practice score of 0.77 (SD = 0.42). Most respondents reported regular handwashing before handling food (94.5%), proper protection of food from contamination (94.5%), sanitation of equipment and utensils (92.0%), and maintenance of clean storage facilities (90.0%). Nevertheless, deficiencies were observed in key operational areas, with only 66.5% of establishments having pest-control systems, 68.5% maintaining verifiable food safety systems, and 66.0% using separate cutting boards for raw and cooked foods. Furthermore, approximately 70.0% of the food establishments surveyed were unregistered. Pearson correlation analysis revealed a statistically significant positive but moderate relationship between food safety knowledge and food handling practices ($r = 0.379$, $t(198) = 5.762$, $p < 0.001$), indicating that knowledge accounted for only 14.4% of the variation in food safety practices. The study concludes that while food safety knowledge is an important determinant of safe food handling behaviour, it is insufficient on its own to ensure compliance with food safety standards.

Keywords: Food safety, Knowledge, Practices, Food handlers, Industrialization

Introduction

Food safety is a critical determinant of public health and economic productivity that has drawn significant global concerns among researchers and policy makers. An effective food safety system is vital to protecting the public from foodborne and related diseases. The issue is particularly acute in urban centers characterized by dense populations and complex food supply chains. In developing nations, foodborne illnesses stemming from inadequate food handling and hygiene persist as a formidable public health challenge. According to the World Health Organization (WHO), contaminated food is responsible for an estimated 600 million illnesses and 420,000 deaths annually worldwide (WHO, 2015), with a disproportionate burden falling on low-and-middle income countries, especially in Africa (Boulos and Abouelezz, 2020; Hassan and Fweje, 2020; Onyenebo and Hedberg, 2013).

In Nigeria, food safety remains a critical issue; there is a noticeably high level of food adulteration, contamination and misbranding. These, complemented by poor food hygiene regulatory oversight along the food supply chain, have culminated in high prevalence of foodborne diseases. In Nigeria, over 200,000 people die from foodborne illness annually (Onyeka *et al.*, 2021) and an estimated 173 million cases of diarrhoea caused by food borne illnesses takes place annually with about 33,000 deaths resulting from this. It is estimated that treating these diseases cost about \$1.7 billion dollars annually excluding the opportunity cost of lost labour time and productivity decline (Obadina, 2024). Reasons adduced for this situation include poor food handling and sanitation practices, inadequate food safety laws,

weak regulatory systems, insufficient financial resources to invest in safer equipment and infrastructure and a lack of knowledge about food safety practices and its importance by handlers at multiple levels, unfavourable cultural practices among some ethnicities, inefficient food supply chain, poor data and traceability mechanisms, among others. (Obadina, 2024).

In response to these challenges, the Nigerian government has since 1958 launched a series of sectoral policy initiatives and regulations focused on agriculture, food, and health, some of which have bearing on food safety. However, the food safety regulatory framework in the country functions as a sectoral Food Safety Control System involving multiple agencies across the Agriculture, Environment, Health, Science and Technology, and Trade & Investment Ministries. In addition, the implementation of food safety regulations is a shared responsibility among the three tiers of government, Federal, State and Local Governments and agencies operating under them. Among these institutions/agencies however, the National Agency for Food and Drugs Administration and Control (NAFDAC), a Federal Government Agency established in 1993, has emerged as the principal body in charge of food safety monitoring.

Based on the realization of the need to further improve food safety regulation, the National Policy on Food Safety (NPFS) was developed in 2000 and incorporated into the National Health Policy in 2010. The NPFS seeks to coordinate all existing laws for the regulation of food safety practices in Nigeria and revamp existing food control systems at different levels of government. It assigned roles and responsibilities to relevant parties for

ensuring food safety in the country. It also provides official guidelines on the minimum food safety practices that could be adhered to in order to assure consumers about the safety of food and food products meant for human consumption.

Other policy initiatives relating to food safety in the country These policies aim to achieve a high standard of food hygiene and safety practices in order to promote health, control foodborne diseases, and ultimately eliminate risks associated with poor food handling. In particular aim to modernize the countries food safety system bringing it with international standards, promote risk reduction, strengthen relevant institutions, develop the food safety knowledge, skill and capacity of food stakeholders in order to enable them adopt and maintain global best practices and standards and improve public awareness on food safety. In 2025, the NAFDAC released a Food Hygiene Regulations (2025) policy document that aims at regulating the establishment and operations of food companies (Obadina, 2024; Omotayo and Denloye, 2002).

To mitigate foodborne diseases and improve the nutritional value of food hygiene, the World Health Organisation established five key indicators for safer food, emphasizing the need for training and education. These include maintaining clean kitchens and utensils, separating raw and cooked foods, cleaning food surfaces, using safe water and raw materials, and cooking food thoroughly (WHO, 2015). Food handlers occupy a pivotal role in the food ecosystem, as their knowledge, attitudes, and practices of these food safety standards directly influence the microbial safety of food. Research indicates that significant proportion of food handlers in Nigeria operate without formal training, often relying on

traditional methods that may not align with modern safety standards (Abdullahi *et al.*, 2006; Ilesanmi and Ilesanmi, 2021). This knowledge-practice gap poses risks not only to consumer health but also to the industrialization of the food sector.

The industrialisation of the food sector, entails transitioning of the sector from informal, small-scale food enterprise operations to formal, standardised, and large-scale food processing and distribution systems. It is essential for both economic growth and public health improvement purposes. However, the effectiveness of this transition is dependent on the implementation of strict food safety protocols and the active participation of food handlers in adopting best practices (Akinbile *et al.*, 2016). Food handlers are primary gatekeepers of food quality for individuals, households and communities. Hence, understanding their perspectives on food safety is critical in designing interventions that are contextually appropriate and behaviourally suitable for advancing food industrialisation.

Lagos State, the most populous and economic capital of Nigeria, hosts a large, predominantly informal, food sector comprising thousands of food vendors, restaurants, and processing establishments. These enterprises are vital to food access, employment and the state's economic growth but often operate with limited regulatory oversight, especially concerning food hygiene and safety practices (Okojie and Isah, 2014). Inadequate infrastructure, insufficient training of food handlers, and limited awareness of safe food handling practices contribute significantly to the risks of food contamination and the spread of food borne diseases (Omemu and Aderoju, 2008).

However, despite the strategic importance of Lagos State in Nigeria's food system and economy, there is paucity of empirical studies examining the perceptions of food handlers on food safety within the state. Existing research often focuses on institutional or consumer perspectives, with limited attention to the voices of those directly involved in food preparation and handling (Omemu and Bankole, 2005). Against this background, this study aims to fill this gap by exploring the relationship between food handlers' knowledge of food safety and their actual food handling practices in Lagos State. Addressing this gap is crucial to the state's development programming, particularly as the Lagos transformation agenda includes becoming a model for urban food system transformation and industrialised food processing.

Theoretical Framework and Literature Review

The Knowledge, Attitudes, and Practices (KAP) model provides the theoretical foundation for this study. This framework posits that knowledge, attitudes, and practices are interconnected components essential for behavioral change. The theory originated from Theory of Planned Behavior and Health Belief Model which posit that an individual's knowledge and perception of risk significantly influence their intention to act. When applied to food safety, these theories suggest that awareness of contamination risks and perceived control over hygienic practices shape the likelihood of compliance.

Within the KAP model, knowledge refers to the conscious understanding of factual information (Wessman, 2006), attitude denotes a positive or negative evaluation of an

object or behavior (Ajzen and Fishbein, 2000), and practice encompasses regular activities shaped by social norms and beliefs (Bourdieu, 1990). The KAP theory suggests that enhancing knowledge can positively influence attitudes and, subsequently, practices. Thus, KAP surveys are instrumental in identifying knowledge gaps, attitudinal barriers, and behavioral patterns to inform targeted interventions.

Empirical studies employing the KAP framework on food safety often reveal a complex, though generally positive, relationship between knowledge and practice. For instance, Khalifa *et al.* (2018) assessed food safety awareness among 136 individuals in Taif, Saudi Arabia, finding that while the population possessed adequate knowledge, this awareness was not consistently translated into practice. In a study of 172 school food handlers in Brazil, Vitória *et al.* (2021) reported sufficient knowledge levels, though these were inferior to their positive attitudes and self-reported practices. The study noted that knowledge increased significantly with professional experience and training duration, highlighting the value of continuous education.

Focusing on street food vendors, Meyer *et al.* (2022) surveyed 266 vendors and found a moderate positive correlation between food safety knowledge, and both attitudes and practices. Their findings reinforce the idea that improving knowledge can foster better attitudes and, consequently, safer practices. Expanding the scope to consumers, Roy *et al.* (2024) conducted a nationwide cross-sectional study with 1,400 adults in Bangladesh. They discovered that consumers exhibited moderate knowledge, excellent attitudes, but relatively poor food safety practices. Socio-demographic factors such as

education level, geographic location, gender, employment status, and family size were significantly associated with KAP scores, suggesting that interventions must be tailored to specific demographic profiles.

A recent systematic review by Hammouh *et al.* (2025), which synthesized 839 articles over 20 years, offered a broader perspective. The review concluded that consumers generally possess greater knowledge and adhere more closely to food safety guidelines than vendors. Vendors, often constrained by limited education and resources, were found to exhibit inconsistent practices despite generally positive attitudes. The study underscores a persistent knowledge-practice gap across different stakeholder groups.

Within the Nigerian context, studies corroborate these challenges. Omemu and Aderoju (2008) highlighted infrastructural and training gaps in Nigeria's informal food sector while Ilesanmi and Ilesanmi (2021) in a review of food safety practices among vendors, identified widespread deficiencies in food hygiene and handling. This present study contributes to this body of literature by providing a focused analysis of the knowledge-practice dynamic among food handlers in Lagos State.

Methodology

The study employed descriptive cross-sectional design. Lagos State has three Senatorial Districts namely Lagos West, Lagos Central and Lagos East. This research was conducted in the Lagos East Senatorial District, comprising five (5) Local Government Areas (LGAs) and eleven (11) State recognised Local Council Development Authorities (LCDAs). Although the LCDAs are the

State's creation, born out of national politics and are not recognized as distinct Local Government Authorities by the Federal Government, within the state, they, *de facto*, play the same role as the Federally recognized LGAs. Like the LGAs, they are vital sources of records on food handlers used for this study. The sampling frame consisted of 402 practising food handlers identified from records at the Local Government/ LCDAs. The sample size was determined using the Taro Yamane formula with a 5% margin of error (equation 1).

$$n = \frac{N}{[1 + N(e)^2]} \dots 1$$

where n = sample size, N = population size (402) and e = margin of error (0.05). This yielded a sample of 200 respondents distributed equally across five randomly selected LGAs/LCDAs (Eredo, Ibeju-Lekki, Ikorodu North, Agboyi-Ketu and Somolu), with 40 respondents selected from each LCDA.

A structured questionnaire was used for data collection, comprising three sections: A, B, and C. Section A collected demographic information. Section B assessed food safety knowledge using 10 negatively worded items on a 4-point Likert scale (Strongly Agree to Strongly Disagree). Agreement indicated poor knowledge, while disagreement indicated good knowledge. Scores ranged from 1 to 4, with higher scores reflecting better food safety knowledge. Section C evaluated food safety practices through 24 binary (Yes/No) items. A "Yes" response (scored 1) denoted good practice, while a "No" (scored 0) denoted poor practice. Higher aggregate scores indicated better food safety practices.

The instrument underwent face and content validation by a panel of six experts

in nutrition, home economics, and food technology. A pilot study with 15 food handlers established reliability, yielding Cronbach's alpha coefficients of 0.78 for knowledge and 0.71 for practice. The Statistical Package for Social Sciences (SPSS) version 24 was used for statistical analysis, with a p-value of less than 0.05 considered statistically significant. The demographic variables were reported in form of frequency counts (n) and percentages (%) using charts and tables. The rated responses were analysed using mean, standard deviation and percentages. The Pearson Product Moment Correlation (r) was used to verify association between the food handlers' knowledge and practices on food safety. The statistical significance of the resulting correlation coefficient was tested using the t test for correlation coefficients:

$$t = r \sqrt{\frac{n-2}{1-r^2}} \quad \dots 2$$

where number of respondents (n) = 200 and degrees of freedom (df) = $n - 2 = 198$.

Results and Discussion

Demographic Variables

The demographic characteristics of the respondents are presented in Figure 1. The findings indicate that females constituted the majority of food handlers surveyed, accounting for 68.5% of the respondents, while males represented 31.5%. This gender distribution reflects the prominent role women play in food preparation, processing, vending, and catering activities in Nigeria's informal and semi-formal food sectors. The dominance of female food handlers observed in this study is consistent with previous studies in Nigeria and other developing countries, which reported that food vending and food

service operations are largely female-driven occupations due to their traditional association with household food preparation and small-scale food entrepreneurship (Omemu and Aderoju, 2008; Ilesanmi and Ilesanmi, 2021).

With respect to age distribution, the largest proportion of respondents (34.0%) fell within the 21–30 years age bracket, indicating that the food service sector in Lagos State is largely driven by young and economically active individuals. This finding suggests a relatively youthful workforce capable of adapting to emerging food safety technologies, training programmes, and regulatory requirements. Similar observations have been reported by Amegah *et al.* (2020), who found that younger food handlers generally demonstrate greater receptiveness to food safety education and behavioural change interventions.

The marital status profile showed that 55.5% of respondents were single, while the remainder were married, divorced, or widowed. The predominance of single respondents may be attributed to the youthful nature of the workforce and the increasing participation of young adults in food-related enterprises as a source of employment and income generation.

Educational attainment among respondents was relatively high. Approximately 60.0% (120 respondents) possessed at least a Master's degree qualification. This finding is noteworthy because educational attainment is often associated with improved access to information, enhanced comprehension of food safety principles, and greater capacity to comply with regulatory requirements. Previous studies have established a positive association between education level and food safety awareness, suggesting that individuals with higher

educational qualifications are more likely to understand the health implications of unsafe food handling practices (Roy *et al.*, 2024; Vitória *et al.*, 2021). Nevertheless, as demonstrated later in this study, higher educational attainment alone does not automatically translate into optimal food safety practices.

Regarding occupation, restaurant managers constituted the largest occupational group (34.0%), followed by housewives involved in food-related enterprises (27.0%) and fast-food outlet managers (13.0%). The diversity of occupational categories represented in the sample provides a broad perspective on food handling practices across different segments of the food service industry. Since managerial personnel often influence operational decisions relating to hygiene, procurement, storage, and staff supervision, their substantial representation in the sample is important for understanding food safety compliance within food establishments.

The findings further revealed that 54.0% of respondents had between one and three years of food handling experience. This suggests that a significant proportion of food handlers are relatively early in their professional

careers and may still be developing practical competencies in food safety management. Existing literature indicates that work experience contributes significantly to food safety competence because repeated exposure to food handling operations enhances practical understanding of contamination risks and preventive measures (Meyer *et al.*, 2022).

A particularly important finding is that approximately 70.0% of the food establishments represented in the study were unregistered. This high level of informality raises significant food safety concerns because unregistered enterprises often operate outside formal regulatory oversight, limiting compliance with food safety standards, inspection requirements, and certification programmes. The finding corroborates observations by Omemu and Aderoju (2008) and Ilesanmi and Ilesanmi (2021), who reported that the informal nature of food enterprises remains a major challenge to food safety regulation in Nigeria. From an industrialisation perspective, the predominance of unregistered establishments may impede efforts to modernise the food sector, improve traceability systems, and enforce quality assurance standards required for sustainable food industry.

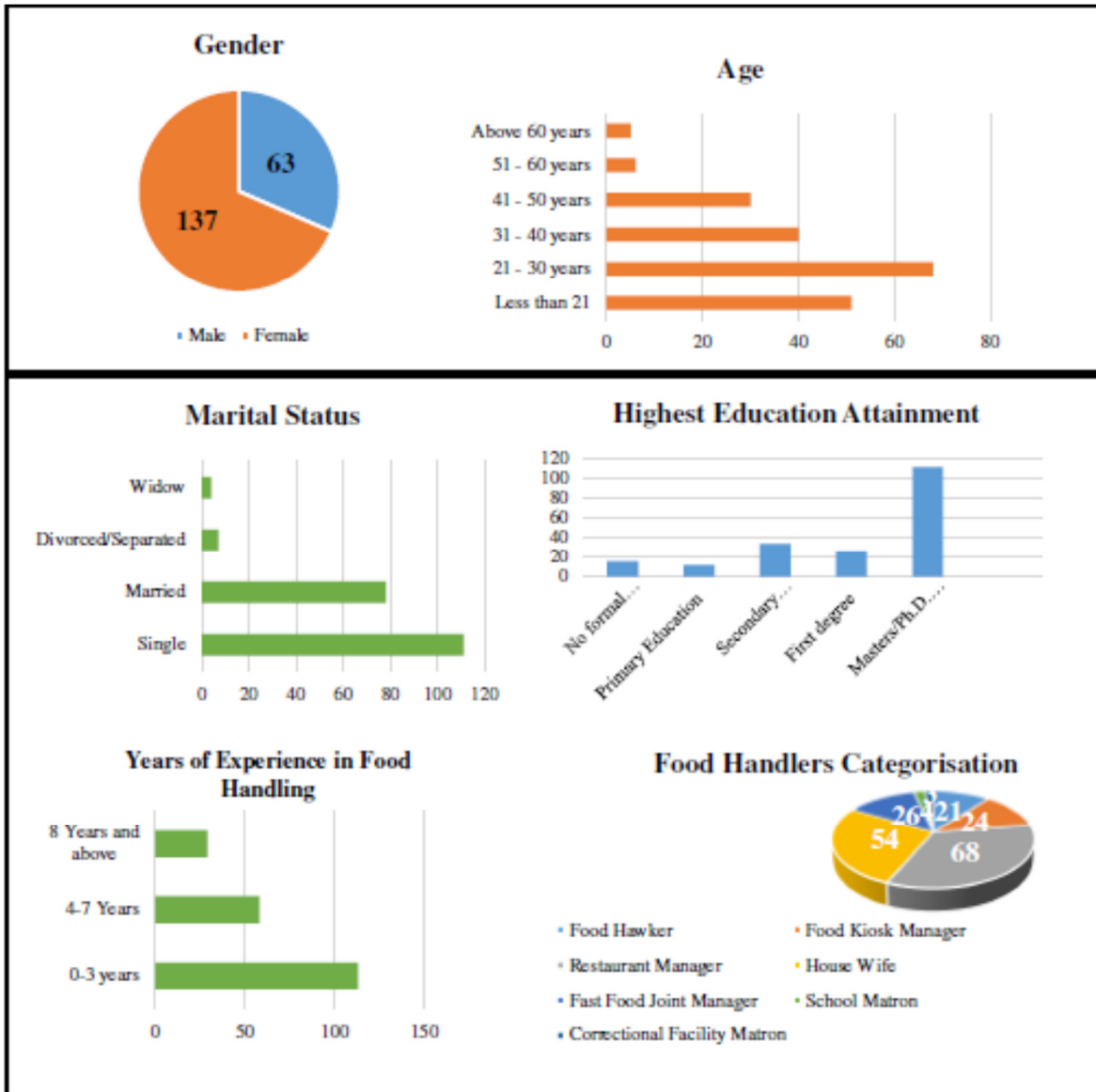


Figure 1: Demographic data of respondents

Food Safety Knowledge of Respondents

Table 1 presents the food safety knowledge scores. The overall mean

knowledge score was 3.02 (SD = 0.99), indicating a good level of knowledge.

Table 1: Food safety knowledge of the respondents (n = 200)

Food safety and handling knowledge items	Responses n (%)				
	SA	A	D	SD	%GK
Food handlers' personal hygiene practices do not affect the safety of food for consumption	19 (9.5)	32 (16)	60 (30)	89 (44.5)	74.5
Cleanliness of food processing premises has no bearing on food safety	8 (4)	20 (10)	63 (31.5)	109 (54.5)	86.0
There is no need for food safety system or procedure in home or work places	6 (3)	17 (8.5)	65 (32.5)	112 (56)	88.5
A sick person can prepare or handle food as long as he/she feels able to	10 (5)	60 (30)	77 (38.5)	53 (26.5)	65.0
Frequent washing of hands when handling food does not necessarily make food safe for human consumption	24 (12)	40 (20)	77 (38.5)	59 (29.5)	68.0
A good food handler does not need training on personal hygiene, food handling processes and food safety laws	15 (7.5)	23 (11.5)	64 (32)	98 (49)	81.0
Using different utensils and chopping materials for fresh and prepared meals is not essential for food safety	15 (7.5)	86 (43)	64 (32)	35 (17.5)	49.5
It is not necessary for a food handler to cough or sneeze inside the elbow if towel is not available	43 (21.5)	67 (33.5)	18 (9)	72 (36)	45.0
There is no need to dispose off food items that have gotten to their expiry dates if they still feel good.	25 (12.5)	27 (13.5)	63 (31.5)	85 (42.5)	74.0
Separating prepared and uncooked meals is not an essential means of stopping infections	35 (17.5)	28 (14)	91 (45.5)	46 (23)	68.5
Overall Mean Score = 3.0217					
Standard Deviation = 0.9934					

Note:

- (1) SA=Strongly Agree, A=Agree, D=Disagree, SD=Strongly Disagree.
- (2) % Good Knowledge (GK) = % Disagree (D) + % Strongly Disagree (SD).
- (3) Numbers in parentheses are percentages.

High percentages of respondents correctly disagreed with negative statements concerning personal hygiene (74.5%), premises cleanliness (88.5%), the need for food safety systems (88.5%), and handling food while sick (65%). However, knowledge gaps were evident in specific areas: 50.5% did not recognize the importance of using separate utensils for raw and cooked foods, and 55% held incorrect beliefs about coughing/sneezing etiquette. It could thus be inferred from

Table 1 that professional food handlers in the study area have good knowledge of food safety practices as they generally disagreed with items that are unfavourable to good food safety practices and agreed with those that are favourable to it.

Food Safety Practices of Respondents

Table 2 outlines the food safety practices. The overall mean practice score was 0.77 (SD = 0.42), suggesting a moderate level of adherence to safe practices.

Table 2: Food safety practices of the respondents (n = 200)

Food safety and handling practices items	Responses n (%)		%GP
	Yes	No	
Do you check your premises regularly for pests, insects and rodents	177 (88.5)	23 (11.5)	88.5
Do you have a pest control system in place in your premises	133 (66.5)	67 (33.5)	
Do you regularly clean your equipment	179 (89.5)	21 (10.5)	
Do you have clean and tidy refrigerators and other storage areas	180 (90)	20 (10)	
Do you have a cleaning schedule for your refrigerators and other storage areas.	165 (82.5)	35 (17.5)	
Do you wash and maintain your premises and equipment regularly	182 (91)	18 (9)	
Do you have verifiable food safety system in place in your premises	137 (68.5)	63 (31.5)	
Do you or your staff use hands to pick foods while cooking instead of food probes	58 (29)	142 (71)	
Are your staff fully trained on food hygiene practices	164 (82)	36 (18)	
Do you or your staff wash your hands each time you want to touch food items	189 (94.5)	11 (5.5)	
Do you or your staff change into protective clothing before work	170 (85)	30 (15)	
Do you or your staff keep your hairs back and/or wear a hair net or hat	179 (89.5)	30 (15.5)	
Do you have first aid kit in the kitchen/workplace	168 (84)	32 (16)	
Do you keep staff sickness records	131 (65.5)	67 (33.5)	
Do you sometimes allow sick staff to handle food items	20 (10)	180 (90)	
Do you have separate preparation areas for raw and ready to eat food	176 (88)	24 (12)	
Do you keep soap and paper towels in the work area and toilets.	185 (92.5)	15 (7.5)	
Are temporary food preparation areas kept in the same condition as permanent ones	135 (67.5)	65 (32.5)	
Do you keep food and serving supplies covered and protected from insects, rodents, and cleaning supplies	189 (94.5)	11 (5.5)	
Do you clean/sanitize equipment, food preparation surfaces and utensils during food preparation steps or whenever contamination occurs.	184 (92)	16 (8)	
Do you use a separate cutting board for raw meat, poultry or seafood and not the one used for other foods	132 (66)	68 (34)	
Do you clean and sanitize cutting boards after each use	151 (75.5)	49 (24.5)	
Do you always ensure that foods are cooked to safe internal temperatures	177 (88.5)	23 (11.5)	
Overall Mean Score = 0.774			
Standard Deviation = 0.4179			

A high proportion of respondents reported positive practices such as regular equipment cleaning (89.5%), maintaining clean storage areas (90%), washing hands before handling food (94.5%), and using protective clothing (85%). However, several critical gaps were identified: only 66.5% had a pest control system, 68.5% had a verifiable food safety system, and

just 66% used separate cutting boards for raw meat.

Relationship Between Food Safety Knowledge and Practices

A Pearson correlation analysis was conducted to examine the relationship between knowledge and practice scores (Table 3).

Table 3: Pearson Correlation Between Respondents' Food Safety Knowledge and Practices

Level	r	df	Sig. (2 tailed)
Food Safety Knowledge and Practices	0.379*	198	0.000

*Correlation is significant at the 1 percent level (2-tailed); [r=0.379, t(198) = 5.762, p<0.01]

The analysis revealed a statistically significant, positive, and moderate correlation between food safety knowledge and practices (r = 0.379, p < 0.001). This indicates that higher levels of food safety knowledge are associated with better food safety practices among the respondents. This aligns with Meyer *et al.* (2022), who also found a positive knowledge-practice link among street vendors. The significant correlation underscores the foundational role of knowledge in promoting safer food handling behaviours. However, the moderate strength of the correlation between knowledge and practice suggests that knowledge alone is not a sufficient driver of optimal practice, a disconnect that is a common theme in KAP literature (Hammouh *et al.*, 2025; Khalifa *et al.*, 2018).

In this study, the identified gaps in critical areas such as cross-contamination prevention, pest control, and formal safety systems point to mediating factors. In fact, factors such as infrastructural deficits, economic constraints, regulation enforcement strength, and the informal nature of most food establishments, have

been identified in previous studies as potential mediators of the knowledge – practice relationship (Omemu and Aderoju, 2008; Ilesanmi and Ilesanmi, 2021). Socioeconomic limitations, infrastructural deficits, and informal sector characteristics dilute the impact of knowledge on day-to-day hygiene compliance. Comparative insights from Brazil, Bangladesh, and Ghana show similar patterns where knowledge alone fails to ensure proper practice (Roy *et al.*, 2024; Amegah *et al.*, 2020). Zanin *et al.* (2017), in a comprehensive literature review, submits that even after training, there is no translation of knowledge into attitudes/practices or attitudes into practices among food handlers.

Policy Options for Food Industrialisation

The results of this study underscore the importance of explicitly linking food handling and processing practices to food-sector development strategies in Lagos State. The observed moderate but statistically significant correlation between food safety knowledge and practice indicates that while knowledge remains an important determinant of

behaviour, it explains only part of the variation in food safety practices among handlers. This finding aligns with previous studies showing that food safety training improves awareness but does not consistently lead to sustained behavioural change (Young and Waddell, 2020). Interventions focused solely on knowledge transfer, such as training and certification programmes, and standard operating procedures, are necessary but not sufficient for achieving reliable compliance within an industrialising food system. They need to be complemented with other equally important measures such as efficient financing schemes, strict regulatory enforcement and compliance monitoring, and targeted infrastructural support.

From an industrialisation perspective therefore, the findings of this study suggest that policy responses must extend beyond educational interventions to address the structural and operational constraints that shape everyday food handling practices. In Lagos State, such constraints include limited access to potable water, inadequate sanitation and storage facilities, high costs of appropriate equipment, and weak availability of pest control services (Alimi, 2016). Efforts must, therefore, be made to embed continuous food safety training requirements with strict inspection of operators and effective support mechanisms. Indeed, the Lagos State Government has declared its commitment to promoting food safety and hygiene across the state. It is in this regard that the State's "Safe Plate Initiative", a law that specifies rigorous health screening of food handlers, regular water quality testing and intensified public awareness campaigns, was enacted in 2024. This is complemented by various other initiatives

such as the "Produce for Lagos" programme, a state government-led investment scheme that is designed to stimulate, aggregate and distribute food while reducing post-harvest losses through provision of logistics infrastructure, food parks and processing hubs, among others. However, a strict implementation and enforcement mechanism will have to be developed given the nation's well known poor policy implementation culture.

Lastly, the findings of this study further highlight the central role of regulatory formalisation in food-sector industrialisation. Despite generally acceptable levels of food safety knowledge and self-reported practices, it was found that persistent deficiencies remain in critical areas such as pest control, prevention of cross-contamination, and the adoption of formal food safety management. The high proportion of unregistered food establishments - approximately 70% in this study - is consistent with prior research documenting the dominance of informality in food processing and food service enterprises in developing economies. Consequently, an industrialisation strategy that not only prioritises output expansion but also parallel investments in food-firm's registration, licensing, and regulatory oversight is required. According to the FAO and WHO (2019) strengthening registration systems and aligning enterprise growth with enforceable regulatory frameworks are essential for sustainable development of the food processing sector.

Conclusion and Recommendations

The findings of this study affirm a significant though moderate association

between food safety knowledge and practice. This suggests that while cognitive awareness exists among food handlers in Lagos State, systemic barriers that impede behavioural translation do also exist. To remedy the situation:

- i. There must be more investment in sector specific training and development programmes. This is because, only a moderate positive correlation exists between knowledge and practice of respondents despite their relatively high level of educational attainment suggesting that their education may not be food safety related.
- ii. Strong policy interventions in infrastructural provision and regulatory enforcement must be provided in order to create enabling environment for proper food safety practice.
- iii. Inclusive empowerment strategies targeted at women food entrepreneurs should be instituted given the gendered nature of food vending in the state. Such strategies can encompass areas like organization, training and access to credit.
- iv. Efforts must be made to strengthen the institutionalization of food safety certification, enhance operators' capacity through continuous training, and embed incentives for compliance in order to foster a professionalized, industrially viable food ecosystem that supports both public health and economic diversification.
- v. Regulatory agencies such as the National Agency for Food and Drug Administration and Control (NAFDAC) must extend their oversight to the informal sector in order to ensure an inclusive regulatory

system that is essential for the sector's industrialization.

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