



Food fraud in Nigeria: A qualitative study of food supply chain actors, healthcare professionals, and regulatory officials

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ABSTRACT

Food fraud is an emerging concern in Nigeria with implications for food security, public health, and economic stability. This qualitative study aims to investigate the perspectives from three key stakeholder groups: food supply chain actors, healthcare professionals, and regulatory officials on drivers of food fraud, barriers to effective control, and strategies for prevention. Face-to-face or online semi-structured interviews were conducted with 36 participants ranging from stakeholders working in the food supply chain ($n = 13$), healthcare professionals ($n = 9$); and regulatory officials including National Agency for Food and Drug Administration and Control (NAFDAC), Nigerian Customs Service and Consumers Protection Council ($n = 14$). Interviews were conducted between June 2023 and January 2024. Qualitative data were analysed using thematic analysis. Five interrelated themes were identified: (i) food fraud as deliberate deception in the food system; (ii) structural and economic drivers of food fraud; (iii) food fraud as a public health and socio-economic threat; (iv) weak institutional capacity undermining food fraud control; and (v) coordinated strategies for prevention. Key drivers included inflation, high raw material and production costs, economic hardship, and financial gain. Across all stakeholder groups, weak institutional capacity was identified as a major barrier to effective control, including shortages of regulatory staff, equipment, funding, vehicles, and security concerns. Participants also highlighted corruption as a factor that may further weaken enforcement. This is the first study exploring in-depth perceptions of food fraud, drivers, barriers for effective control and mitigating strategies among three key stakeholders including those involved in food supply chain, healthcare and regulatory control in Nigeria.

1. Introduction

Food fraud is increasingly recognised as a major challenge to food systems worldwide. It involves the deliberate substitution, adulteration, counterfeiting, mislabelling, dilution, concealment, or smuggling of food and food products for economic gain (Spink & Moyer, 2011). Although many fraudulent acts are economically motivated, their consequences can extend beyond financial deception to food safety, public health, consumer trust, and market integrity (Bannor et al., 2023; Spink & Moyer, 2011; Visciano & Schirone, 2021). In Nigeria, food fraud has been linked to wider structural challenges including poverty, corruption, weak food safety control, and regulatory limitations (Adebayo & Ojo, 2012; Matemilola & Elegbede, 2017; Opia, 2020). Existing literature suggests that food fraud is a persistent problem in the country. For

example, studies examining food fraud across Africa identified Nigeria as one of the countries most frequently represented in the literature, with common forms of fraud including adulteration, substitution, and mislabelling (Gwenzi et al., 2023; Njiru et al., 2025; Okonji et al., 2026; Visciano & Schirone, 2021). Reports from Nigeria have highlighted compromised products such as rice, meat, alcoholic and non-alcoholic beverages, alongside concerns over unauthorised additives, preservatives, and other unsafe substances used to extend shelf life or improve appearance (Adenuga & Montowska, 2023; Okonji et al., 2026; Opia, 2020; Eze & Bamson, 2024; Chukwugozie et al., 2024).

These practices are concerning because food fraud may expose consumers to unsafe ingredients, undeclared allergens, contaminated foods, and lower-quality products sold at premium prices (Eze, 2019; PwC, 2016; Soon-Sinclair et al., 2023). While not all fraudulent food

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causes immediate harm, some effects may emerge only after repeated exposure over time, particularly where unsafe additives, contaminants, or concealed ingredients are involved (GFSI, 2014; Spink & Moyer, 2011). In other cases, the consequences may be acute, such as food poisoning or allergic reactions resulting from mislabelling or undeclared contents (McCullough et al., 2024; Spink & Moyer, 2011).

Food fraud also has broader socio-economic implications. Fraudulent food activities can weaken confidence in food governance, reduce public trust in regulatory agencies, and create compliance challenges for both businesses and consumers (Chukwugozie et al., 2024; Onyeaka et al., 2022; Osmond et al., 2023). In Nigeria, this concern is especially important given the economic significance of agriculture and food manufacturing. Agriculture contributes approximately 24% of Nigeria's gross domestic product (GDP) (International Trade Administration, 2025), while food and beverage manufacturing (including tobacco) contributes US\$7.8 billion to the national economy (National Bureau of Statistics, 2025). However, the food sector operates under considerable pressure from inflation, high production costs, inadequate infrastructure, limited access to finance, raw material constraints, and other regulatory and operational barriers (Adeyemo et al., 2021; Matemilola & Elegbede, 2017). These factors increase vulnerability to fraudulent practices by encouraging cost-cutting, substitution, or other deceptive strategies within the supply chain (Morgan & Fanzo, 2020).

Regulatory institutions are central to food fraud prevention in Nigeria. The National Agency for Food and Drug Administration and Control (NAFDAC) is responsible for regulating the manufacture, importation, exportation, distribution, and quality control of food products, while the Nigeria Customs Service (NCS) plays a key role in tackling smuggling, counterfeit products, and the illegal movement of substandard foods across borders (NAFDAC, 2026; Nigeria Customs Service, 2026). Despite the efforts from regulatory bodies, food fraud incidents continue to prevail in Nigeria.

Although previous studies have documented important aspects of food fraud in Nigeria, much of the literature has focused on products, incidents, food safety risks, or regulatory concerns rather than how different stakeholder groups understand and experience the issue. Yet food fraud is likely to be perceived differently by those working within the food supply chain, those encountering its consequences in clinical settings, and those responsible for regulation and enforcement. Capturing these perspectives is important for understanding food fraud as a systemic problem shaped by economic pressures, health risks, governance weaknesses, and resources constraints across the food system. This study therefore aimed to explore stakeholder perspectives on food fraud in Nigeria across three groups: food supply chain actors, healthcare professionals, and regulatory officials. Specifically, the study examined how these stakeholders understood food fraud, drivers of food fraud, barriers to effective control, and the strategies for prevention. By bringing these perspectives together, the study seeks to provide a more comprehensive account of food fraud in Nigeria.

2. Methodology

An exploratory, qualitative study using semi-structured interviews was conducted to investigate the perspectives of three key stakeholder groups including food supply chain actors, healthcare professionals and regulatory officials. A separate cross-sectional study consisting of questionnaire survey and semi-structured interviews with consumers were conducted and reported in Okonji et al. (2026).

2.1. Recruitment

A total of 36 stakeholders were recruited, both in person and/or online using purposive sampling. Purposive sampling was enabled selection of respondents that would most likely useful information to enhance depth of understanding of food fraud from the three stakeholder groups, improving the rigour of the study and trustworthiness of

findings (Campbell et al., (2020)). The following stakeholders were interviewed: (i) Food supply chain actors (including farmers, food producers, distributors and vendors) ($n = 13$); (ii) healthcare professionals ($n = 9$); and (iii) regulatory officials including NAFDAC and the Nigerian Customs Service and Consumers Protection Council ($n = 14$). Information sheets and consent forms were issued to the participants before the interviews were conducted. The interviews were conducted either face-to-face or online via MS Teams between June 2023 and January 2024. The interviews lasted between 30 and 90 min. The interviews were audio recorded and transcribed.

2.2. Development of semi-structured interview guides

The semi-structured interview guides for the stakeholders in the food supply chain (farmers, producers, and distributors), health professionals, and regulatory bodies in Nigeria were developed and adapted from previously conducted studies by Richard, (2023), Soon and Liu, (2020), and Opia (2020). The stakeholder interview questions include: e.g., 'Could you describe (if any) food fraud experience your food business had experienced or witnessed?' (for stakeholders in food supply chain); 'What are the challenges faced by regulatory bodies to address food fraud in Nigeria?' (for regulatory officials); and 'How does food fraud affect the health of public?' (for healthcare professionals).

The semi-structured interview questionnaires were validated by three UK academics and one Nigerian academic during the development stages. To test the interview questions and gain some practice in interviewing, pilot interviews were conducted with a stakeholder from each of the targeted sample group. Specifically, stakeholders in the food supply chain (food producer), healthcare profession and regulatory body. Based on the pilot findings, the interview questions were modified to enhance clarity. For example, a question related to "What are the food fraud laws in Nigeria" was revised to "With regards to the food laws and regulations, what measures are taken to control food fraud in Nigeria?". The semi-structured interview questions for all stakeholder groups are available in [Supplementary Material 1](#).

2.3. Data analysis

This study employed thematic analysis to identify, assess, and articulate the recurring patterns in the data, thus facilitating a comprehensive and detailed understanding of the data (Braun & Clarke, 2006). The acquired data were transcribed, processed, analysed, and reported employing the six steps for assessing qualitative data through thematic analysis, as outlined by Braun and Clarke, (2006, 2023). Transcripts were read and re-read to achieve familiarisation with the data, followed by initial coding. An inductive coding approach was used. Related codes were then grouped into potential themes. These themes were reviewed and refined to produce the final sub-themes and overarching themes. Verbatim statements were extracted from the transcripts to validate the identified themes. Participants were given a number ID, e.g., Food supply chain (FSC) participant 1 (Rice farmer); Healthcare professional 1 (General practitioner) and Regulatory official 1 (NAFDAC). The study did not reveal the location and gender of the participants to ensure anonymity. For the full list of participants, please see [Supplementary Material 2](#).

2.4. Ethics

Informed consent was obtained from all participants. The study received ethical approval from the University of Lancashire HEALTH Ethics Review Panel (Reference Number: HEALTH 0301).

3. Results

Analysis of interviews with food supply chain actors, healthcare professionals, and regulatory officials generated five interrelated

themes: (1) food fraud as deliberate deception in the food system, (2) structural and economic drivers of food fraud, (3) food fraud as a public health and socio-economic threat, (4) weak institutional capacity undermining food fraud control, and (5) coordinated strategies for food fraud prevention. Although each stakeholder group emphasised different aspects of the problem, their accounts converged in portraying food fraud in Nigeria as a systemic issue shaped by market pressures, governance weaknesses, and stretched capacity for prevention and response.

3.1. Food fraud as deliberate deception in the food system

Across stakeholder groups, food fraud was understood as an intentional form of deception embedded within the Nigerian food system. Participants described food fraud not simply as acts of adulteration, but as a broader pattern of practices including substitution, counterfeiting, smuggling, relabelling, expired product sales, and misrepresentation of food quality. These findings suggested that food fraud was viewed as a deliberate and profit-driven act, harmful to consumers, and sufficiently widespread to affect both raw and processed foods across multiple settings.

Specifically, food supply chain participants did not view food fraud as an abstract concept, but as a practical and ongoing threat in their daily operations. They positioned food fraud as both unethical and materially harmful to consumers and businesses.

“Food fraud is a bad act carried out by some greedy producers by adding some ill content in food to increase its size or quantity for the purpose of gain. All hands must be on deck to control it as it could be harmful to the consumers, food supply chain, and the economy. The major challenges that we face in business is fake products and insincerity from the suppliers.” Food supply chain participant 6 (Bread manufacturer)

Healthcare professionals similarly demonstrated a strong practical understanding of food fraud and described it as intentional deception directed at consumers. Their views identified multiple manifestations of fraud, including adulteration, counterfeiting, smuggling, substitution, and the sale of expired products. Importantly, they also linked food fraud to consumer harm and lack of value for money, showing that their understanding was both clinical and consumer-oriented.

“Food fraud is typically motivated by profits; some form can be harmful to consumers or mislead the consumers.” Healthcare professional 1 (General Practitioner)

“Food fraud means to deceive consumers of a particular product, consumers not getting the worth or value for their money as required. There are different types, adulteration, counterfeiting, smuggling, addition, substitution and so on and this might however lead to health effects when consumed.” Healthcare professional 9 (Laboratory Scientist)

Regulatory officials reinforced this theme by describing food fraud as widespread, varied, and visible across multiple products, places, and trading environments. They suggested that food fraud was not confined to one commodity or one part of Nigeria, but cut across states and food categories, with some products and locations appearing more vulnerable because of high demand, commercialisation, and local consumption patterns. Their perspective adds a systems-level dimension to the food supply chain and healthcare stakeholders' views by showing that regulators perceive food fraud as structurally dispersed across the country.

“Food fraud can be regarded as an unethical practice. It is a menace that has eaten deep into the food chain and the economy.” Regulatory official 2 (NAFDAC)

“Food fraud is taking place in virtually all the states because you can't single out a state, because it is a kind of interwoven or

interrelated. For instance, food fraud taking place in Lagos will have its direct bearing from Kano or Maiduguri, the one taking place in in Calabar might have its bearing from somewhere Osun or Ibadan, which means, it is cut across all part of the country.” Regulatory official 3 (Customs)

3.2. Economic and structural drivers of food fraud

Participants' findings indicated that food fraud was shaped by structural and economic pressures. Across stakeholder groups, food fraud was linked to inflation, high costs of raw materials and production, economic hardship, consumer demand for cheaper foods, and the pursuit of financial gain. These conditions appeared to create opportunities for fraudulent practices to emerge or become normalised, particularly where monitoring and enforcement were weak or inconsistently enforced. Food supply chain stakeholders and regulatory officials also viewed fraud not only as economically or profit-driven, but also due to a constrained commercial environment where maintaining product quality may compete with business survival and cost reduction.

“Inflation is one of them, food items are on the high side, and raw materials are nowhere to touch.” Food supply chain participant 12 (Restaurant)

“Well, I will say in a way also due to the economy of the country, things are hard, the cost of purchase of raw materials is high, the cost of food production is high, sales of end products are high also the cost of living is high, that is producers find it difficult to produce due to high cost of raw materials while the consumers find it difficult to purchase desired food products due to its cost.” Food supply chain participant 8 (Tomato paste manufacturer)

“The economy is hard, things are very difficult now so when you go out, the prices of things are skyrocketing every day. If you go to the market today, it is not the same price you will meet it tomorrow.” Regulatory official 4 (NAFDAC)

Both regulatory and food supply chain participants highlighted that some consumers may knowingly purchase cheaper substandard foods because of financial constraints, while producers may respond to market pressures through substitution or other deceptive practices.

“Consumers encourage food fraud that is the reason it is much in Nigeria. Consumers want it big but at a lesser price.” Food supply chain participant 6 (Bread manufacturer)

“Some producers are forced to cut corners just to satisfy customers because what they want is cheap and cheerful.” Food supply chain participant 7 (Spice and food ingredients manufacturer)

“Food fraud target products that are very expensive, products that have a good brand name or are common and move in the market. Due to the economy, some people are too lazy to sit down and develop their own products. A whole lot of manufacturers now just sit down look around and see a product that sells without doing their own due diligence, but they look at the other product add one or two things and make theirs.” Regulatory official 11 (NAFDAC)

3.3. Public health and socio-economic threat

Healthcare professionals described food fraud as a serious threat to public health with both immediate and delayed consequences. Healthcare professionals linked unsafe and potentially fraudulent foods to acute symptoms such as food poisoning and allergic reactions, while also identifying more severe long-term outcomes including toxin accumulation, organ damage and cancer. They further stressed that diagnosis is often difficult because symptoms may be non-specific or emerge only after prolonged exposure.

"Food fraud act is a threat to the lives of consumers. Possible disease conditions this will result in include allergic reactions to certain hidden or substituted ingredients, lead poisoning, food poisoning in extreme of cases certain cancer types, or even death." Healthcare participant 2 (General Practitioner)

"With the various types of food fraud, one can say we are not sure of what we are eating, starting from the farm that uses unapproved chemicals down to processed food with unapproved ingredients, and when all this is consumed, it may not really have an immediate effect but over time this accumulated toxins or chemicals tend to be a danger to the body system and damages these systems and gradually may lead to total damage of one organ or the other." Healthcare participant 4 (General Surgeon)

Beyond health, food supply chain participants and regulatory officials framed food fraud as harmful to local production, and the wider economy, indicating that its effects are also socio-economic. A particularly salient socio-economic consequence was cross-border smuggling, especially of rice, which participants said undermined local production and farmer incentives.

3.3.1. Smuggling as a socio-economic threat

Similarly, farmer participants indicated that food smuggling activities in and out of Nigeria could potentially be attributed to the corrupt practices and porous nature of the borders. Foods like rice, vegetable oil and poultry products were smuggled across borders (e.g., Seme, Idiroko, etc.) with more focus on the Seme border. Food supply chain participant 1 (rice farmer) identified that smuggled foods were either moved at night or concealed in different forms including fuel tankers or stuffed in different compartments of a car (e.g., engine and extra constructed compartment underneath the car) and smuggled into the country without importation duty fee.

"Smuggling occurs majorly through our country's porous border, using fuel tankers to conceal rice. Most times, they move at night so the security personnel may not take note." Food supply chain participant 1 (Rice farmer)

The rice farmer also indicated that smugglers potentially liaised with officers at certain borders to carry out smuggling activities. *"Smuggling is a very big problem as it threatens the countries attempts to boost local productions. Rice is mostly smuggled in through our porous borders - Seme, Idiroko, Agbara, and Ota those are the major areas that rice is smuggled into Nigeria. Surprisingly, corruption that is settlement or bribery facilitate smuggling of these products into the country."*

All farmers expressed that rice smuggling in the country has a significant effect on the nation's economy as it reduces incentive for local food production. Smuggling was therefore seen to substantially impact consumers, food producers, and the economy.

"It is a very big problem because rice smuggling threatens the country's attempts to boost local production. That will as well drop our local production because people no longer patronise our locally made products, our farmers won't have that encouragement to go into production, they will only produce for family's consumption, and they won't produce for commercial purpose, and it will also be difficult for us to curb the menace." Food supply chain participant 1 (Rice farmer)

3.4. Weak institutional capacity undermined food fraud control

A recurring finding across all stakeholder groups was that food fraud persists partly because institutional systems for detection, prevention, and enforcement remain weak. Regulatory officials stated shortages of staff, inadequate equipment, poor funding, mobility constraints, and security concerns as barriers to effective control.

"The major challenge is lack of staff." Regulatory official 13 (NAFDAC)

"We are not very equipped, and we are still struggling to meet up with the demand we face outside. Our staff do not have enough capacity, human power, we don't have enough equipment." Regulatory official 4 (NAFDAC)

Regulatory participants emphasised the need for vehicles and financial resources, highlighting limitations in accessing various locations due to insufficient transportation. Some participants expressed concerns over accessibility, security and safety risks that may hinder their work while performing their duties. Food supply chain participants were aware of the challenges faced by regulatory bodies and the lack of resources to support them effectively in regulating and ensuring food safety.

"The major challenge is lack of staff, funds, not just salary wish, but fund for other activities needed to move around, like good vehicles to enable our movement when visiting a company and there are a lot of tools that is needed to verify claims." Regulatory official 13 (NAFDAC)

"It is security, we go out every day to the porous, interior places, so lack of security, mobility, and finance. We are ready to work but security is a major concern." Regulatory official 7 (NAFDAC)

"They do need more support from the government to facilitate and help their duties effectively. The government can increase their salaries, give them some cars to help with their duties, and support them throughout." Food supply chain participant 8 (Tomato paste manufacturer)

These limitations were compounded by concerns about corruption. For example, participants identified that some food stakeholders who engage in food fraud practices in Nigeria, may offer bribe (money or product) to the regulatory official to prevent inspections or sanctions. On the other hand, food supply chain stakeholders indicated that some regulatory officials seek bribes instead of conducting their jobs.

"If this place is not good, tell me, let me correct my mistakes. Don't come here and tell me to give you bread and give you money." Food supply chain participant 6 (Bread Manufacturer)

"Corruption is a general problem in the country. When cases are revealed and the fraudsters are caught, they should face the penalty at all times instead of bribing or paying their way out." Healthcare professional 4 (General Surgeon)

"We know of budgets made but not released to the agencies, we know of money released, but the managers divert it because of corruption. Manpower is essential, you must have men on the ground to do the jobs and if they are well motivated, salary wise, if they are well motivated, they will do the job knowing that they are not just protecting the countries but themselves." Healthcare professional 3 (Gynaecologist)

A healthcare participant suggested raising governmental staff's salary equivalent to their workload to avoid corrupt practices, *"If a person is doing a duty of 2 persons, then the person should be paid more, this could help with corruption in our system"*. Healthcare professional 5 (Dietitian)

3.5. Coordinated strategies for food fraud prevention

Most regulatory participants suggested that food fraud cannot be effectively addressed by a single organisation and instead requires co-ordinated action across all stakeholders in the food system.

"In order to control food fraud, it has to be a collaborative effort from consumers, local, state, and federal efforts." Regulatory official 1 (NAFDAC)

"Whenever customs do come across such food fraud cases, they will collaborate with NAFDAC for investigation and subsequent prosecution". Regulatory official 3 (Nigerian Custom Service)

Sub-themes including regulatory enforcement and oversight; food supply chain strategies and consumer-focused measures, which were identified are discussed below.

3.5.1. Regulatory enforcement and oversight

Regulatory officials framed prevention as a combination of formal systems, enforcement, and consumer involvement. Their accounts reflected that prevention already includes inspection, laboratory analyses, sanctions, awareness creation and complaint mechanisms. However, they also imply that these measures need stronger implementation and public cooperation.

"We have put in place several measures to mitigate this food fraud. Number one what do we do? There's what we call routine surveillance or routine inspection most times, we go into the market, we go into the streets, and sample the product after which, we take it to our laboratory, after that, various findings can ascertain the composition of that product if it is connotes with what the company claim. Once we verify a company is involved in such acts, we also sanction the company and most times they change from that very bad act." Regulatory official 6 (NAFDAC)

Regulatory officials also highlighted the importance of consumer complaints and reporting because it links prevention not only to agency action, but to active participation by the public.

"If a consumer does not complain, or report a case, we won't be able to act on them. So, consumers are encouraged to walk into our offices nationwide to make complaints of any sort" Regulatory official 2 (NAFDAC)

"You know in Nigeria today the idea is that if I complain, it won't have any effect, So I think people should speak out. You know most times, the consumers have a great role to play if get a particular product and you are not getting satisfaction, then speak out they just feel that if they speak out, nothing will happen, but it is wrong because they are paying for it" Regulatory official 6 (NAFDAC)

Findings show that the Consumer Protection Agency provides platforms for consumers to express their complaints in the event of disputes. These disputes are addressed utilising the 3 R's (Replace, Repair or Refund) to facilitate a swift resolution of disputes between the concerned parties, and the complainant. If not resolved, then the agency escalates the dispute to court, employing specialised legal professionals and judicial proceedings.

"Once a complaint is brought to us and we carry out our investigation and realise that part of the problem is also from the producer, we then invite the two parties involved and ensure that we seek regress for the consumer. Most of the times, the money can be refunded, or the product replaced but, in the case, when it is not a consumable product, it could be repaired for example phones, electronics, etc. so it is either you Replace, Repair or Refund we call it the 3 R's." Regulatory official 10 (Consumers Protection Council)

3.5.2. Food supply chain strategies

Food supply chain participants suggested the importance of being involved in the entire food value chain, including own raw material production to ensure quality. They also suggested carrying out market surveys to check if competitors developed similar products (e.g., counterfeits) as their own brand.

"We actually start this process from the farm, that is we cultivate the palm kernels in our farms and when they are ripe, we harvest and process." Food supply chain participant 9 (Palm oil processor)

"As I told you I do the entire value chain of fish. So, what happened to me once was that I bought feed and I lost almost half of the entire pond due to the feed. From then on, I decided to make my own feed, so now, I formulate my own feed." Food supply chain participant 7 (Spice and food ingredients manufacturer)

"We organise market surveys to check our products in the market and to minimise the risk of it being imitated, counterfeited, relabelling or rebranded and inform the consumer's possible ways to identify our products" Food supply chain participant 8 (Tomato paste manufacturer)

Regulatory officials also mentioned that food manufacturers received reminders to adhere to all mandatory policies and standards of the Nigeria Government, making sure that all food products produced were registered with the necessary agencies. Food producers were also encouraged to educate consumers to identify and differentiate their food products from adulterated ones. For example, food producers were encouraged to inform consumers of any changes to their packaging or labelling. Likewise, food distributors were encouraged to refrain from committing fraudulent acts like alteration of the best before dates and concealing a product's original details or labels.

"That every product brand must have its NAFDAC registration number, exact and specified contents of the products, accurate product label details, batch numbers and expiring dated clearly stated on the product labels" Regulatory official 8 (NAFDAC)

"First of all, every packaged food is supposed to be registered with the NAFDAC registration number, and they are supposed to have best-before dates and batch formulation number/coding. So, it is good for these food producers to always sensitize their consumers on how to identify their products. Yes, these products are being faked regularly and sometimes, they even change packaging because of the fraud but how will people know that you have moved from one particular packaging to another and how do they still identify it" Regulatory official 12 (NAFDAC)

"So, the batch number is very important on a product so if someone is imitating your product you can easily identify it's not your product. With all this people in food production should try to reduce fraud because if they date mark properly then it would help to easily identify faked food products because the fraudster will now be more careful" Regulatory official 8 (NAFDAC)

3.5.3. Consumer-focused measures

Prevention strategies such as stronger public awareness and consumer education especially in health implications and interpreting food labels were discussed by healthcare and regulatory body participants.

"Food fraud awareness in Nigeria is poor, the government should invest in food fraud awareness and employ more hands in the regulatory body." Healthcare professional 2 (General Practitioner)

"NAFDAC is putting efforts to increase this consciousness in the heart of consumers to make them understand they must be careful of what they eat. So, we engage in so much on public enlightenment and sensitizing the public more on the dangers of food fraud." Regulatory official 11 (NAFDAC)

This was evident from the agency educational programme that is still actively featured in national television programme. As mentioned by Regulatory official 1 from NAFDAC, 'Follow the television show 'NAFDAC and your health' which is an awareness programme every Tuesday, 8 pm.' Regulatory official 1 (NAFDAC)

Regulatory body participants also suggested possible prevention

measures such as paying careful attention to market indicators like the price of food, physical looks, labels, quantity, etc. For example, consumers should check the product name, address, contact information, NAFDAC registration number, product content, and expiry dates. Consumers were encouraged to adhere to these preventive measures and to always purchase food products from trusted food businesses, to avoid falling victim to food fraud.

“Well, at least firstly is to check certification, not just the NAFDAC local certification, they should have priority for products that have more than just NAFDAC like FDA, HACCP and all other certifications.” Food supply chain participant 7 (Spice and food ingredients manufacturer)

“Proper product labelling, that is looking at the labels, the product name, address if it is traceable. Food that is fraudulent normally has issues with its label always, especially counterfeited foods or imitated products. The labels tell it all.” Regulatory official 2 (NAFDAC)

“I think the best thing to do is to select where you buy your items. There are some shops in some places that their integrity level is high. So, customers are encouraged to buy their products from such places to avoid falling victims to food fraud.” Regulatory official 3 (Nigerian Customs Service)

4. Discussion

The findings of this study show that food fraud in Nigeria is widely understood as a deliberate and profit-driven practice embedded within the food system. This aligns with [Kendall et al. \(2019\)](#), who argued that, in attempts to increase production and business yield, food supply chain actors and producers may engage in fraudulent practices. In the present study, participants across stakeholder groups described food fraud not as an isolated event, but as a form of deliberate deception that occurs across production, distribution, and borders. This reinforces the view that food fraud should be understood as a systemic issue shaped by economic incentives and weaknesses within the wider food environment.

Building on this understanding, the findings identified economic hardship as a major driver of food fraud, where both formal and informal food system actors face intense financial pressure. In Nigeria, this hardship is compounded by high unemployment, food insecurity, currency devaluation, inflation, and low wages ([Schenck-Fontaine & Panico, 2019](#)), all of which reflect the country's current economic realities. Nigeria has experienced persistent economic instability, driven by fluctuating oil prices, naira devaluation, and disruptions to agricultural production ([Agha et al., 2024](#); [Howard et al., 2019](#)). The country has also recorded headline inflation above 30%, with food inflation reaching 35.4% in early 2024, among the highest in sub-Saharan Africa ([Adeyemi-Tijani, 2025](#); [Usifoh & Baghebo, 2024](#)). These economic conditions place substantial pressure on food supply chain stakeholders by increasing the cost of raw materials, labour, transport, and logistics, while simultaneously shrinking profit margins ([Adenle, 2021](#)). Under such conditions, food fraud may become more attractive as a coping or profit-seeking strategy. As [Okonji et al. \(2026\)](#) and [Onyeaka et al., \(2022, 2024\)](#) noted, economic hardship can create conditions that encourage fraudulent acts by making shortcuts and illicit practices appear commercially viable.

One particularly important socio-economic dimension of food fraud identified in this study was smuggling. Participants linked smuggling, especially of food products such as rice, poultry, fish, and vegetable oils, to serious consequences for local production, farmer livelihoods, and national economic development. The findings suggest that smuggled foods undermine domestic markets by displacing locally produced goods, reducing incentives for local producers, and reduces government revenue through lost customs and import duties ([Aluede, 2019](#); [Chidi,](#)

[2024](#)). The porosity of Nigeria's borders appears to intensify this problem. Previous studies have linked porous borders to corruption, inadequate regulatory staffing, insufficient resources, poor accessibility, and insurgency ([Jibrin & Abdullahi, 2022](#); [Okolie-Osemene & Aluko, 2019](#)).

The study also found that food fraud control in Nigeria is undermined by weak institutional capacity. Participants identified major barriers including inadequate infrastructure, financial and logistical constraints, poor traceability, staff shortages, inadequate remuneration, corruption, and limited consumer complaints and reporting. These findings are consistent with [Opia \(2020\)](#), who identified inadequate funding, logistical gaps, overlapping mandates among regulatory agencies, fragmented and weak enforcement. A particularly important issue arising from the findings is bribery. In the Nigerian food sector, bribery appears to function as a mechanism through which fraudsters evade prosecution, sanctions, and compliance requirements. [Malomo \(2013\)](#) observed that firms may use informal payments to secure essential goods and services or to accelerate bureaucratic processes. Meanwhile, bribery involving regulatory officials appears to be shaped by intersecting socio-economic and institutional factors. Studies have linked such practices to low salaries, poor working conditions, weak anti-corruption laws, ineffective enforcement, entrenched bribery norms, and wider economic pressures such as inflation, unemployment, and poverty ([Obuah, 2024](#); [Oduntan, 2017](#); [Opia, 2020](#)). This interpretation is consistent with [Transparency International's \(2026\)](#) Corruption Perceptions Index, in which Nigeria ranked 142 out of 182 countries. These conditions suggest that corruption is not separate from food fraud control, but a reinforcing mechanism that undermines already fragile institutions ([Otusanya & Lauwo, 2019](#)).

Given the breadth of these challenges, the findings suggest that preventing food fraud in Nigeria requires coordinated action across multiple actors and levels of the food system. Participants described a need for stronger government commitment, more effective regulation, improved funding, better logistics, consumer education, and collaboration between regulatory agencies and food supply chain actors. This supports [Ojonugwa and Gwom \(2021\)](#), who recommended empowering regulatory bodies through improved policy formulation, funding, and targeted interventions. According to [Aibieyi and Eke \(2022\)](#), regulation plays a critical role in restricting fraudulent acts and ensuring compliance with food safety laws. In Nigeria, government and regulatory agencies at various levels are responsible for developing, implementing, and enforcing relevant food safety legislation ([Ezirigwe, 2018](#)). NAFDAC especially is committed to increasing consumer awareness through the 'NAFDAC and Your Health' television and radio programmes ([NAFDAC, 2024](#)). The present findings show that although regulatory bodies are already undertaking measures such as random inspections of factories and food businesses, product testing, and public awareness activities, participants believed that greater effort and sustained attention are still needed. Food producers and other supply chain actors have an important role in strengthening transparency, traceability, supplier verification, and internal quality assurance. Consumers likewise remain important in identifying suspicious products, reporting concerns, and making safer purchasing decisions. For this reason, coordinated food fraud prevention should be understood as involving three interdependent strands: stronger regulatory oversight, greater industry accountability, and improved consumer awareness and engagement.

5. Conclusion

This study captured the perspectives of food supply chain stakeholders, healthcare professionals and regulatory officials in Nigeria on food fraud in Nigeria. The findings have revealed that food fraud is a systemic problem shaped by economic pressures, resource constraints and weakened institutional capacity to address food fraud. Food fraud was identified by the participants as a deliberate deception that exists in various points of the food supply chain, including across borders. Multiple factors contributed to food fraud incidents, including economic

hardships, profit-seeking, business survival, costs of raw materials and inflation. Food fraud is both an economic and public health threat of which smuggling was identified as a key example where local food production was undermined. Insufficient resources for enforcement including staff, vehicles and finance further weakened regulatory bodies to carry out effective enforcement and monitoring. This was further compounded by corruption viewed as occurring within food producers and regulatory officials. A coordinated approach across all stakeholders is required.

CRedit authorship contribution statement

Blessing A. Okonji: Writing – original draft, Validation, Methodology, Investigation, Formal analysis, Data curation, Conceptualization. **Shingai Nyarugwe:** Writing – review & editing, Validation, Supervision, Methodology, Investigation. **Carol A. Wallace:** Writing – review & editing, Validation, Supervision, Methodology, Investigation. **Kemka H. Ogbonda:** Writing – review & editing, Supervision, Methodology, Investigation. **Jan Mei Soon-Sinclair:** Writing – review & editing, Writing – original draft, Validation, Supervision, Project administration, Methodology, Investigation, Formal analysis, Conceptualization.

Ethics declaration

Written informed consent to take part in the study and to publish the article has been obtained from all participants or their legal representatives. The privacy rights of participants have been observed.

This study was performed in compliance with relevant laws, regulatory frameworks and guidelines where the research took place. This study was approved by the University of Lancashire HEALTH Ethics Review Panel. (Approval No. 0301).

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Appendix A. Supporting information

Supplementary data associated with this article can be found in the online version at [doi:10.1016/j.foohum.2026.101497](https://doi.org/10.1016/j.foohum.2026.101497).

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