

EDIBLE OIL USE PRACTICES AMONG FOOD VENDORS IN OWERRI METROPOLIS, IMO STATE, NIGERIA

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ABSTRACT: The quality of edible oils used in street food preparation is of paramount importance for both public health and culinary excellence. The repetitive use of edible oils in the preparation of street foods, particularly fried items, raises significant public health concerns in places around the world. This study aims to investigate the factors that influence edible oil practices among street fried food vendors in Owerri Metropolis Imo State, Nigeria, to address a critical knowledge gap that hampers efforts to enhance food safety. A cross-sectional study design was employed, using quantitative surveys to gather data. The study sampled 200 street fried food vendors using convenience and purposive sampling techniques. Data collection focused on, the socio-demographic characteristics of vendors, level of compliance with safety standards and factors that limit the adoption of recommended safety practices, among others. Descriptive analysis (percentage and frequency) was used to analyse the data. Findings revealed low compliance with safety standards among street fried food vendors in Owerri Metropolis. Limited financial resources/ Cost of quality oil (economic factors) were the primary drivers of unsafe practices. Vendors made use of cheap oil, with many reusing oil multiple times due to financial constraints. The study recommends creating awareness of cost-effective oil management strategies, enhancing regulatory measures and educational initiatives to improve food safety among fried food street food vendors in the area. This approach is crucial for safeguarding consumer health and promoting sustainable street food vendor practices.

Keywords: Edible Oil Practices, Street Fried Food Vendors, Oil Reuse, Food Safety, Public Health.

INTRODUCTION

Food and Agriculture Organization (FAO) estimated that 2.6 billion people consume street vended foods on daily basis (Imathiu, 2017). According to the World Health Organization (WHO), street vended foods are the ones cooked and served by vendors in streets or local public places and are consumed directly without further cooking (Rayza, Marcela, Charles & Suzi, 2016). Street food vendors, often found in bustling marketplaces or along busy streets, play a crucial role in providing these options to consumers. The choice of edible oil can greatly impact the taste, texture, and nutritional value of the street vended fried foods. There are certain considerations and challenges associated with the use of edible oil for cooking street vended foods (Peřta-Criřan, Ursachi, Chereji, Tolan, & Munteanu, 2023). These considerations include the quality and safety of the edible oil, as well as potential health risks associated with excessive consumption of fried foods (Perta-Crisan et al., 2023). The selection, handling and utilization of edible oil by street food vendors are often influenced by several factors, including economic considerations, availability, knowledge of food safety practices, and regulatory frameworks

(Fradin, 2023). Street food has been associated with food safety concerns due to poor hygiene practices and inadequate control measures during preparation and cooking (Mwove, Imathiu, Orina & Karanja, 2020). Street food vendors often have poor knowledge regarding the safety and health aspects of cooking oils (Ayub, Awan, Nazir, Sami & Khalid, 2022; Fekadu, Abera & Weldemichael, 2023). Many are unaware of the harmful effects of consuming food prepared from reused cooking oil (Nwankwo, Mokogwu, Agboghroma, Ahmed & Mortimer, 2018). Imiyu, Imungi and Njue, (2021) reported that Street food vendors primarily select frying oil based on low price rather than quality. The type of oil used can also have a significant impact on the reactions that occur when heating. For example, oils that are high in unsaturated fats, such as vegetable oils, are more susceptible to oxidation than oils that are high in saturated fats, such as coconut oil (Koh & Surh, 2015). Some vendors practice adding new oil to the used oil instead of disposing it (Emelike, Ujong & Achinewu, 2020). A study by Maduelosi and Cookey, (2020) found that improper frying practices like reheating oil at high temperatures and frying different foods in the same oil can accelerate oil deterioration. Furthermore, Street food vendors often cook and sell fried foods on the roadside, exposing the oil to open-air dust and pollution. Given the safety concerns of street food, Nigeria has over time issued several regulations to enhance street food hygiene and safety practices (Ukwueze, 2019). However, the need to revise some existing food safety legislations has been emphasized, as some of them are out of date and do not meet current realities and trends in food safety (Omotayo & Denloye, 2012). Stringent enforcement by food authorities is lacking to prevent the sale of used cooking oil to street vendors. A previous study (Rane, 2017) has posited the presence of unregulated and unmonitored street food vending practices, leading to food-borne illnesses and compromised food safety standards. This scenario is a course for concern.

Statement of the Problem

In Nigeria, 80% of street fried food vendors operate without licenses or permits, and regulatory agencies often lack the resources to monitor and enforce food safety regulations effectively (Ukwueze, 2019), leading to a lack of accountability and potential health risks to the public. Previous studies (Houmani, Haidar, Assi, Hassan, & Rizk, 2024; Kamboj, Gupta, Bandral, Gandotra & Anjum, 2020; Nurudeen, Lawal, & Ajayi, 2014; Rakha, Fatima, Bano, Khan, Chaudhary & Aadil, 2022) have documented the prevalence of oil reuse among street vendors and its implications for food safety. However, most of these studies were conducted outside Nigeria, thus leading to knowledge gap in this region. Furthermore, there is limited research on the specific factors that influence these practices in the context of Owerri Metropolis. These factors can be categorised into internal factors related to vendor knowledge, attitudes, and preferences, as well as external factors that include availability, cost, and regulatory considerations. Therefore, this study sought to identify the factors that influence oil use practices and the level of compliance with safety standards among street fried food vendors in Owerri metropolis.

This study therefore seeks answers to the following questions:

- i. What is the socio-demographic characteristics of street fried food vendors?
- ii. What factors influence oil use practices among street fried food vendors in the area?
- iii. What is the level of compliance with the safety standards in the use of edible oil among street fried food vendors in Owerri metropolis?

METHODOLOGY

The study is a cross-sectional survey which employed a convenience and purposive sampling technique to select street fried food vendors. The selection was carried out in areas where street food vendors operate in Owerri Metropolis such as streets, markets, parks. The places selected were Douglas, Wethedral, New Owerri, Orji, Bank Road, Tetlow Road, Ekeonunwa, and Relief Market. The study used a semi-structured questionnaire. A Cronbach's Alpha of 0.86 was derived in the reliability test, which implies a relatively high level of internal consistency among the items in the questionnaire. Cochran formula along with the finite population correction factor was used to determine the sample size for the study which accounted for the total of 200 street fried food vendors. The data was analysed with simple descriptive statistics.

RESULTS

Socio-demographic characteristics of the Street fried food vendors

Table 1 below provides an overview of the socio-demographic characteristics of the respondents, including their age, gender, educational level, marital status, level of income, and year of experience in the business. In terms of gender distribution, the majority of participants (82.5%) were females while only a small fraction (17.5%) were male. The age distribution revealed that majority of respondents (30%) fell within the age range 36-45 years, another percentage (29%) of the respondents were made up of those within the age bracket 46-55 years, followed closely by (22.0%) who fell within the age bracket of 26-35 years, a smaller percentage (11.0%) belonged to the age group 56 years above, while only a small fraction (8.00%) were between the ages of 18-25 years. Regarding the level of education, majority of the participants (44.0%) attained secondary level education, followed by (32.0%) who had primary education and (18.5%) of the respondents do not have any formal education, while a small fraction (5.5%) attained tertiary level of education. In terms of marital status, the majority (70.0%) of participants were married, a small proportion were single (14.5%), a few were widowed (9.5%), while 6% were separated. In response to level of monthly income, majority of the participants (45.5%) affirmed to earning between 51,000 to 70,000 naira monthly, (30.5%) earned between 31,000 to 50,000 naira, followed by (16.0%) of the respondents who earned 70,000 naira and above and a smaller proportion (8.0%) who made below 30,000 monthly. Majority of the respondents (34.5%) had between 5-10 years of experience, followed by (28.5%) who had 10-15 years of experience, (23.5%) affirmed that they had between 1-5 years of experience, while (11.0%) had more than 15 years of experience and the smallest portion (2.5%) of the respondents had less than 1 year of experience.

Table 1: Socio-demographic characteristics of the Respondents

Variable	Frequency (N=200)	Percentage (%)
Gender		
Male	35	17.5
Female	165	82.5
Total	200	100.0
Age		
18-25	16	8.0

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26-35	44	22.0
36-45	60	30.0
46-55	58	29.0
56 and above	22	11.0
Total	200	100.0
Marital status		
Married	140	70.0
Single	29	14.5
Separated	12	6.0
Widowed	19	9.5
Total	200	100.0
Level of income		
Less than 30000	16	8.0
31,000 to 50,000	61	30.5
51, 000 to 70,000	91	45.5
70,000 and above	32	16.0
Total	200	100.0
Educational level		
No education	37	18.5
Primary	64	32.0
Secondary	88	44.0
Tertiary	11	5.5
Total	200	100
Years of experience		
Less than 1 year	5	2.5
1-5	47	23.5
5-10	69	34.5
10-15	57	28.5
15 and above	22	11.0
Total	200	100.0

Factors that Influence Practices in the Use of Edible Oil among Street Fried Food Vendors

The most significant factor that influence oil use practices in the area is economic factors, with 34.5% of vendors citing limited financial resources or the cost of quality oil as a barrier to proper practices, a substantial portion of vendors (23.5%) indicated lack of knowledge and inadequate training programs, Poor enforcement of regulations/ lack of regular inspection was another influencing factor by 20.0% of vendors, Environmental factors, such as storage and infrastructure issues, also influenced practices, accounting for 4.0% from the reports of the vendors, while the least cited influencing factor was preference for adherence to traditional methods and customer preferences, influencing 8% of the vendors.

Table 2: Factors that Influence Practices in the Use of Edible oil among Street Fried Food Vendors in in Owerri Metropolis

Variable	Frequency (N=200)	Percentage (%)
Limited financial resources/ Cost of quality oil (economic factors)	69	34.5
Lack of knowledge/ Inadequate training programs (educational factors)	47	23.5
Poor enforcement of regulations/ lack of regular inspection (regulatory factors)	40	20.0
Storage and Infrastructure Issues/ Operational Conditions (environmental factors)	28	14.0
Traditional practices/Customer preferences (cultural practices)	16	8.0
Total	200	100.0

Level of Compliance to the Safety Standards Associated with the Use of Edible Oil

Table 3 below showed the level of compliance of street fried food vendors to safety standard. A significant portion of vendors (29%) are strongly non-compliant with safety standards related to the use of edible oil. Another 24% of vendors are non-compliant, meaning they fail to meet several important safety standards. This implies that more than half of the vendors (53%) do not adhere adequately to safety practices. The largest group, 31%, is moderately compliant. These vendors meet some safety standards but still have room for improvement. Only 12.5% of vendors are compliant with safety standards, a small fraction (3.5%) of vendors are strongly compliant, consistently following all safety standards associated with the use of edible oil.

Table 3: Level of Compliance to the Safety Standards Associated with the Use of Edible Oil

Variable	Frequency (N=200)	Percentage (%)
Level of compliance		
Strongly non-compliant	58	29.0
Non-complaint	48	24.0
Moderately compliant	62	31.0
Compliant	25	12.5
Strongly compliant	7	3.5
Total	200	100.0

DISCUSSION OF RESULTS

This study investigated edible oil usage practices among street fried food vendors in Owerri, metropolis, Imo State, Nigeria. A study of the socio-demographic characteristics of the

respondents revealed that majority (82.5%) were females, indicating a higher representation of females in the study. This trend is similarly observed in previous studies (Afolaranmi, Hassan, Bello & Misari, 2015; Hanashiro, Morita, Matté, Matté, & Torres, 2015; Madaki, Bavorova, 2019) where the food vendors are predominantly female, A survey by Helen, Fekadu & Abera, (2023), showed 89.4% of the respondents were female, while the remaining 10.6 percent were male. More than half of the street food vendors were within the ages of 35 - 55 years old, this is in agreement with the findings of the study done in Nigeria (Hanashiro et al., 2015), Bangladesh (Meher, Afrin, Talukder, & Haider, 2022), and Ecuador (Rosales, Linnemann, & Luning, 2023) case studies, where the majority of the street vendors were aged above 35 years. However, the age category of this study is higher than that of the, Bauchi State, Nigeria (Madaki, & Bavorova, 2019), Vietnam (Samapundo, Thanh, Khaferi, & Devlieghere, 2016), South Africa (Nkosi & Tabit, 2021) and Gondar City, Ethiopia (Azanaw, Engdaw, Dejene, Bogale, & Degu, 2022) where the majority of the street food vendors were aged between 20 and 30 years (belonging to the youth age). The study revealed a primary or secondary level of education among street fried food vendors. Similar to other previous studies, lower educational level is presumed to be the characteristics of street food vendors, specifically in developing countries (Cortese, Veiros, Feldman, & Cavalli, 2016; Hassan & Fweja, 2020; Okojie & Isah, 2019). Majority of street fried food vendors in Owerri Metropolis have over 5-10 years of experience. This study however differs from studies in Zanzibar (Hassan & Fweja, 2020), where street food vendors mostly had less than five years of experience. In another study (Azanaw, et al., 2022) carried out in Gondar, Ethiopia the majority of the respondents had less than five years' vending experience. However, the studies conducted in Guwahati, Assam, India by Choudhury, Mahanta, Goswami, Mazumder, and Pegoo, (2011); in Bangladesh by Meher et al., (2022); and in Ambato, Ecuador by Rosales et al., (2023), where the majority of the street vendors had more than five years of experience in the street vending business, align with the current finding.

Furthermore, the current study used factors such as quality and type of oil used, frequency of oil changes, storage and filtration methods, regular oil inspection, use of separate oil for frying different food items, type of environment and involvement in food safety training to determine level of compliance among the participants. The findings of the study as shown in table 3 indicates that a combined 53% (29% strongly non-compliant and 24% non-compliant) of street fried food vendors are not following safe practices concerning the use of edible oil. This highlights a significant public health concern, as improper use and handling of frying oil can lead to various health issues, including the formation of harmful compounds, food-borne illnesses, and poor food quality (Mishra, Firdaus, Patel & Pandey, 2023; Thao, Kiên, Thien, Bach, Dung & Thuy, 2023; Yeasmen, Sharma, Bhuiyan & Orsat, 2023). This is comparable to various research conducted by Haider, Akhtar and Khalid, (2023); Adelagun et al., (2023); Ayub et al., (2022); Flores, Meyer, Orellana, Saravia, Galdames and Pérez-Camino, (2018). The study carried out by Emelike et al. (2020) showed that 66.6% of the SFVs of Port Harcourt and Rivers state, Nigeria used oil for more than three days or unless its colour changed. Karimi, Wawire and Mathooko, (2017) also observed in their survey that more than 100 food items are fried in the same oil before it is discarded or changed which is a clear indication of frying oil for a longer period, hence deteriorating its quality. Overall, the level of compliance to safety standards associated with edible oil use among street fried food vendors was low.

The current study showed that limited financial resources/ cost of quality oil (economic factors) was the main challenges in adoption of proper edible oil practice among street fried food vendors in Owerri Metropolis. Informal food vendors often struggle with financial constraints,

which hinders their ability to invest in proper equipment, storage facilities, and training, further exacerbating food safety issues (Onyeaka, Ekwebelem, Eze, Onwuka, Aleke, Nwaiwu and Chionuma, 2024). Street food vendors therefore face financial and operational constraints that limit their ability to use higher quality and more expensive oils consistently. The need to maximize profits in a competitive market can incentivize the use of cheaper, lower-quality oils (Pinzón-Martinez, Oca-Rosales, Flores-Primo & Berasain, 2021; Karimi et al., 2017). In Ghana, 65.7% of food vendors cited financial constraints as a major obstacle to maintaining food safety standards (Amaami, Dominic & Collins, 2017). Additionally, research in Ethiopia found that vendors with a monthly income below a certain threshold were more likely to exhibit poor hygiene practices, indicating a financial constraint in maintaining proper food safety measures (Haftamu, Yawukal, Habtamu & Dube, 2024).

Conclusion

This study examined the factors associated with practices associated with use of edible oil among street fried food vendors in Owerri Metropolis, Imo State, Nigeria. The findings revealed significant non-compliance with safety standards in the use of frying oil among a substantial portion of the vendors. This poses a public health concern due to the potential health risks associated with improper oil use, such as the formation of harmful compounds, food-borne illnesses, and poor food quality. The socio-demographic analysis highlighted a predominance of female vendors with most vendors aged between 35 and 55 years. The educational level of the majority of vendors was limited to primary or secondary education, and most had over 5-10 years of experience in the street food vending business. The study identified economic constraints as the primary barrier to proper edible oil practices, with limited financial resources hindering vendors' ability to invest in quality oil and necessary equipment.

Recommendations

Thus, it is imperative that food quality control stakeholders and health professionals provide vendors with appropriate training regarding use of edible oil. Their skills may be further improved by the training. Regular monitoring and inspections are paramount, as well as provision of financial support or incentives for compliance by the government, NGOs and philanthropists. There's also a need for health professionals, and educators to raise public awareness about the importance of food safety standards. Addressing these challenges can lead to improved health outcomes and safer food practices among street food vendors in Owerri Metropolis.

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