

*Research*

# Nutritional knowledge, attitude and practices of mothers regarding vegetable oil consumption in rural and urban areas of Oyo-State, Nigeria

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## Background

Vegetable oils play a crucial role as part of family nutrition as a primary food source for fat for consumption, flavor, and nutrient absorption. Knowledge gaps on handling, quality, and health effects exist, however, particularly among mothers, and they play the primary role as family-level decision-makers for nutrition. Mothers' knowledge on vegetable oils' consumption as part of KAP (knowledge, attitude, and practice) was crucial for enabling effective public health action and dietary interventions.

## Objective

This study assessed mothers' knowledge, attitudes, and practices regarding vegetable oil consumption in rural and urban Oyo State, Nigeria.

## Methods

This descriptive, cross-sectional study employed a multistage sampling technique. Structured questionnaires were used to ascertain socioeconomic characteristics, level of knowledge, attitude, and practices regarding vegetable oil consumption. Descriptive and inferential statistical tests, conducted using version 16.0 of the SPSS software, ascertained differences as well as relationships.

## Results

There were significant differences in the knowledge and practices of urban and rural respondents. Unhealthy behavior was prevalent, with 68.5% of respondents reusing vegetable oil for frying and 57.3% bleaching their oil before consumption. Education level and income level had a strong correlation with knowledge and appropriate consumption practices for oils ( $p < 0.05$ ).

## Conclusions

Nutrition education is necessary for increasing safe consumption of vegetable oil, especially among rural households. Encouragement through campaigns on quality consciousness, health risks of poor handling, and the impact of dietary fat intake on a long-term basis is necessary.

## INTRODUCTION

Vegetable oil, also referred to as cooking or edible oil, plays a vital role in various sectors due to its versatility and nutritional value. It is widely used in domestic and commercial cooking, food processing, and the manufacture of products such as margarine. Beyond the food industry,

vegetable oil also serves as a key raw material in the cosmetic, pharmaceutical, and chemical industries, where it is valued for its functional properties and health-related benefits. As a primary source of dietary fat, it enhances the flavor, texture, and nutrient absorption of food. Some

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common vegetable oils are obtained from sunflowers, olives, soybeans, peanuts, coconuts, canola, sesame, cotton, and palm (Ogah et al., 2020). Mothers are often the primary caregivers, and decisions about family nutrition largely depend on them; hence, they must be informed about the health benefits of vegetable oil (Wu et al., 2017).

The consumption of vegetable oils plays a key role in dietary practices and has significant implications for health outcomes. Certain oils, such as those rich in monounsaturated and polyunsaturated fats, are associated with cardiovascular benefits. Excessive intake of saturated and trans fats has been linked to obesity, metabolic disorders, and heart disease (Meijaard et al., 2024; Sayon-Orea et al., 2015). Additionally, poor handling practices such as prolonged reuse of frying oils, bleaching before use, and improper storage can lead to the formation of harmful chemical compounds that may contribute to long-term health risks (Rajendran et al., 2020; Fine et al., 2015; Raina et al., 2025). Many households prioritize cost over quality, purchasing non-branded, unregulated oils from informal markets, which may be adulterated or of inferior quality (Tang et al., 2024; Nordhagen et al., 2022; Oyeyinka et al., 2024).

Understanding why individuals adopt certain dietary behaviors, including vegetable oil choices and consumption patterns, requires insights from human health behavior theories. The Knowledge, Attitude, and Practices (KAP) Model is a well-established framework used to assess how people's understanding and perceptions influence their behaviors. In the context of vegetable oil consumption, knowledge relates to an individual's awareness of different oil types, health risks, and storage practices; attitude reflects personal beliefs about oil quality, affordability, and nutritional benefits; and practices refer to actual cooking habits, such as oil selection, frequency of use, and frying techniques (Ifeoma et al., 2024; Ijeoma & Prisca, 2015). Previous studies on fat consumption among Nigerians have focused either on overall country trends or city populations, with comparatively few examining regional differences. It is this gap that is addressed here by providing location-specific data on vegetable oil consumption patterns among Oyo State's urban and rural communities (Ugwu et al., 2022). While consumers in urban areas have better access to branded and regulated vegetable oils, people living in rural areas have limited themselves mainly to non-branded, processed oils sourced through informal channels, which may not only be cheaper but also harmful for one's health (Lateef et al., 2016; Okidhika & Ozioma, 2024; Olaoluwa et al., 2017).

While there is sufficient evidence on dietary patterns and food consumption among Nigerians, a geographic gap in the knowledge, attitude, and practices among mothers regarding vegetable oil consumption in different socio-economic and physical settings persists (Oluyemisi et al., 2018). The present research bridges this gap by focusing on Oyo State, Nigeria, a region where infrastructural, financial, and cultural disparities significantly influence food consumption and health conditions.

## METHODS

This descriptive study involved assessing the knowledge,

attitudes, and practices of mothers regarding the use of vegetable oil.

### SAMPLING PROCEDURES

The survey was conducted in Ibadan-South West and Akinyele, Local Government Areas (LGAs), which were selected from the eleven (11) LGAs located in Ibadan by balloting, stratified into rural and urban. Two major streets were selected for convenience in each ward, and fifteen households were randomly selected on each street. Eligible women (18-60years) were then systematically selected to obtain 74 rural and 57 urban participants.

### ETHICAL CONSIDERATIONS

The University of Ibadan and University College Hospital (UI/UCH) Ethics Review Committee approved the study. A letter of Introduction from the department was provided, and informed consent was obtained from all participants, and measures were taken to ensure the confidentiality of their information.

### DATA COLLECTION AND DATA ANALYSIS

Data collection was conducted using a pre-tested, semi-structured questionnaire to gather information on the socioeconomic and demographic characteristics of the respondents. Each respondent was asked 30 questions in the second part of the questionnaire to evaluate their level of knowledge regarding the content and sources of vegetable oil. A score of one was given for each correct answer, and zero for an incorrect answer. The total knowledge score was then used to classify the respondents into three levels of knowledge. Attitudes towards vegetable oil were assessed using six question items on a 6-point Likert scale with the following options: strongly agree, agree, disagree, strongly disagree, and indifferent. Questions were used to determine the practices of mothers regarding the use of vegetable oil. Data were analyzed using the Statistical Package for the Social Sciences (SPSS) version 16.0.

## RESULTS

The socio-demographic characteristics of the respondents are presented in Table 1.

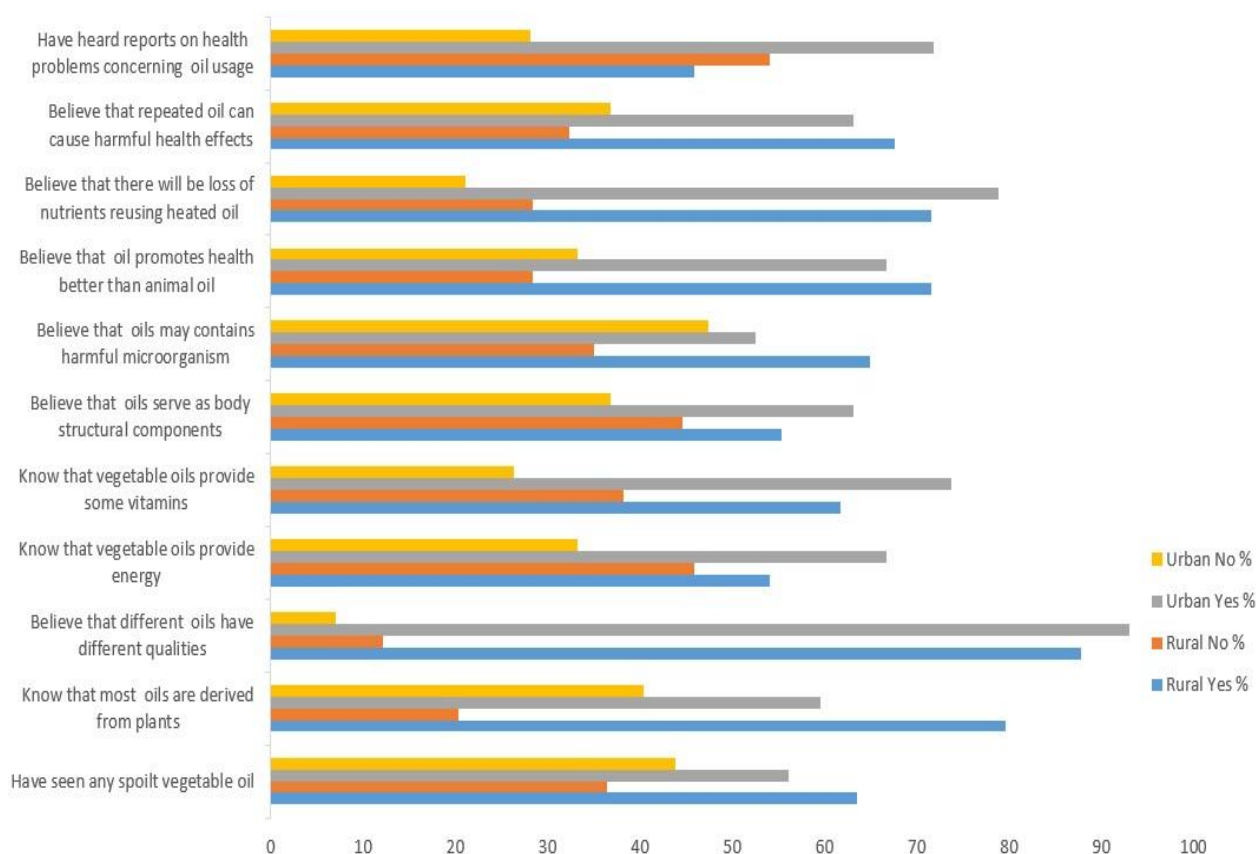
Figure 1 shows that there was a generally high level of awareness of vegetable oil among both rural and urban respondents. Urban participants showed greater awareness of the nutritional functions of oils, including their role in providing energy, vitamins, and structural components. Both groups widely acknowledged that vegetable oils differ in quality, with urban respondents more strongly affirming this. Concerns about overconsumption, reheating, and spoilage were consistently high in both settings, indicating strong food safety awareness. However, urban respondents reported greater exposure to health problem reports through social media.

Table 2 shows that both rural and urban respondents demonstrated strong awareness of the importance of proper vegetable oil storage and the health risks associated with excessive consumption, with over 80% agreement in both groups. Most also recognized that rancid oil is unsafe for cooking. However, fewer respondents were aware of the potential presence of heavy metals in vegetable oils,

**Table 1. Socio-Demographic characteristics of the respondents (n=131)**

Variable	Rural 74(%)	Urban 57(%)	Total 131(%)
<b>Age (years)</b>			
< 20	2 (2.7)	0 (0.0)	2 (1.53)
21-30	20 (27.03)	20 (35.09)	40 (30.53)
31-40	32 (44.59)	22 (36.84)	54 (41.22)
41-50	13 (17.57)	10 (17.54)	23 (17.56)
51-60	6 (8.11)	6 (10.53)	12 (9.16)
<b>Marital Status</b>			
Married	63 (85.14)	57 (100.0)	120 (91.6)
Single	0 (0.0)	0 (0.0)	0 (0.0)
Widows	11 (14.86)	0 (0.0)	11 (8.4)
Divorced	0 (0.0)	0 (0.0)	0 (0.0)
<b>Household Size</b>			
1-5	32 (43.24)	49 (85.96)	81 (61.83)
6-10	42 (56.76)	8 (14.04)	50 (38.17)

Religion			
Christianity	59 (79.73)	46 (80.70)	105 (80.15)
Islam	15 (20.27)	11 (19.3)	26 (19.85)
<b>Educational</b>			
No Formal Education	15 (20.27)	0 (0.0)	15 (11.45)
Primary	40 (54.05)	3 (5.26)	43 (32.82)
Secondary	17 (22.97)	14 (24.56)	31 (23.66)
Tertiary	2 (2.7)	40 (70.18)	42 (32.06)
<b>Occupation</b>			
Unemployed	0 (0.0)	9 (15.79)	9 (6.87)
Artisan	7 (9.46)	1 (1.75)	8 (6.11)
Trading	42 (56.76)	8 (14.04)	50 (38.17)
Farming	21 (28.38)	1 (1.75)	22 (16.79)
Professional	1 (1.35)	17 (29.82)	18 (13.74)
Civil Servant	3 (4.05)	21 (36.84)	24 (18.32)



**Figure 1. Level of awareness of respondents towards vegetable oil usage**

indicating a gap in knowledge. Rural respondents showed greater trust in producers' safety measures compared to urban counterparts. Additionally, a majority in both groups believed vegetable oil could be stored for a year or more, which may reflect a common misconception. Overall, while general safety awareness is high, notable gaps exist in understanding specific contamination risks and storage practices.

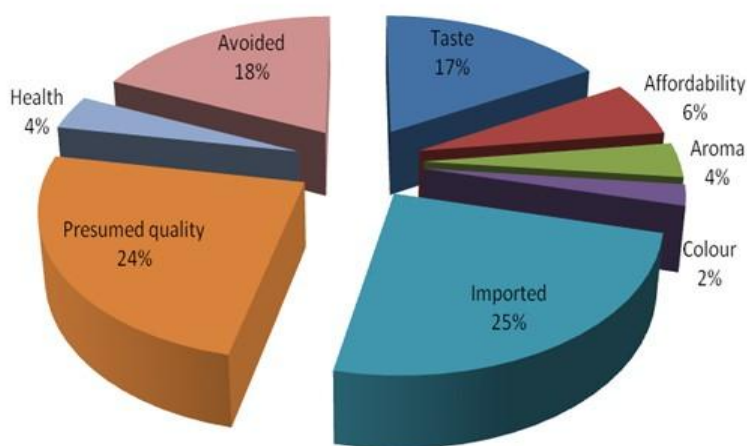
Figure 2 presents the reason for the choice of vegetable oil by respondents; the pie chart reveals that the oil being

imported (25%) and its presumed quality (24%) primarily drive consumer preference for vegetable oil, indicating a strong influence of perception and branding. Taste

(17%) and avoidance (18%) also significantly influenced choices, while factors such as affordability (6%), aroma (4%), health (4%), and color (2%) played a lesser role. Overall, the findings suggest that perceived quality and origin outweigh sensory or economic considerations in shaping consumer decisions.

**Table 2. Attitudes of respondents towards vegetable oil usage**

Statement	Rural - Disagree	Rural - Agree	Urban - Disagree	Urban - Agree	Mean	SD
It is necessary to store vegetable oil properly to avoid contamination	13 (17.6%)	61 (82.4%)	3 (5.3%)	54 (94.7%)	32.75	25.12
Consuming a high amount of vegetable oil can have a deleterious effect on health	7 (9.5%)	67(90.5%)	6 (10.5%)	51 (89.5%)	32.75	26.85
Rancid vegetable oil can be used to cook	9 (12.2%)	65 (87.8%)	12 (21.1%)	45 (78.9%)	32.75	23.37
Heavy metals are present in vegetable oils	41 (55.4%)	33 (44.5%)	30 (52.6%)	27 (47.4%)	32.75	5.21
Vegetable oil sellers and producers take safety measures seriously	19 (25.7%)	55 (74.3%)	36 (63.2%)	21 (36.8%)	32.75	14.43
Vegetable oil can be stored for a year or more before use	21 (28.4%)	53 (71.6%)	15 (26.3%)	42 (73.7%)	32.75	15.40
<b>Average Mean/SD</b>					<b>32.6</b>	<b>18.40</b>



**Figure 2. The reason for choice of vegetable oil by respondents**

**DISCUSSION**

This study compares a wide range of issues related to mothers’ knowledge, attitudes, and practices regarding vegetable usage in rural and urban Oyo State, Nigeria (The Nation, 2022). Despite many gaps in their knowledge and some unscientific beliefs, these others do care about quality and often believe that imported brands help ensure this. This aligns with reports (Oladunjoye & Aluko, 2024; Cicerale et al., 2016) that consumers in Nigeria often associate imported oils with higher purity and safety, even when local alternatives meet safety standards. Additionally, many respondents check for color and potential adulteration before purchasing vegetable oil, suggesting a moderate level of food safety awareness. However, unsafe practices such as reusing oil for frying (68.5%) and bleaching vegetable oil before use (57.3%) remain common, which may lead to the formation of harmful trans-fats and oxidative compounds, which increase health risks, including cardiovascular diseases and metabolic disorders (Zainah et al. 2023; Azman et. al. 2012; Obisesan 2017).

Despite the general awareness of contaminants in vegetable oil (79.7% rural, 82.5% urban), fewer respondents directly associated vegetable oil consumption with adverse health effects (32.4% rural, 35.1% urban), consistent with Folasire et al. (2022) who found that while consumers recognized the possibility of adulteration in edible oils, many lacked the knowledge to link poor-quality oils with specific health conditions. We also identified a significant association between mothers’ education, income, and

knowledge of vegetable oil safety ( $p < 0.05$ ), which reinforces previous research by Tesha et al. (2022) and Dzudzor et al. (2023) that higher education levels and economic status contribute to better dietary choices and food safety awareness. This strong positive correlation between knowledge and safe consumption practices emphasizes the need for targeted nutrition education programs to reduce harmful oil-related practices, particularly among lower-income and rural households.

**CONCLUSION**

This study reveals that while there is a high level of general awareness about vegetable oil usage among mothers in both rural and urban areas of Oyo State, Nigeria, critical knowledge gaps and risky practices persist. Most respondents understand the importance of proper storage and the potential health risks of excessive oil consumption. However, misconceptions such as the safety of prolonged storage, limited recognition of heavy metal contamination, and the acceptance of harmful practices like oil reuse and bleaching pose significant health risks. Preferences for imported oils and perceived quality suggest that branding and trust heavily influence consumer decisions, often outweighing scientific understanding. The findings also highlight that higher education and income levels are positively associated with better awareness and safer practices. Therefore, targeted interventions, especially nutrition education, should be integrated into community outreach programs and training

with a focus on mothers on healthy fat consumption to encourage better dietary choices, and public health campaigns are urgently needed to address misconceptions, improve food safety literacy, and promote healthier oil usage habits, particularly in lower-income and rural communities.

#### AUTHOR CONTRIBUTIONS

Conceptualization, FAU, GTF; Methodology, FAU, TOA; Data Collection, FAU, TOA, MES; Formal Analysis, TOA; Writing – Original Draft, FAU; Writing – Review & Editing, FAU, TOA, GTF, MES; Supervision, GTF, FAU; Project Administration, FAU. All authors have read and approved the final version of the paper and its submission.

#### CONFLICT OF INTEREST

The authors declare that they have no other potential conflicts of interest.

#### DECLARATION OF GENERATIVE AI AND AI-ASSISTED TECHNOLOGIES IN SCIENTIFIC WRITING

Nothing to disclose.

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