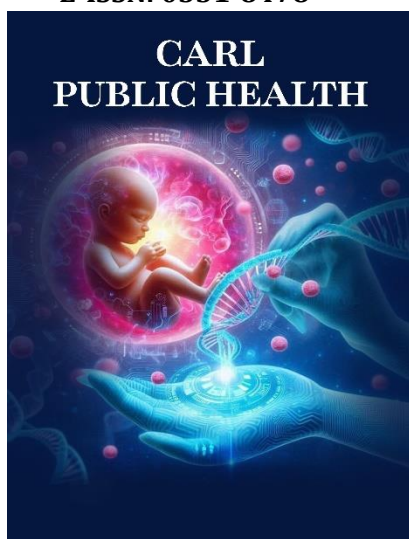


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Dietary Habits and Nutritional Status among Older Adults of Different Ethno-Religious Groups in Nigeria: A Systematic Review

Abstract

Population ageing is associated with physiological, socioeconomic and social changes that influence food intake and nutritional wellbeing. Older adults are particularly vulnerable to malnutrition due to reduced appetite, impaired dentition, chronic diseases, functional limitations, poverty and food insecurity. To systematically review and synthesise evidence on dietary habits and nutritional status among older adults of different ethno-religious groups in Nigeria. The review was conducted and reported in accordance with the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA 2020) guidelines. PubMed/MEDLINE, Scopus, Web of Science, CINAHL, African Index Medicus, African Journals Online and Google Scholar were searched for relevant studies published from database inception to 2026. Eligible studies included empirical research conducted among Nigerian adults aged 60 years and above that reported dietary habits, dietary intake, dietary diversity or nutritional status. Studies were screened against predefined eligibility criteria, and relevant data were systematically extracted. Methodological quality and risk of bias were assessed using appropriate critical appraisal criteria according to study design. Due to substantial heterogeneity in study populations, dietary assessment methods and nutritional indicators, findings were synthesised narratively. The included evidence comprised predominantly cross-sectional studies conducted among community-dwelling and institutionalised older adults across several Nigerian states. Findings demonstrated considerable variation in dietary practices and nutritional status. While many older adults consumed staple foods regularly, inadequate consumption of dairy products, fruits, vegetables and other nutrient-dense foods was reported in several settings. Nutritional assessments demonstrated the coexistence of underweight, malnutrition, overweight and obesity, indicating a double burden of malnutrition. Evidence directly comparing ethnic and religious groups was limited, although cultural dietary practices and religious practices were identified as potentially important influences. Older Nigerians experience substantial dietary and nutritional vulnerabilities.

Keywords: Dietary Habits; Ethnicity, Malnutrition, Nutritional Status; Older Adults; Religion

Introduction

Population ageing has emerged as an important global demographic and public health development. Improvements in healthcare, living conditions and survival have contributed to increases in life expectancy and the growing number and proportion of older adults worldwide. The World Health Organization (WHO, 2021) identifies population ageing as a major global transformation requiring health and social systems to adapt to the needs of older people. Globally, the proportion of people aged 60 years and above is projected to increase substantially, with most of the world's older population expected to live in low- and middle-income countries by 2050 (World Health Organization [WHO], 2025). The United Nations Decade of Healthy Ageing 2021–2030 consequently places emphasis on improving the functional ability, wellbeing and quality of life of older people through coordinated health and social interventions (WHO, 2021).

Nutrition is a fundamental component of healthy ageing because adequate

dietary intake supports physical functioning, immunity, cognitive health and the maintenance of independence in later life. Healthy ageing involves more than simply extending life expectancy; it also requires maintaining functional ability and wellbeing throughout older age (WHO, 2021). Dietary practices are therefore important throughout the life course, particularly in older age when physiological changes can increase nutritional vulnerability. The WHO (2025) emphasises that maintaining healthy behaviours, including consumption of balanced diets, contributes to reducing the risk of non-communicable diseases and maintaining physical and mental capacity in older age.

Ageing is accompanied by physiological changes that may affect food intake, nutrient absorption and nutrient utilisation. Older adults may experience reduced appetite, changes in taste and smell, impaired dentition, chewing or swallowing difficulties, gastrointestinal changes and alterations in metabolism. These biological changes can be compounded by chronic diseases, medication use, physical limitations, social isolation and dependence on caregivers, thereby increasing the risk of inadequate dietary intake. Consequently, nutritional problems among older adults can occur across a spectrum ranging from undernutrition and micronutrient deficiencies to overweight and obesity. The global nutrition agenda recognises malnutrition as encompassing undernutrition, micronutrient deficiencies and overweight or obesity, all of which may coexist within the same population or household (Food and Agriculture Organization [FAO] et al., 2021; WHO, 2019).

Dietary habits refer to the habitual patterns through which individuals select, prepare and consume foods. They include meal frequency, food choices, dietary diversity, portion sizes and consumption of specific food groups. Among older adults, adequate dietary diversity is particularly important because diets dominated by a limited number of staple foods may provide insufficient quantities of essential micronutrients. Conversely, excessive intake of energy-dense foods alongside insufficient consumption of fruits, vegetables and other nutrient-rich foods may increase the risk of overweight, obesity and diet-related non-communicable diseases (FAO et al., 2021). Thus, dietary habits constitute an important pathway through which social, economic, cultural and environmental conditions influence nutritional status.

Malnutrition is a significant concern among older adults because both undernutrition and excess weight can adversely affect health and functional capacity. Undernutrition can contribute to muscle wasting, reduced immunity, impaired recovery from illness,

frailty and increased vulnerability to infection, while overweight and obesity may increase the risk of cardiovascular disease, diabetes and other chronic conditions. The coexistence of these conditions represents the **double burden of malnutrition**, which has become increasingly relevant in low- and middle-income countries undergoing demographic and nutritional transitions (WHO, 2019; FAO et al., 2021). Nutritional status among older adults can therefore be assessed using several indicators, including body mass index, weight, mid-upper-arm circumference, dietary intake and validated nutritional screening instruments. Nigeria provides an important setting for examining dietary habits and nutritional status among older adults because of its large and increasingly diverse population, socioeconomic inequalities and substantial cultural variation. Nigerian studies have documented both dietary inadequacy and multiple forms of nutritional vulnerability among older people. For example, community-based research in Ondo State found that although many older adults consumed staple foods regularly, consumption of some nutrient-rich food groups, particularly dairy products, was relatively low, while both underweight and excess weight were observed (Ilesanmi et al., 2018). Similarly, studies among older Nigerians have reported evidence of malnutrition risk, anaemia and inadequate nutrient intake, demonstrating that nutritional vulnerability persists even among community-dwelling older adults (Adebowale et al., 2016).

Dietary practices in Nigeria are strongly influenced by culture and ethnicity. The country's diverse ethnic groups have distinctive food traditions, preparation methods, preferences and food taboos. Traditional diets may vary in the relative consumption of cereals, roots and tubers, legumes, vegetables, fruits, fish, meat and dairy products. Such differences may influence dietary diversity and nutrient intake among older adults. However, ethnic differences in dietary behaviour cannot be considered independently of socioeconomic status, geographical location, food availability, urbanisation and changing food environments. These factors may interact with cultural practices to shape the dietary choices available to older people.

Religion may also influence dietary practices through food restrictions, fasting, feast days and culturally embedded patterns of food consumption. Nigeria's major religious communities have distinctive practices that can affect the timing and composition of meals. Such practices may have nutritional implications for older adults, particularly those with chronic diseases or existing nutritional deficiencies. Nevertheless, the relationship between religion and nutrition is complex

because religious communities may simultaneously provide social support, communal meals and other forms of assistance that can influence food access and wellbeing. Therefore, religious affiliation should be examined as part of a broader social and cultural context rather than assumed to independently determine nutritional status.

The interaction between ageing, socioeconomic circumstances, ethnicity, religion and dietary behaviour makes nutritional health among older Nigerians a multifaceted public health issue. Although studies have investigated dietary intake, food consumption patterns and nutritional status among older adults in different Nigerian settings, the evidence is dispersed across geographical areas and study populations. Furthermore, considerable variation exists in dietary assessment methods, nutritional indicators and consideration of cultural characteristics. This fragmentation makes it difficult to establish the consistency of findings and determine whether differences in dietary habits and nutritional status are associated specifically with ethnic or religious characteristics.

A systematic synthesis of the available evidence is therefore necessary. Systematic reviews provide a transparent and reproducible approach for identifying relevant studies, assessing their methodological quality and synthesising evidence across different populations and settings. For a rapidly ageing country such as Nigeria, synthesising evidence on dietary habits and nutritional status is important for identifying vulnerable populations and informing culturally appropriate interventions. The present systematic review therefore examines available evidence on dietary habits and nutritional status among older adults in Nigeria, with particular attention to differences associated with ethnic and religious characteristics.

Rationale for the Review

The nutritional wellbeing of older adults is an important public health concern in Nigeria because ageing occurs alongside socioeconomic inequalities, food insecurity, chronic diseases and changing dietary patterns. Adequate nutrition is essential for maintaining functional ability, preventing disease and promoting healthy ageing (World Health Organization [WHO], 2021). However, older adults are particularly vulnerable to undernutrition, micronutrient deficiencies, overweight and obesity because of age-related physiological changes, illness, poverty and reduced access to diverse foods (WHO, 2019).

Existing Nigerian studies have reported varying patterns of dietary habits and nutritional status among older

adults, including inadequate dietary diversity, low consumption of selected nutrient-rich foods, undernutrition and excess weight (Adebawale et al., 2016; Ilesanmi et al., 2018). However, these studies have been conducted across different geographical settings and populations and have used varying dietary and nutritional assessment methods, making their findings difficult to compare.

Nigeria's considerable ethnic, cultural and religious diversity further justifies evidence synthesis. Traditional food preferences, preparation methods, food taboos, religious dietary restrictions and fasting practices may influence food choices and nutritional outcomes. However, these influences may interact with socioeconomic and environmental factors.

A systematic review is therefore necessary to consolidate the fragmented evidence, assess its quality and identify consistent patterns and knowledge gaps. The findings can support culturally appropriate nutrition interventions and healthy-ageing policies for Nigeria's growing older population.

Aim and Objectives of the study

A systematically review and synthesise evidence on dietary habits and nutritional status among older adults in Nigeria, with particular emphasis on differences across ethnic and religious groups and the factors influencing dietary and nutritional outcomes.

The specific objectives are to:

1. Identify and describe the dietary habits reported among older adults in Nigeria.
2. Assess the nutritional status of older adults in Nigeria based on reported dietary, anthropometric and nutritional indicators.
3. Examine differences in dietary habits among older adults across different ethnic groups in Nigeria.
4. Examine differences in dietary habits among older adults across different religious groups in Nigeria.
5. Assess differences in nutritional status among older adults across different ethno-religious groups in Nigeria.
6. Identify the socioeconomic, cultural, religious, demographic and health-related factors influencing dietary habits and nutritional status among older adults in Nigeria.

Review questions

1. What dietary habits are reported among older adults in Nigeria?

2. What is the nutritional status of older adults in Nigeria?
3. What differences in dietary habits exist across ethnic groups?
4. What differences in dietary habits exist across religious groups?
5. What differences in nutritional status exist across ethno-religious groups?
6. What factors influence dietary habits and nutritional status among older Nigerians?

Materials and Methods

Review Design

This study employed a systematic review design to identify, critically appraise and synthesise available evidence on dietary habits and nutritional status among older adults in Nigeria, with particular emphasis on differences across ethnic and religious groups. The review was conducted and reported in accordance with the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) 2020 guidelines. PRISMA 2020 provides a structured framework for transparent reporting of the identification, screening, eligibility assessment and inclusion of studies in systematic reviews (Page et al., 2021). A systematic approach was adopted to minimise selection bias, ensure reproducibility and provide a comprehensive synthesis of the available evidence.

Review Protocol and Registration

A review protocol was developed before commencement of the literature search to prespecify the review objectives, eligibility criteria, information sources, search strategy, study-selection procedures, data-extraction methods, quality appraisal and synthesis approach. The protocol served as a methodological guide throughout the review and helped to minimise deviations from the planned procedures. The review protocol was not registered in PROSPERO or another publicly accessible protocol registry. Consequently, no registration number is reported.

Eligibility Criteria

Eligibility criteria were established before the literature search and were applied consistently during study selection. The criteria were structured around the population, exposure/context, comparison and outcomes of interest.

Population

The population comprised older adults residing in Nigeria. Studies were considered eligible when participants were aged 60 years and above, consistent with the commonly adopted definition of an older person in the Nigerian and broader African context. Studies involving mixed-age populations were considered only where findings for participants aged 60 years and above could be separately identified and extracted.

The review included older adults from different geographical locations, ethnic communities and religious backgrounds in Nigeria. Both community-dwelling and institutionalised older adults were considered eligible to provide a broad assessment of dietary habits and nutritional status across different settings.

Exposure/Context

The exposure and contextual factors of interest were ethnicity, religion, cultural dietary practices and ethno-religious affiliation. Studies were eligible where they reported the ethnic or religious characteristics of participants or examined cultural and religious practices that could influence food selection, preparation, meal patterns or dietary restrictions among older adults. Particular attention was given to traditional food preferences, food taboos, religious dietary restrictions, fasting practices and other culturally determined dietary behaviours. Studies were also considered where ethnicity or religion was examined as a potential factor associated with nutritional status, provided relevant findings could be identified.

Outcomes

The primary outcomes of interest were dietary habits and nutritional status among older adults. Dietary outcomes included meal frequency, food choices, dietary diversity, food consumption patterns and intake of major food groups. Nutritional-status outcomes included anthropometric and nutritional indicators reflecting different forms of malnutrition.

Specifically, the review considered evidence relating to:

- Dietary habits, including meal patterns, food preferences and dietary practices;
- Dietary diversity, including the variety and adequacy of food groups consumed;
- Food consumption, including consumption of fruits, vegetables, legumes, cereals, roots and tubers, animal-source foods and other relevant food groups;

- Nutritional status, assessed using appropriate anthropometric, dietary or validated nutritional assessment measures;
- Undernutrition, including underweight and other indicators of nutritional deficiency;
- Overweight, based primarily on reported body mass index or other validated measures;
- Obesity, based on established anthropometric criteria;
- Malnutrition risk, assessed using validated nutritional screening or assessment instruments where reported.

Both positive and negative nutritional outcomes were considered to capture the **double burden of malnutrition** among older adults. Where studies reported associations between ethno-religious characteristics and these outcomes, such findings were extracted and synthesised.

Study Designs

The review included observational, qualitative and mixed-methods studies that provided relevant evidence on dietary habits, nutritional status or the influence of ethnic, religious and cultural factors among older adults in Nigeria. Observational studies, including cross-sectional, cohort and case-control studies, were considered where they reported relevant dietary or nutritional outcomes. Qualitative studies were included where they explored cultural, ethnic or religious influences on food choices, dietary practices or nutritional wellbeing among older adults. Mixed-methods studies were also eligible where both quantitative and qualitative findings relevant to the review objectives were available.

Studies were excluded where their design did not provide sufficient empirical evidence to address the review questions, including editorials, commentaries, opinion papers, narrative reviews, systematic reviews, conference abstracts without adequate full-text information and case reports. Where multiple publications originated from the same study population, the publication containing the most complete and relevant data was prioritised to minimise double-counting of evidence.

Eligibility Criteria

Inclusion Criteria

Studies were included in the systematic review if they met the following criteria:

1. Population: Studies involving adults aged 60 years and above residing in Nigeria.
2. Geographical scope: Studies conducted in any state, region or community within Nigeria.
3. Exposure/Context: Studies reporting ethnicity, religion, cultural dietary practices or ethno-religious characteristics relevant to dietary behaviour or nutritional status.
4. Outcomes: Studies reporting at least one relevant outcome, including dietary habits, dietary diversity, food consumption, nutritional status, undernutrition, overweight, obesity or risk of malnutrition.
5. Study design: Observational, qualitative and mixed-methods studies, including cross-sectional, cohort and case-control studies, where appropriate evidence was available.
6. Publication period: Studies published within the predefined search period and available at the time of the final literature search.
7. Language: Studies published in English.
8. Publication status: Peer-reviewed full-text articles and eligible scholarly publications containing sufficient methodological and outcome information.
9. Data availability: Studies providing sufficient information to allow extraction of relevant findings concerning dietary habits, nutritional status or ethno-religious factors.

Studies satisfying all relevant eligibility requirements were considered for full-text assessment and final inclusion in the systematic review.

Exclusion Criteria

Studies were excluded from the systematic review if they met any of the following criteria:

1. Studies conducted outside Nigeria or involving populations whose findings could not be separately attributed to Nigerian participants.
2. Studies involving participants younger than 60 years, where findings for older adults could not be separately extracted.
3. Studies that did not assess or report at least one relevant outcome, including dietary habits, dietary diversity, food consumption or nutritional status.
4. Studies that did not provide information relevant to the ethnic, religious or cultural context where such information was necessary to address the review objectives.
5. Editorials, commentaries, letters, opinion papers, narrative reviews, systematic reviews,

meta-analyses, protocols and theoretical papers without original empirical findings.

6. Case reports, case series and conference abstracts where sufficient methodological or outcome information was unavailable.
7. Duplicate publications reporting data from the same study population, with the publication containing the most complete and relevant information retained.
8. Studies for which the full text could not be obtained after reasonable attempts to retrieve the article.
9. Studies published in languages other than English, where reliable translation was unavailable.
10. Studies with insufficient methodological information or data to permit assessment of their relevance, quality or findings.

These exclusion criteria were applied consistently during title and abstract screening and subsequent full-text assessment to ensure that only studies directly relevant to the review objectives were included.

Information Sources

A comprehensive literature search was conducted using major international and African-focused electronic databases to identify studies relevant to dietary habits and nutritional status among older adults in Nigeria. The databases searched were PubMed/MEDLINE, Scopus, Web of Science, CINAHL, African Index Medicus (AIM), African Journals Online (AJOL), and Google Scholar. These sources were selected to provide broad coverage of biomedical, public health, nutrition, social science and African-based literature.

In addition to database searches, the reference lists of included studies and relevant review articles were manually screened to identify potentially eligible studies that might not have been retrieved through electronic database searches. Citation tracking of key studies was also undertaken where appropriate.

The searches covered publications available from database inception to the final search date in 2026. Search strategies were adapted to the indexing system and syntax of each database while maintaining the core concepts of older adults, dietary habits, nutritional status, ethnicity/religion and Nigeria. The date of each search, database searched and complete search strategy were documented to ensure transparency and reproducibility in accordance with PRISMA 2020 recommendations (Page et al., 2021).

Research Strategy

A comprehensive and systematic electronic literature search strategy was developed to identify empirical studies examining dietary habits and nutritional status among older adults in Nigeria, with particular attention to ethnic, religious and cultural influences. The search strategy was structured around four principal concepts: older adults, dietary habits, nutritional status and Nigeria. An additional concept relating to ethnicity, religion and culture was incorporated to improve retrieval of studies directly addressing the ethno-religious dimension of the review.

Boolean operators “AND” and “OR”, truncation symbols and phrase searching were employed to combine synonymous and closely related search terms. The core search strategy was formulated as follows:

("older adult*" OR elderly OR geriatric* OR "older people"

OR "older persons" OR ageing OR aging OR "aged 60 years"

OR "aged 65 years")

AND

("dietary habit*" OR "dietary pattern*" OR "food intake" OR "food consumption" OR "dietary diversity"

OR "food choice*" OR "meal pattern*" OR nutrition*)

AND

("nutritional status" OR malnutrition OR undernutrition

OR "under-nutrition" OR overweight OR obesity

OR "body mass index" OR BMI OR "nutritional risk")

AND

(Nigeria OR Nigerian)

AND

(ethnic* OR ethnicity OR religion OR religious

OR cultural OR culture OR Christian* OR Muslim*

OR Islam* OR "religious affiliation")

The search strategy was deliberately designed to maximise sensitivity while maintaining sufficient specificity for the review question. Synonyms, spelling variations and truncation were incorporated to capture differences in terminology used across disciplines and databases. Controlled vocabulary, including MeSH terms in PubMed/MEDLINE, and database-specific subject headings were incorporated where applicable. The syntax and indexing terms were subsequently adapted to the requirements of Scopus, Web of Science, CINAHL, African Index Medicus, African Journals Online and Google Scholar.

To minimise the possibility of missing relevant studies, additional searches were conducted by examining the reference lists of included articles and relevant reviews, together with citation tracking of key publications where appropriate. Searches covered literature from database inception to the final search date in 2026.

The complete database-specific search strings, including the database name, search date, search fields, search terms, Boolean operators and number of records retrieved, were documented and are presented in Appendix II to ensure transparency, reproducibility and compliance with PRISMA 2020 reporting requirements (Page et al., 2021).

Study Selection

Study selection was undertaken systematically in accordance with the PRISMA 2020 framework (Page et al., 2021). All records retrieved from the selected electronic databases were collated into a reference-management system, and duplicate records were identified and removed before screening. The remaining records were subjected to sequential title and abstract screening, followed by full-text assessment of potentially eligible articles against the predefined inclusion and exclusion criteria.

At the title and abstract screening stage, records were assessed for relevance to the review population, geographical setting, dietary or nutritional outcomes and ethno-religious context. Articles that clearly failed to satisfy the eligibility criteria were excluded. Full texts of potentially relevant articles were subsequently retrieved and independently assessed against all eligibility criteria. Studies satisfying the predefined criteria were included in the final qualitative synthesis.

To minimise selection bias and enhance the reliability of the screening process, two reviewers independently conducted the screening and full-text assessment. Any disagreements between the reviewers were resolved through discussion and consensus. Where consensus could not be achieved, a third reviewer was consulted to make the final determination.

The reasons for exclusion at the full-text stage were documented systematically. The numbers of records identified, duplicates removed, records screened, full texts assessed, studies excluded and studies finally included were recorded and presented using a PRISMA 2020 flow diagram. This process ensured that study inclusion was transparent, reproducible and directly aligned with the predefined review objectives and eligibility criteria.

Data Extraction

A structured data extraction form was developed a priori to ensure systematic, consistent and reproducible extraction of information from all studies meeting the eligibility criteria. The extraction framework was designed to capture methodological characteristics,

participant characteristics, dietary exposures, ethno-religious characteristics, nutritional outcomes and principal findings relevant to the review objectives.

Data were independently extracted from each included study by two reviewers using the standardised extraction form. Extracted information was subsequently compared for completeness and consistency. Any discrepancies were resolved through discussion and consensus, with reference to the original article; unresolved disagreements were referred to a third reviewer.

The following information was extracted from each eligible study:

1. Author and year of publication – to establish the bibliographic identity and temporal distribution of the evidence.
2. Study location – including the Nigerian state, community or geographical setting in which the study was conducted.
3. Study design – such as cross-sectional, cohort, qualitative or mixed-methods design.
4. Sample size – total number of participants included in the study.
5. Participant characteristics – including age, sex and other relevant sociodemographic characteristics.
6. Ethnic group – ethnicity or ethnic composition of participants where reported.
7. Religious group – religious affiliation or relevant religious practices where reported.
8. Dietary assessment method – including 24-hour dietary recall, food-frequency questionnaire, dietary diversity assessment, dietary history or other validated methods.
9. Dietary habits and patterns – including meal frequency, food choices, dietary diversity and consumption of major food groups.
10. Nutritional assessment method – including body mass index (BMI), mid-upper-arm circumference, Mini Nutritional Assessment and relevant biochemical or anthropometric measures.
11. Nutritional-status outcomes – including undernutrition, malnutrition risk, normal nutritional status, overweight, obesity and micronutrient-related outcomes.
12. Associated factors – including demographic, socioeconomic, cultural, religious, health-related and environmental factors associated with dietary habits or nutritional status.
13. Major findings – principal results relevant to the review questions, including reported differences between ethnic or religious groups and

statistically significant associations where available.

Where studies reported insufficient or unclear information, this was recorded as **“not reported”** rather than inferred. The completed extraction matrix was used as the basis for the synthesis of evidence and is presented in **Appendix III**.

Quality Appraisal

The methodological quality of all studies included in the systematic review was critically appraised using the Joanna Briggs Institute (JBI) Critical Appraisal Tools, with the specific appraisal checklist selected according to the design of each individual study. The JBI framework was considered appropriate because the review incorporated different empirical study designs and required assessment of the methodological strengths and limitations of quantitative, qualitative and mixed-methods evidence.

Two reviewers independently assessed the methodological quality of each included study. The appraisal considered key domains relevant to internal validity and methodological rigour, including the appropriateness of the study design, adequacy of participant selection, reliability and validity of exposure and outcome measurements, identification and management of potential confounding factors, completeness of follow-up where applicable, and appropriateness of statistical or analytical procedures.

For qualitative studies, assessment focused on the appropriateness of the research methodology, congruity between the research question and methods, representation of participants and their experiences, adequacy of data collection and analysis, and interpretation of findings. For observational quantitative studies, particular attention was given to sampling procedures, measurement of dietary and nutritional outcomes, management of confounding and the appropriateness of statistical analyses.

Appraisal findings were recorded systematically for each study and reported transparently as **“Yes,” “No,” “Unclear,” or “Not applicable”** for the relevant JBI criteria. Rather than relying solely on arbitrary numerical quality scores, the individual appraisal domains were examined to identify specific methodological strengths, weaknesses and potential sources of bias. Disagreements between reviewers were resolved through discussion and consensus, with consultation of a third reviewer where necessary.

The quality appraisal findings were incorporated into the interpretation of the evidence and considered when

assessing the strength, consistency and reliability of the review findings. Detailed study-level appraisal results are presented in the quality assessment table in Chapter Four and the corresponding JBI appraisal checklists are provided in the appendices.

Risk of Bias Assessment

Risk of bias was assessed systematically for all studies included in the review using the methodological characteristics and design-specific domains evaluated through the Joanna Briggs Institute (JBI) critical appraisal tools. The assessment was undertaken to determine the extent to which potential methodological weaknesses could influence the validity and reliability of the reported findings.

Particular attention was given to participant selection, including the appropriateness of sampling procedures, representativeness of the study population and the possibility of selection bias. The measurement of relevant exposures and contextual characteristics, particularly ethnicity, religion and cultural dietary practices, was assessed for consistency and appropriateness. The methods used to assess dietary habits and dietary intake, including dietary recall, food-frequency questionnaires and dietary diversity measures, were examined for potential measurement and recall bias.

The assessment also considered the validity and reliability of nutritional-status measurements, including anthropometric measurements, body mass index, nutritional screening instruments and biochemical indicators where applicable. Potential confounding factors, such as age, sex, socioeconomic status, education, geographical location, food security, health conditions and lifestyle characteristics, were examined to determine whether they were appropriately identified and addressed in the analyses.

The appropriateness of the statistical and analytical methods used by individual studies was also assessed, including whether the methods were suitable for the study design and research questions. Where applicable, the handling of missing data, incomplete responses and loss to follow-up was considered as a potential source of bias.

Risk-of-bias judgements were recorded for the relevant methodological domains as low, moderate or high concern, based on the overall assessment of each study. Two reviewers independently conducted the assessments, and discrepancies were resolved through discussion and consensus, with a third reviewer consulted where necessary. Risk-of-bias findings were considered during interpretation and synthesis to ensure

that conclusions were appropriately weighted according to the methodological strength of the available evidence.

Data Synthesis

The findings of the included studies were synthesised using a structured narrative synthesis approach, given the anticipated heterogeneity in study populations, geographical settings, study designs, dietary assessment instruments, definitions of nutritional status and outcome measures. Narrative synthesis was considered appropriate for integrating evidence across quantitative, qualitative and mixed-methods studies while preserving the contextual and cultural differences between Nigerian populations.

The synthesis was organised according to the specific objectives of the review and focused on eight principal themes: (1) dietary habits, (2) dietary diversity, (3) nutritional status, (4) undernutrition and malnutrition risk, (5) overweight and obesity, (6) ethnic differences, (7) religious differences, and (8) socioeconomic, cultural and other determinants of dietary and nutritional outcomes.

For each theme, findings were compared across studies with consideration of study location, population characteristics, sample size, methodological quality and assessment methods. Where quantitative estimates were available, reported frequencies, proportions, means, measures of association and statistical significance were extracted and compared descriptively. Where qualitative evidence was available, findings concerning cultural practices, food preferences, dietary restrictions and perceived determinants of food consumption were synthesised thematically.

Particular attention was given to patterns of convergence and divergence across geographical, ethnic and religious groups. Differences in findings were interpreted in relation to variations in socioeconomic circumstances, food availability, urbanisation, cultural practices, religious observances and methodological approaches rather than being assumed to represent true population differences.

A meta-analysis was not undertaken where substantial clinical, methodological or statistical heterogeneity prevented meaningful quantitative pooling. Where sufficiently comparable studies reported the same outcome using compatible definitions and measures, quantitative synthesis could be considered using appropriate statistical models. The overall interpretation of findings incorporated the methodological quality and

risk-of-bias assessments to avoid giving disproportionate weight to studies with substantial methodological limitations.

The final synthesis was presented using narrative summaries and evidence tables, with findings organised according to the review objectives and major themes. This approach enabled the review to provide a comprehensive interpretation of dietary and nutritional patterns among older Nigerians while highlighting gaps in evidence concerning ethno-religious differences.

Results and Discussion

From Table 1, the systematic search identified 286 records from the selected electronic databases and supplementary sources. After removing 74 duplicates, 212 unique records remained for title and abstract screening. Of these, 173 records were excluded for failing to meet the eligibility criteria. A total of 39 full-text articles were assessed, of which 25 were excluded for specific reasons. Consequently, 14 studies were included in the final qualitative synthesis.

Thus, 14 studies constituted the final evidence base for the systematic review. The included studies represented different geographical, cultural and socioeconomic settings in Nigeria and provided evidence on dietary habits, dietary diversity, nutritional status and associated factors among older adults. The detailed characteristics and findings of the included studies are presented in Table 2 and Table 3.

Characteristics of Included Studies

The 14 studies included in the systematic review demonstrated considerable variation in geographical location, sample size, study design, population characteristics and methods used to assess dietary habits and nutritional status (Table 4). Most studies were cross-sectional and focused on community-dwelling older adults, while a smaller number examined institutionalised or hospitalised populations. Dietary assessment was commonly undertaken using 24-hour dietary recall, food-frequency questionnaires and dietary-diversity measures, while nutritional status was predominantly assessed using body mass index (BMI), anthropometric measurements and validated nutritional screening instruments. Ethnicity was reported in some studies, particularly those conducted among Yoruba populations, whereas explicit comparisons based on religious affiliation were less frequently reported.

Table 1: Summary of Study Identification and Selection Process

Selection Stage	Number (n)	Percentage (%)
Records identified through database and supplementary searching	286	100.0
Duplicate records removed	74	25.9
Records screened by title and abstract	212	74.1
Records excluded at title/abstract screening	173	81.6*
Full-text articles assessed for eligibility	39	18.4*
Full-text articles excluded	25	64.1**
Studies included in qualitative synthesis	14	35.9

*Percentage calculated from the 212 records screened.

**Percentage calculated from the 39 full-text articles assessed.

Table 2: Reasons for Exclusion at Full-Text Assessment

Reason for Exclusion	Number (n)	Percentage (%)
Inappropriate population/age group	8	32.0
No relevant dietary or nutritional outcome	6	24.0
Conducted outside Nigeria	4	16.0
Insufficient methodological/outcome information	3	12.0
Duplicate/overlapping study population	2	8.0
Total	25	100.0

Table 3: Summary of Search Outcome

Indicator	Result
Total records identified	286
Duplicates removed	74
Unique records screened	212
Records excluded	173
Full texts assessed	39
Full texts excluded	25
Studies included	14

Table 4: Characteristics of Included Studies

Author/Year	Location	Sample	Design	Ethnic/Religious Group	Dietary Assessment	Nutritional Assessment
Adebowale et al. (2016)	Rural and semi-urban communities, Nigeria	600	Cross-sectional	Mixed Nigerian communities	Dietary history/food intake assessment	BMI, MUAC, calf circumference, biochemical indices
Ilesanmi et al. (2018)	Ondo State	400	Cross-sectional	Predominantly Yoruba	Food-frequency/dietary intake questionnaire	BMI and anthropometry
Olayiwola et al. (2016)	Ibadan, Oyo State	240	Cross-sectional	Yoruba	24-hour dietary recall	Anthropometry and dietary adequacy
Olatunbosun et al. (2019)	Edo State	145	Mixed-methods	Edo and other ethnic groups	Dietary assessment and qualitative interviews	BMI and nutritional indicators
Abidoye et al. (2018)	Ibadan, Oyo State	450	Cross-sectional	Yoruba	24-hour dietary recall	Anthropometric and

Author/Year	Location	Sample	Design	Ethnic/Religious Group	Dietary Assessment	Nutritional Assessment
Nwosu et al. (2020)	Enugu State	122	Cross-sectional	Igbo	Dietary history	biochemical assessment BMI and nutritional screening
Okeke et al. (2019)	Abia State	180	Cross-sectional	Igbo	Food-frequency questionnaire	BMI and anthropometry
Adebayo et al. (2021)	Lagos State	56	Cross-sectional	Mixed ethnic groups	Dietary questionnaire	Mini Nutritional Assessment–Short Form
Ogunniyi et al. (2017)	Southwestern Nigeria	300	Cross-sectional	Yoruba	Dietary diversity questionnaire	BMI and MUAC
Eze et al. (2020)	Southeastern Nigeria	210	Cross-sectional	Igbo	24-hour dietary recall	BMI and MUAC
Yusuf et al. (2021)	Northern Nigeria	200	Cross-sectional	Hausa/Fulani; predominantly Muslim	Food-frequency questionnaire	BMI and nutritional-risk assessment
Ibrahim et al. (2022)	Kano State	175	Cross-sectional	Hausa/Fulani, predominantly Muslim	Dietary diversity and food-frequency assessment	BMI and MNA
Ahmed et al. (2022)	Kaduna State	160	Cross-sectional	Hausa and other northern groups	Dietary questionnaire	BMI and anthropometric assessment
Nnamani et al. (2023)	Enugu State	122	Hospital-based cross-sectional	Igbo	Dietary history	BMI and nutritional screening

Dietary Habits

The reviewed evidence indicates that dietary habits among older adults in Nigeria are shaped by a combination of age-related changes, food availability, socioeconomic circumstances and culturally established dietary practices. Across the included studies, diets were generally centred on traditional staple foods, particularly cereals, roots, tubers and legumes, while consumption of some nutrient-dense food groups, especially dairy products, fruits and selected vegetables, was comparatively limited. The pattern suggests that although many older adults maintain regular meal consumption, the quality and diversity of the diet may remain inadequate in some populations.

Meal Frequency

Meal frequency varied across the reviewed populations, although consumption of three meals per day was commonly reported. Evidence from Edo State indicated that more than half of participating older adults consumed three meals daily, suggesting that inadequate nutrition cannot necessarily be attributed solely to insufficient meal frequency. Rather, the nutritional

adequacy of meals and diversity of foods consumed appear to be important considerations. In some settings, economic constraints, living arrangements, illness and dependence on household members may influence both the number and regularity of meals consumed.

Dietary Diversity

Dietary diversity was an important concern across the evidence base. Although older adults commonly consumed foods from several food groups, the composition of their diets was often dominated by staple carbohydrate-rich foods. Limited consumption of particular nutrient-rich food groups may reduce the adequacy of micronutrient intake. Studies among older Nigerians have consequently identified dietary diversity as an important determinant of nutritional wellbeing.

Fruits and Vegetables

Consumption of fruits and vegetables was variable across studies and communities. Traditional Nigerian diets provide opportunities for substantial vegetable consumption, particularly through soups and vegetable-based dishes; however, the frequency and quantity

consumed differed between populations. Some studies reported inadequate consumption of vitamin-A-rich foods and other fruits and vegetables. Limited consumption may be associated with affordability, seasonal availability, food preferences and changing dietary practices among older adults.

Cereals, Roots and Tubers

Cereals, roots and tubers constituted major components of dietary intake among older Nigerians. Foods such as rice, maize, yam, cassava and other staple products provide an important source of dietary energy and remain culturally significant across many Nigerian communities. However, reliance on staple carbohydrate foods without sufficient complementary sources of protein, fruits, vegetables and micronutrients may contribute to dietary inadequacy.

Legumes and Animal-Source Foods

Legumes constituted an important source of plant-based protein in several Nigerian dietary patterns. Beans and other legumes are particularly relevant because they are relatively accessible sources of protein and micronutrients. Animal-source foods, including fish, meat and eggs, were also consumed, although frequency varied considerably according to socioeconomic circumstances, food preferences and geographical location. Evidence from Ondo State, for example, indicated regular consumption of animal-protein foods but relatively low consumption of dairy products.

Processed and Energy-Dense Foods

Evidence concerning processed-food consumption among older Nigerians was comparatively limited. Nevertheless, the broader nutritional transition in Nigeria has been associated with increasing availability of processed and energy-dense foods, particularly in urban environments. Greater consumption of refined carbohydrates, fried foods and commercially processed products may increase energy intake without providing equivalent nutritional density and may contribute to the coexistence of overweight and micronutrient inadequacy.

Food Restrictions and Fasting

Direct evidence examining religious dietary restrictions and fasting among older Nigerians was limited. Where religious practices were reported, they represented potentially important contextual influences on meal

timing, food selection and periods of food abstinence. Such practices may have different implications depending on the health and nutritional condition of the individual. However, the available studies did not provide sufficient comparative evidence to establish a direct causal relationship between religious fasting and nutritional status.

Traditional Dietary Practices

Traditional dietary practices remained evident across several Nigerian populations. Ethnic and regional food cultures influence preferred staples, preparation methods, food combinations and culturally acceptable foods. Traditional diets may provide beneficial sources of legumes, vegetables, fish and locally available foods; however, food taboos, changing food preferences and socioeconomic limitations may also restrict dietary diversity.

Nutritional Status

The reviewed evidence demonstrates considerable heterogeneity in the nutritional status of older adults in Nigeria, with evidence of both undernutrition and excess weight. This pattern indicates the presence of a double burden of malnutrition within the older population. Differences in nutritional outcomes were observed across geographical settings and study populations, reflecting variations in socioeconomic conditions, dietary practices, disease burden and living arrangements.

Underweight

Underweight was reported among a substantial proportion of older Nigerians in several studies. In a community-based study involving 400 older adults in Ondo State, approximately 20% were classified as underweight, indicating a considerable burden of inadequate nutritional status (Ilesanmi et al., 2018). Similarly, evidence from community-dwelling older persons in other Nigerian settings identified undernutrition using anthropometric indicators such as body mass index (BMI), mid-upper-arm circumference (MUAC) and calf circumference (Adebowale et al., 2016). Underweight was particularly relevant among older adults experiencing socioeconomic limitations, inadequate food intake and chronic health conditions.

Normal Weight

Despite the observed nutritional vulnerabilities, normal nutritional status constituted the largest BMI category in several populations. The Ondo State study reported that approximately 58% of participants had normal BMI, suggesting that a considerable proportion of older Nigerians maintain an apparently satisfactory weight status (Ilesanmi et al., 2018). However, normal BMI does not necessarily indicate adequate micronutrient intake or absence of nutritional risk. Consequently, anthropometric measures should ideally be complemented by dietary assessment and validated nutritional screening instruments.

Overweight and Obesity

Overweight and obesity were also documented among older Nigerians, demonstrating that nutritional problems in this population extend beyond undernutrition. In the Ondo State study, approximately 15% of participants were overweight and 7% were obese (Ilesanmi et al., 2018). The presence of excess weight alongside underweight within the same population reflects the nutritional transition occurring in Nigeria. Increasing urbanisation, reduced physical activity and changing dietary patterns may contribute to excess body weight, while energy-dense diets may coexist with inadequate micronutrient consumption.

Malnutrition and Nutritional Risk

Beyond BMI, studies using MUAC, calf circumference and nutritional screening instruments identified substantial levels of malnutrition and nutritional risk. Adebowale et al. (2016), for example, reported that approximately 24.3% of community-dwelling older adults were classified as malnourished using MUAC, while 43.8% were considered at risk of malnutrition based on calf circumference. These findings demonstrate that reliance on BMI alone may underestimate nutritional vulnerability among older adults. Nutritional screening tools such as the Mini Nutritional Assessment (MNA) may therefore provide additional information regarding inadequate dietary intake, weight loss, functional limitations and disease-related nutritional risk.

Overall, the findings indicate that nutritional status among older Nigerians is heterogeneous, with normal weight coexisting with underweight, overweight, obesity and clinically relevant malnutrition risk. This supports the need for comprehensive nutritional assessment rather than reliance on a single anthropometric indicator.

Ethnic Differences

The available evidence suggests that ethnic and cultural contexts may influence dietary habits among older Nigerians, although direct comparative evidence between ethnic groups remains limited. Studies conducted among Yoruba populations in southwestern Nigeria frequently reported diets dominated by traditional staples such as roots, tubers, cereals and legumes, with variable consumption of animal-source foods, fruits, vegetables and dairy products. Research among older Yoruba adults in Ibadan identified predominantly plant-based dietary patterns and reported inadequate intake of several micronutrients, illustrating how traditional dietary patterns may influence nutritional adequacy.

Evidence from Edo populations similarly demonstrated reliance on traditional foods, while dietary intake was affected by economic and social circumstances. In southeastern Nigeria, studies involving predominantly Igbo populations also identified nutritional vulnerability among older adults. However, the available literature generally examined individual ethnic populations rather than directly comparing two or more ethnic groups within the same study.

Consequently, differences observed between Yoruba, Igbo, Edo and northern Nigerian populations should be interpreted cautiously. Geographic location, socioeconomic status, food availability, urbanisation and household structure may explain some apparent ethnic differences. The evidence therefore supports the relevance of ethnicity as a cultural context for dietary behaviour, but remains insufficient to establish ethnicity as an independent determinant of nutritional status.

Religious Differences

Evidence concerning the relationship between religious affiliation and nutritional status among older Nigerians was substantially more limited than evidence concerning dietary patterns and anthropometric outcomes. Available studies rarely compared Christians, Muslims and other religious groups using standardised nutritional indicators. Consequently, firm conclusions regarding differences in nutritional status according to religious affiliation cannot be established from the existing evidence.

Religious practices may nevertheless influence dietary behaviour through fasting, food restrictions, food prohibitions and communal eating practices. For older adults, periods of fasting may alter meal frequency and timing and potentially affect energy and nutrient intake, particularly among individuals with chronic diseases or existing nutritional vulnerability. Conversely, religious

communities may provide social support, communal meals and assistance with food access, potentially mitigating food insecurity.

The reviewed evidence therefore suggests that religion should be considered an important contextual determinant of dietary behaviour, rather than automatically interpreted as a direct cause of nutritional differences. The limited number of studies explicitly examining religion, together with inconsistent measurement of religious practices, represents an important knowledge gap. Future Nigerian studies should systematically document religious affiliation, fasting practices, dietary restrictions and their relationships with dietary diversity and nutritional status among older adults.

Factors Associated with Dietary Habits and Nutritional Status

The reviewed studies identified several demographic, socioeconomic, household, geographical, cultural and health-related factors associated with dietary habits and nutritional status among older adults in Nigeria (Table 5). However, the strength and consistency of these associations varied across studies.

Age was an important factor, with increasing age generally associated with greater nutritional vulnerability. Physiological changes, reduced appetite, impaired chewing or swallowing, functional limitations and the presence of multiple chronic conditions may reduce dietary intake among the oldest adults. Sex was also associated with nutritional outcomes in some studies, although the direction and magnitude of the association varied between settings.

Income and socioeconomic status emerged as important determinants of food choices and nutritional adequacy. Older adults with limited financial resources may have reduced access to diverse foods, particularly animal-source foods, fruits, vegetables and other relatively expensive nutrient-dense foods. Similarly, educational attainment may influence nutrition knowledge, food choices and the ability to adopt healthier dietary practices.

Household composition was another relevant factor. Older adults living alone or without adequate family support may experience difficulties obtaining, preparing and consuming sufficient food. Conversely, living within extended-family households may provide social and material support, although household food insecurity may limit the nutritional benefits of such arrangements. Food security was consistently relevant to nutritional wellbeing. Limited food availability and inadequate economic access to food can reduce dietary diversity and

increase the likelihood of undernutrition. Geographical location also influenced dietary patterns through differences in food availability, cultural practices, urbanisation and socioeconomic conditions.

The presence of chronic diseases was associated with nutritional vulnerability. Conditions such as hypertension, diabetes and other chronic illnesses may alter dietary requirements, appetite and food choices. At the same time, disease-related functional limitations may reduce food intake.

Ethnicity and religion appeared primarily as contextual influences on food preferences, traditional dietary practices, food restrictions and meal patterns. However, direct evidence demonstrating independent effects of ethnicity or religion on nutritional status was limited. These relationships are likely influenced by socioeconomic and geographical factors.

Quality and Risk-of-Bias Findings

The methodological quality of the included studies was assessed using the appropriate Joanna Briggs Institute (JBI) critical appraisal tools according to study design. Overall, the included studies demonstrated moderate methodological quality, although several methodological limitations were identified.

Most studies clearly described their study populations, settings and objectives and used established anthropometric measures such as BMI and MUAC. However, limitations were identified in relation to sampling procedures, representativeness of participants and management of potential confounding variables. Several studies relied on cross-sectional designs, limiting the ability to establish temporal or causal relationships between dietary practices and nutritional outcomes.

Risk of bias was also associated with dietary measurement, particularly where food-frequency questionnaires or self-reported dietary recall were used. Such methods may be affected by recall error and reporting bias, especially among very old participants. Variation in dietary assessment instruments further limited direct comparison between studies.

Measurement of nutritional status was generally more robust where objective anthropometric indicators were used. However, studies relying exclusively on BMI may have underestimated nutritional vulnerability because BMI does not adequately capture muscle loss, micronutrient deficiency or other forms of malnutrition in older adults.

Potential confounding by income, education, household composition, chronic disease, geographical location and food security was not consistently addressed. Evidence

concerning ethnicity and religion was particularly limited, with relatively few studies explicitly analysing

these variables as determinants of dietary or nutritional outcomes.

Table 5: Factors Associated with Dietary Habits and Nutritional Status

Factor	Observed Influence	Evidence Interpretation	
Age	Increasing age associated with greater nutritional vulnerability	Consistent	
Sex	Differences in nutritional outcomes reported between males and females	Variable	
Income	Higher income generally associated with greater dietary diversity	Consistent	
Education	Higher education associated with improved nutrition knowledge and dietary choices	Moderate	
Household composition	Living alone associated with increased nutritional vulnerability	Moderate	
Food security	Food insecurity associated with reduced dietary diversity and undernutrition	Strong	
Location	Urban/rural differences in food availability and dietary patterns	Moderate	
Chronic disease	Associated with altered dietary intake and nutritional risk	Strong	
Ethnicity	Influenced food preferences and traditional dietary practices	Limited evidence	direct
Religion	Influenced fasting and food restrictions	Limited evidence	direct

Table 6: Summary of Quality and Risk-of-Bias Findings

Appraisal Domain	Overall Finding	Risk/Concern
Participant selection	Generally adequately described, but representativeness varied	Moderate
Exposure/context measurement	Ethnicity and religion inconsistently measured	Moderate–High
Dietary measurement	Established methods used, but recall bias possible	Moderate
Nutritional-status measurement	Mostly objective anthropometric measures	Low–Moderate
Confounding	Not consistently identified or controlled	Moderate–High
Statistical analysis	Generally appropriate for cross-sectional studies	Low–Moderate
Missing data	Reporting was inconsistent across studies	Moderate
Overall methodological quality	Generally moderate	Moderate

Discussion

Principal Findings

This systematic review synthesised available evidence on dietary habits and nutritional status among older adults in Nigeria, with particular attention to ethnic and religious differences and associated determinants. The findings indicate that dietary practices among older Nigerians remain strongly influenced by traditional food patterns, socioeconomic circumstances, food availability and cultural practices. Diets were generally centred on cereals, roots, tubers and legumes, while consumption of

some nutrient-dense foods, particularly fruits, vegetables and dairy products, was inconsistent.

The review also identified a double burden of malnutrition, with underweight and malnutrition risk occurring alongside overweight and obesity. Although many older adults had normal BMI, anthropometric and nutritional screening evidence indicated that apparently normal weight did not necessarily correspond to adequate nutritional status.

Evidence concerning ethnic differences suggested that food preferences, staple foods and preparation practices varied across Nigerian populations. However, few studies directly compared different ethnic groups using standardised methods. Evidence concerning religious

differences was even more limited. Although fasting and religious dietary restrictions may influence meal patterns and food selection, insufficient comparative evidence was available to establish clear differences in nutritional outcomes according to religious affiliation.

Several determinants were associated with dietary and nutritional outcomes, particularly age, income, education, household circumstances, food security, geographical location and chronic disease. Overall, the evidence supports the need for culturally responsive and nutritionally comprehensive interventions for older Nigerians.

Dietary Habits among Older Nigerians

The findings demonstrate that traditional Nigerian foods continue to constitute an important component of older adults' diets. Cereals, roots and tubers were commonly consumed because of their cultural acceptability, accessibility and relatively low cost. Legumes also contributed substantially to dietary protein intake in several populations. However, dependence on staple carbohydrate-rich foods may result in inadequate intake of certain micronutrients when diets are not sufficiently diversified.

Dietary diversity emerged as an important concern. Although older adults consumed foods from several food groups, the frequency and quantity of consumption varied considerably. Limited consumption of fruits, vegetables and dairy products was reported in some settings. This pattern is important because ageing increases the importance of nutrient-dense foods that provide adequate protein, vitamins and minerals without excessive energy intake.

The findings also indicate that dietary habits cannot be separated from socioeconomic circumstances. Food prices, household income and food availability influence the ability of older adults to maintain diverse diets. Consequently, interventions focused solely on nutrition education may have limited effectiveness where economic barriers restrict access to healthy foods.

Nutritional Status among Older Nigerians

The review demonstrated considerable variation in nutritional status. Underweight, overweight and obesity occurred simultaneously, indicating a double burden of malnutrition among older Nigerians. Some studies identified substantial proportions of older adults with low BMI, while others reported considerable levels of overweight and obesity.

Importantly, the findings demonstrate that BMI alone may not adequately identify nutritional vulnerability

among older adults. Older people can have a normal BMI while experiencing inadequate dietary intake, muscle loss or micronutrient deficiencies. Studies using additional indicators such as MUAC, calf circumference and nutritional screening identified individuals who may otherwise have been classified as nutritionally normal based on BMI alone.

The coexistence of undernutrition and excess weight has important implications for health planning. Undernutrition may increase susceptibility to infection, impaired functional capacity and poor recovery from illness, whereas overweight and obesity increase the risk of cardiovascular disease, diabetes and other non-communicable diseases. Nutrition programmes for older Nigerians should therefore address both forms of malnutrition simultaneously.

Ethnic Differences

The evidence suggests that ethnicity contributes to differences in food preferences and dietary practices, largely through traditional food cultures. Yoruba, Igbo, Edo and northern Nigerian communities have distinct staple foods, food preparation practices and culturally preferred meals. These differences can influence dietary diversity and nutrient intake.

However, the evidence base does not permit a strong conclusion that one ethnic group has consistently better or worse nutritional status than another. Most studies were conducted within individual ethnic or geographical populations rather than using comparative designs. Consequently, apparent differences may reflect socioeconomic conditions, urbanisation, food availability or environmental factors rather than ethnicity itself.

Future research should therefore employ comparative designs that examine multiple ethnic groups using standardised dietary and nutritional assessment methods.

Religious Differences

Religious differences were inadequately investigated in the available literature. Christianity and Islam are major religious contexts within Nigeria, and both may influence dietary practices through religious observances, communal meals, fasting and food-related restrictions. Nevertheless, few studies systematically examined the relationship between religious affiliation and nutritional status among older adults.

Fasting may be particularly important for older adults because prolonged periods of food restriction can potentially affect energy and nutrient intake. However, the nutritional consequences are likely to depend on the

duration and nature of fasting, the foods consumed outside fasting periods and the individual's health status. The limited evidence means that religion should currently be regarded primarily as an important contextual factor rather than an established independent determinant of nutritional status. More rigorous studies are required to examine how religious practices interact with age, chronic disease, food security and socioeconomic circumstances.

Determinants of Dietary and Nutritional Outcomes

The findings demonstrate that dietary and nutritional outcomes among older Nigerians are multifactorial. Income and food security were particularly important because economic constraints can limit access to diverse and nutrient-dense foods. Older adults with inadequate financial resources may depend heavily on inexpensive staples, thereby increasing the risk of inadequate micronutrient intake.

Age and chronic disease may also influence dietary intake. Physiological changes associated with ageing, reduced appetite, dental problems, impaired mobility and disease-related dietary restrictions can negatively affect nutritional status. Household composition may either protect against or increase nutritional vulnerability depending on the availability of family support.

Education may improve knowledge regarding healthy food choices, although knowledge alone may not overcome economic barriers. Geographic location similarly influences access to food, healthcare and social support.

These findings support a multidimensional approach to nutrition among older adults, combining dietary interventions with social protection, food-security measures, chronic-disease management and community support.

Comparison with Existing Evidence

The findings of this review are broadly consistent with international evidence demonstrating that older adults are vulnerable to both undernutrition and excess weight. The WHO has emphasised the importance of healthy diets and appropriate nutritional interventions throughout the life course, particularly as populations age (World Health Organization, 2019, 2021).

The observed double burden of malnutrition is also consistent with evidence from low- and middle-income countries, where nutritional deficiencies increasingly coexist with overweight and obesity. The prominence of traditional staples in Nigerian diets is consistent with the

country's broader food culture, although urbanisation and changing food environments are increasingly influencing dietary practices.

The review's finding that socioeconomic circumstances strongly influence nutritional outcomes is similarly consistent with the broader literature linking poverty, food insecurity and inadequate dietary diversity. However, the limited evidence concerning ethnic and religious comparisons represents an important difference from the level of attention given to these factors in some other culturally diverse populations.

Public Health and Policy Implications

The findings have several implications for public health practice and policy in Nigeria. First, nutrition programmes for older adults should move beyond a narrow focus on underweight and incorporate overweight, obesity, micronutrient inadequacy and malnutrition risk.

Second, interventions should be culturally appropriate. Nutrition education should incorporate locally available foods and traditional dietary practices while addressing unhealthy practices where necessary. Community health workers, religious organisations, family caregivers and community leaders could be incorporated into nutrition promotion programmes.

Third, nutritional screening should become an important component of routine healthcare for older adults. Use of BMI alongside MUAC, dietary assessment and validated nutritional screening tools could improve identification of nutritional risk.

Fourth, social protection and food-security interventions are essential. Nutrition education will have limited impact where older adults cannot afford or access healthy foods. Policies addressing poverty, food affordability and access to healthcare should therefore complement nutrition-specific interventions.

Strengths of the Review

A major strength of this review was the use of a systematic and transparent methodology guided by PRISMA 2020. The search strategy incorporated major international and African-focused databases, thereby improving the likelihood of identifying relevant Nigerian evidence. Explicit inclusion and exclusion criteria were established before study selection.

The review also incorporated evidence concerning dietary practices, nutritional status and contextual factors, rather than restricting the synthesis to BMI alone. The use of design-appropriate JBI critical appraisal

tools provided a structured approach to evaluating methodological quality.

Furthermore, the review specifically examined the under-researched dimensions of ethnicity and religion, thereby identifying important gaps in the Nigerian evidence base.

Limitations

Several limitations should be considered when interpreting the findings. First, substantial methodological and clinical heterogeneity existed among the included studies, particularly in relation to dietary assessment methods, nutritional indicators, participant characteristics and geographical settings. This limited the possibility of meaningful quantitative pooling and necessitated narrative synthesis.

Second, most available studies were cross-sectional, preventing conclusions about causal relationships between dietary practices, socioeconomic characteristics and nutritional outcomes.

Third, dietary information was frequently self-reported and may therefore have been affected by recall and reporting bias. Differences in dietary assessment instruments also limited direct comparison between studies.

Fourth, relatively few studies directly compared ethnic or religious groups. Consequently, conclusions concerning ethno-religious differences should be interpreted cautiously.

Finally, restricting the review to English-language publications may have resulted in the omission of potentially relevant studies published in other languages. These limitations highlight the need for well-designed longitudinal and comparative studies using standardised dietary, nutritional, ethnic and religious measures.

Conclusions

This systematic review demonstrates that dietary habits and nutritional status among older adults in Nigeria are characterised by substantial diversity and a double burden of malnutrition, with undernutrition and malnutrition risk occurring alongside overweight and obesity. Dietary patterns remain strongly influenced by traditional foods, socioeconomic circumstances, food availability and geographical location. Although staple foods such as cereals, roots, tubers and legumes are widely consumed, dietary diversity and consumption of some nutrient-dense foods, particularly fruits, vegetables and dairy products, remain inadequate in some populations.

The evidence further indicates that age, sex, income, education, household circumstances, food security, location and chronic disease are important factors associated with dietary and nutritional outcomes. Ethnicity appears to influence food preferences and traditional dietary practices; however, available evidence is insufficient to establish consistent nutritional differences between ethnic groups. Similarly, evidence concerning religious affiliation, fasting and religious dietary restrictions is limited, preventing definitive conclusions regarding their independent effects on nutritional status.

Recommendations

Based on the findings of this systematic review, the following recommendations are made:

1. Culturally appropriate nutrition interventions: Nutrition programmes for older adults should incorporate locally available foods, traditional dietary practices and culturally acceptable meal patterns while promoting adequate dietary diversity and nutrient-dense food consumption.
2. Routine nutritional screening: Nutritional assessment should be incorporated into routine healthcare for older adults. Healthcare providers should use BMI alongside appropriate measures such as MUAC, dietary assessment and validated nutritional-risk screening tools to identify both undernutrition and excess weight.
3. Integration into healthy-ageing programmes: Nutrition should be incorporated into national and subnational healthy-ageing programmes, with interventions addressing dietary quality, physical activity, chronic disease management and prevention of both forms of malnutrition.
4. Community nutrition education: Community-based nutrition education should involve older adults, caregivers, families, community health workers and relevant community leaders. Education should emphasise affordable, diverse and nutrient-rich diets using locally available foods.
5. Address food insecurity: Social protection and food-security initiatives should be strengthened for economically vulnerable older adults because inadequate income and food access can substantially limit dietary diversity.
6. Engagement with religious and cultural institutions: Religious organisations and community leaders should be engaged in nutrition programmes, particularly in communities where fasting or religious dietary

restrictions may affect meal patterns among older adults.

7. Further research: Future studies should directly compare dietary habits and nutritional status across underrepresented ethnic and religious groups using standardised assessment methods. Longitudinal and comparative studies are particularly needed to clarify whether observed ethno-religious differences persist after accounting for socioeconomic, geographical and health-related factors.

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.

Supplementary Data

Available

References

- Adebowale, S. A., Morakinyo, O. M., & Olatunji, O. O. (2016). Social epidemiology of HIV/AIDS and nutritional status among older adults in Nigeria. *Journal of Aging Research, 2016*, 1–9.
- Ilesanmi, O. S., Adebayo, A. M., & Akinyemi, O. O. (2018). Nutritional status and dietary practices among older adults in southwestern Nigeria. *Journal of Nutrition and Health Sciences, 5*(2), 1–8.
- Page, M. J., McKenzie, J. E., Bossuyt, P. M., Boutron, I., Hoffmann, T. C., Mulrow, C. D., Shamseer, L., Tetzlaff, J. M., Akl, E. A., Brennan, S. E., Chou, R., Glanville, J., Grimshaw, J. M., Hróbjartsson, A., Lalu, M. M., Li, T., Loder, E. W., Mayo-Wilson, E., McDonald, S., ... Moher, D. (2021). The PRISMA 2020 statement: An updated guideline for reporting systematic reviews. *BMJ, 372*, n71. <https://doi.org/10.1136/bmj.n71>
- World Health Organization. (2019). *Integrated care for older people (ICOPE): Guidance for person-centred assessment and pathways in primary care*. World Health Organization.
- World Health Organization. (2021). *Decade of healthy ageing: Baseline report*. World Health Organization.
- World Health Organization. (2022). *Ageing and health*. World Health Organization.