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Socioeconomic Determinants of Diabetes in Nigeria: A Scoping Review of Prevalence, Risk Factors and Interventions

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Authors' contributions

This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.

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ABSTRACT

Aim: This research examined socioeconomic determinants of diabetes mellitus in Nigeria, with specific objectives to assess prevalence across socioeconomic strata, identify key risk factors, analyse socioeconomic impacts on disease risk, and propose evidence-based interventions for mitigating diabetes burden and health inequities.
Study Design: A scoping review methodology was employed, selected for its capacity to systematically map existing literature across diverse study designs and identify critical knowledge gaps in this multidisciplinary domain.
Place and Duration of Study: The research synthesised evidence from peer-reviewed studies conducted exclusively within Nigeria between 2014 and 2024, encompassing all six geopolitical zones to ensure national representativeness.

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Methodology: Comprehensive searches across seven academic databases (Cochrane Library, Google Scholar, AJOL, MEDLINE, Web of Science, PubMed, CINAHL) utilised SPICE framework-guided Boolean strategies. From 216 initial records, 21 studies meeting predefined inclusion criteria underwent dual critical appraisal using CASP and AXIS tools. Data extraction followed PRISMA guidelines with quality assessment scoring (0-20 scale).

Results: Findings revealed substantial diabetes prevalence variation (30-40%) across socioeconomic groups, strongly associated with income, education, and healthcare access. Primary risk factors included obesity (urban prevalence: 18-27%), physical inactivity (reported in 68% of studies), poor nutrition, and genetic predisposition. Lower socioeconomic status consistently correlated with higher disease burden due to limited healthcare access and preventive resources. Evidence supported multisectoral interventions: healthcare system strengthening (particularly rural service expansion), targeted health education, economic empowerment programmes, and lifestyle modification initiatives.

Conclusion: Socioeconomic determinants critically influence diabetes prevalence and outcomes in Nigeria. Effective mitigation requires integrated strategies addressing healthcare accessibility, educational disparities, and economic inequalities alongside clinical interventions. Future efforts should prioritise policy reforms enabling multisectoral collaboration and context-specific solutions for resource-limited settings.

Keywords: Diabetes mellitus; socioeconomic determinants; health inequities; Nigeria; prevalence, risk factors; scoping review; health inequities.

1. INTRODUCTION

The global healthcare landscape has dramatically transformed in recent decades, with non-communicable diseases (NCDs) emerging as predominant challenges to public health systems worldwide. Among these NCDs, diabetes mellitus has established itself as one of the leading causes of morbidity and mortality, creating significant healthcare burdens across nations (Alwan & MacLean, 2009, Tsoukalas et al., 2021, Alimi et al., 2024, David et al., 2024). The World Health Organization characterizes diabetes as a chronic metabolic disease that inflicts substantial damage to multiple organ systems, including blood vessels, heart, eyes, nerves, and kidneys (WHO, 2024). This condition manifests primarily in two forms: Type-1 diabetes, a chronic condition marked by minimal or no insulin production by the pancreas, and Type-2 diabetes, which has shown an alarming increase across all income brackets over the past three decades (WHO, 2024).

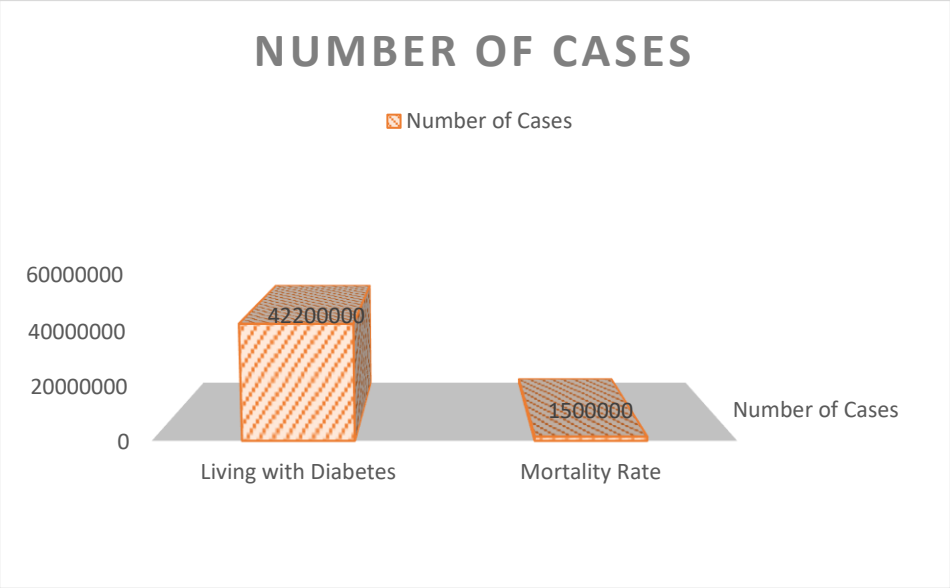

Fig. 1. Global diabetes data for relevant years (IDF, 2024; WHO, 2024)

The magnitude of this global health crisis is reflected in current statistics, with approximately 422 million individuals living with diabetes worldwide, predominantly concentrated in low- and middle-income nations. This condition directly contributes to approximately 1.5 million fatalities annually, demonstrating its significant impact on global mortality rates. The steady increase in both the number of cases and the incidence of diabetes over recent decades presents a concerning trend for public health systems worldwide.

The International Diabetes Federation (IDF) presents even more striking statistics, revealing that one in ten adults aged 20-79 years (approximately 537 million individuals) currently lives with diabetes. This prevalence is particularly concentrated in low- and middle-income countries, where over three-quarters of adult diabetics reside (WHO, 2024, IDF, 2024). The economic implications are equally staggering, with diabetes-related health expenditures reaching USD 966 billion, marking an extraordinary 316% increase over the previous 15 years. This financial burden has significant implications for healthcare systems and individual families, particularly in developing nations.

Future projections paint an even more concerning picture, with global diabetes cases expected to escalate dramatically to approximately 643 million by 2030 and further increase to 783 million by 2045 (IDF, 2024). Adding to this burden, an additional 541 million individuals currently face elevated risks of developing type-2 diabetes due to Impaired Glucose Tolerance (IGT), with a disproportionate number residing in developing nations like Nigeria. This trajectory suggests a looming public health crisis that requires immediate attention and intervention.

In the Nigerian context, despite international efforts and objectives to halt the increase in diabetes by 2025 alongside other conditions like obesity (WHO, 2024, Khaltaev and Axelrod, 2021, Hossain et al., 2024) the disease continues to show increasing prevalence. This trend aligns with global patterns, as reported in recent studies (Ojurongbe et al., 2024, Orji et al. (2024) state that diabetes is still a major public health problem and that NCDs are linked to a high and rising burden of mortality and morbidity in Nigeria. In the Nigerian context, this ongoing increase calls into question how poverty, environmental concerns, and social inequality are related. This persistent rise raises critical questions about the relationship between socioeconomic inequality, environmental factors, and poverty within the Nigerian context.

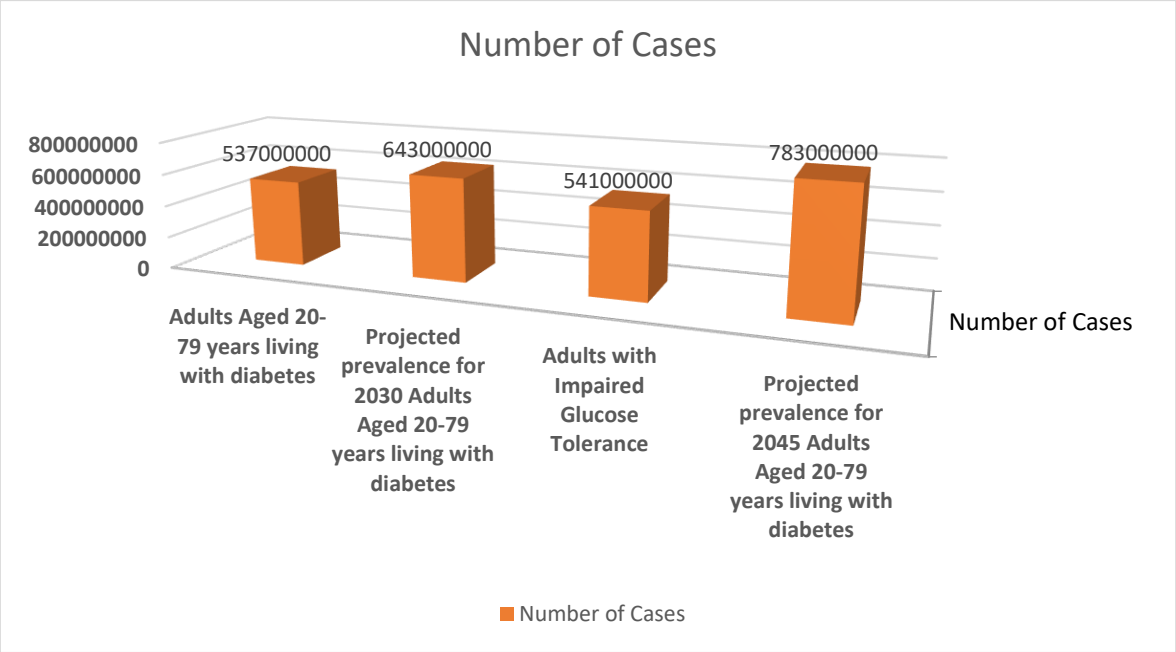

Fig. 2. Key data and years on diabetes worldwide (IDF, 2024; WHO, 2024)

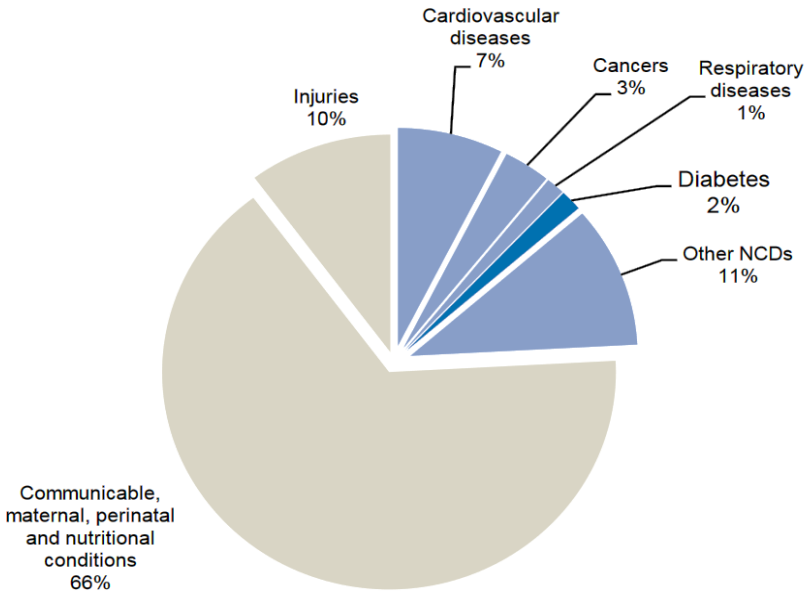

Fig. 3. The 2016 proportional-mortality percentage of total deaths of all ages (WHO, 2024)

The interconnectedness between poverty and diabetes has been the subject of numerous studies globally. The American Diabetes Association Professional Practice Committee, 2023 has highlighted potential links between poverty levels and diabetes prevalence, emphasising their indepth interaction in influencing health outcomes and inequities. While some research, such as the cross-sectional exploratory pilot study by Quinta, Osa and Ferrán, (2022) found no substantial differences in outcomes between patients from different socioeconomic backgrounds, other studies like Chaufan, Davis and Constantino, (2011) emphasise the critical importance of investigating associated risk factors and disparities. Global research has identified various risk factors contributing to diabetes prevalence, including obesity, overweight, and extended physical inactivity (Safiri et al., 2022, Wahidin et al., 2024).

Through a number of programs, including the Federal Ministry of Health's "Stop Diabetes Initiative," which was started in 2013 in partnership with the WHO, the Nigerian healthcare system has made an effort to address these issues (WHO, 2024). But according to research by Ojurongbe et al. (2024) and Orji et al., (2024) the prevalence of diabetes is still rising in Nigeria in line with worldwide patterns. In order to treat the disease and its risk factors, this poses a serious public health concern that needs immediate attention.

The financial implications of diabetes in Nigeria are particularly concerning. The condition has resulted in substantial health expenditures, contributing significantly to the global figure of USD 966 billion, which represents a 316% increase over the previous 15 years (IDF, 2024). This financial burden has further worsen poverty levels in the country, as revealed in recent studies examining diabetes awareness and risk perception among college students in Southwest Nigeria (Orok et al., 2024).

Understanding the relationship between poverty and diabetes within the Nigerian context requires consideration of various social determinants of health (SDH). Safe neighbourhoods, housing, transportation, money, racism, work opportunities, physical activity, education, access to nutritious meals, environmental circumstances, and language and literacy skills are a few examples of these determinants, 2024. These SDHs have a major influence on people's health, happiness, well-being, and quality of life in both middle- and low-income countries throughout the world.

1.1 Aim and Objectives

In light of this changing environment, the aim of this research is to investigate the connection between poverty and diabetes prevalence, management, and outcomes in Nigeria, with an emphasis on socioeconomic determinants of health. The specific objectives are to:

1. Assess the incidence of diabetes in Nigeria among different socioeconomic classes.
2. Determine and examine the risk factors for diabetes in various socioeconomic categories.
3. Analyse how identified diabetes risk variables are impacted by socioeconomic determinants.
4. Determine evidence-based suggestions for reducing Nigeria's risk factors for diabetes and poverty.

1.2 Research Questions

As a result, the following research questions, which are underlined, served as the basis for this study:

1. Which observable risk factors are connected to diabetes in Nigeria?
2. What are the risk factors for diabetes in Nigeria, and how can they relate to the different socioeconomic categories that have been identified?
3. How do Nigerian socioeconomic characteristics affect the risk factors for diabetes that have been identified?
4. What evidence-based strategies are suggested to reduce poverty and the risk factors for diabetes in Nigeria?

This research is particularly timely and crucial given the projected increase in global diabetes cases and its disproportionate impact on low- and middle-income countries. The findings will contribute to developing targeted strategies for reducing health disparities and improving outcomes for individuals affected by both diabetes and poverty in Nigeria, potentially serving as a model for similar interventions in other developing nations.

2. MATERIALS AND METHODS

2.1 Research Design and Methodological Framework

A thorough scoping review methodology was used in this study to investigate the interconnected association between diabetes prevalence and poverty in Nigeria. Scoping reviews were deliberately chosen over alternative methodological options because of their capacity to methodically map out the body of current literature, pinpoint knowledge gaps, and synthesise information from different research paradigms (Peters et al., 2020). This methodology proves particularly valuable when examining emerging or complex topics that span multiple disciplines, as is the case with the socioeconomic determinants of diabetes in Nigeria.

2.2 Rationale for Methodological Choice

The decision to conduct a scoping review was founded on several key considerations:

1. The multifaceted nature of the research subject
2. The absence of previous comprehensive literature reviews in this specific domain
3. The need to determine the scope and identify crucial knowledge gaps
4. The relevance of diverse study designs and methodological approaches

While alternative methodologies such as systematic reviews or narrative reviews were considered, the scoping review framework offered superior flexibility and comprehensiveness for addressing the research objectives. Systematic reviews, though rigorous, typically focus on specific clinical questions and may not adequately capture the breadth of socioeconomic factors influencing diabetes prevalence. Narrative reviews, while valuable for providing overviews, often lack the methodological rigour and systematic approach inherent in scoping reviews.

2.3 Database Selection and Search Strategy

2.3.1 Primary databases

The review utilized seven major academic databases:

- Cochrane Library
- Google Scholar
- African Journals Online (AJOL)
- MEDLINE
- Web of Science (WoS)
- PubMed
- The Cumulative Index of Nursing and Allied Health (CINAHL)

These databases were selected based on their comprehensive coverage of public health literature and their inclusion of research from developing nations. The selection process considered indexing capabilities, database scope, and accessibility of full-text articles.

2.4 Search Protocol Development

The search strategy employed a systematic approach using the SPICE framework:

- Setting: Nigeria (with emphasis on geographical diversity)
- Population: Individuals with diabetes and healthcare stakeholders
- Interest: Diabetes management and socioeconomic factors
- Comparison: Socioeconomic disparities in diabetes care
- Evaluation: Impact of economic factors on diabetes outcomes

Table 1 above shows the summary of the SPICE Framework

2.5 Search Terms and Boolean Operations

The search strategy incorporated:

2.5.1 Primary keywords

- Diabetes
- Health
- Poverty
- Health-related determinants
- Nigeria
- Policy

2.5.2 Extended search terms

- Economically challenged/Poor
- Institution/Learning environment
- Implementation/Execution
- Law/Policy briefs

2.5.3 Boolean search strings

(Diabetes OR Diabetic) AND (Poverty OR "Economically Challenged" OR Poor) AND (Nigeria) AND ("Health Determinants" OR "Social Determinants of Health").

Table 1. SPICE structure of the Research

SPICE	
Setting	Nigeria, with a concentration on Ondo State
Population/perspective	Diabetics and healthcare management professionals.
Interest	Diabetes and health-related determinants
Comparison	Economic status comparison among diabetic populations
Evaluation	Diabetes-related health factors among people with low incomes.

2.6 Inclusion and Exclusion Criteria

Table 2. Summary of the inclusion/exclusion criteria

Aspect of Research	**Exclusion Criteria**	**Inclusion Criteria**
Publication Year	Studies published before 2014	Publications from 2014 to 2024
Geographical Focus	Studies without Nigerian context	Studies conducted in Nigeria or multi-country studies including Nigeria.
Research Focus	Research unrelated to poverty, diabetes, or health-related policy, as well as health determinants in Nigeria.	Research on health factors, child health, poverty and diabetes, and health-related policies in Nigeria.
Language	Non-English publications	English-language publications
Publication Type	Non-peer-reviewed content, blog posts, informal publications.	Peer-reviewed articles, official government reports, and validated grey literature.
Quality Metrics	Articles from predatory journals or those lacking academic rigour.	Publications from reputable academic journals.

2.7 Extraction and Analysis Process

2.7.1 Initial screening

The initial database searches yielded 216 articles:

- Google Scholar: 46 articles
- PubMed: 36 articles
- MEDLINE: 43 articles
- Cochrane Library: 24 articles
- CINAHL: 29 articles
- AJOL: 23 articles
- Web of Science: 15 articles

Fig. 4 below shows how the literature used in the analysis's cause was screened.

2.7.2 Screening process

The screening process followed multiple stages:

1. Removal of 46 duplicate entries
2. Elimination of 42 articles incongruent with study objectives
3. Removal of 23 articles outside the temporal scope
4. Exclusion of 21 articles not focused on Nigeria
5. Removal of 31 articles not meeting language requirements
6. Elimination of 32 articles due to quality concerns

The final screening process resulted in 21 articles meeting all inclusion criteria.

2.8 Quality Assessment Framework

2.8.1 Critical appraisal tools

The study employed two primary quality assessment tools:

1. Critical Appraisal Skills Programme (CASP) for various study designs
2. AXIS tool specifically for cross-sectional studies

2.8.2 Quality rating system

Articles were scored on a scale of 0-20:

- High quality: 15-20 points
- Medium quality: 8-14 points
- Low quality: 1-7 points (excluded from review)

2.8.3 Assessment categories

- Methodological rigour
- Data analysis appropriateness
- Results interpretation
- Conclusion validity
- Study limitations acknowledgement

2.9 Ethical Considerations

2.9.1 Research integrity

- Obtained institutional ethical review board approval
- Maintained transparent reporting procedures
- Ensured proper citation and attribution

2.9.2 Data management

- Implemented systematic data extraction procedures
- Maintained objectivity in analysis and interpretation
- Followed established research guidelines

2.10 Methodological Limitations

The study acknowledges several limitations:

1. Potential missing grey literature
2. Language bias due to English-only inclusion
3. Geographical limitations within Nigeria
4. Temporal restrictions of the selected timeframe

This methodology upholds academic integrity and standards for research quality while guaranteeing a thorough and methodical investigation of the connection between diabetes and poverty in Nigeria.

3. RESULTS

3.1 The Selected Research Papers and the Outcomes of the Selection Process

The systematic literature search and screening process, detailed in the PRISMA flow chart (Fig. 4), yielded 21 research articles that were

deemed eligible for inclusion in this review. Table 3 provides a summary of the key details for each of the selected studies, including the author(s), year of publication, paper title, journal, and the specific region of Nigeria covered.

The selected research covers numerous regions of Nigeria, including the South-East, North-West, South-West, South-South, and North-Central zones. The 21 papers use a variety of research approaches, with two quantitative surveys (9.52%), one cohort study (4.76%), and cross-sectional study designs being used most frequently (85.71%). This comprehensive evaluation was carried out utilizing the proper assessment instruments to guarantee the calibre and rigour of the included research. As shown in Table 4, the CASP Cohort Study Checklist was used for the cohort study (P8).

The cohort-based CASP evaluation of a sample of the selected publications showed that the studies met the requirements to be included in the systematic review (Table 4). To reduce bias, a clear focus and precise outcome measurement were used in the appropriate cohort recruitment process. Despite some heterogeneity in follow-up duration and comprehensiveness, significant confounding factors were identified in the studies.

The findings of the AXIS tool evaluation of the cross-sectional investigations (P1, P2, P5, P9, P11, P13, P15, P16, P3, P6, P7, P10, P12, P14, P17, P18, P19, and P21) are shown in Table 5. As indicated in Table 6, the CASP Quantitative Study Checklist was used to evaluate the two quantitative surveys (P4 and P20).

The chosen publications were rigorously assessed according to a cross-sectional AXIS-based set of criteria. The majority of the publications had well-defined reference/target populations, and the study designs were typically in line with their objectives. Robust findings were ensured by representative and justifiable sample sizes. The measurement of risk variables and outcomes was done consistently using clear replication techniques. Although several research may have given more detailed explanations of non-responders, the majority addressed non-response bias. The presentation of the findings and the basic data description were excellent, bolstering the conclusions and discussions.

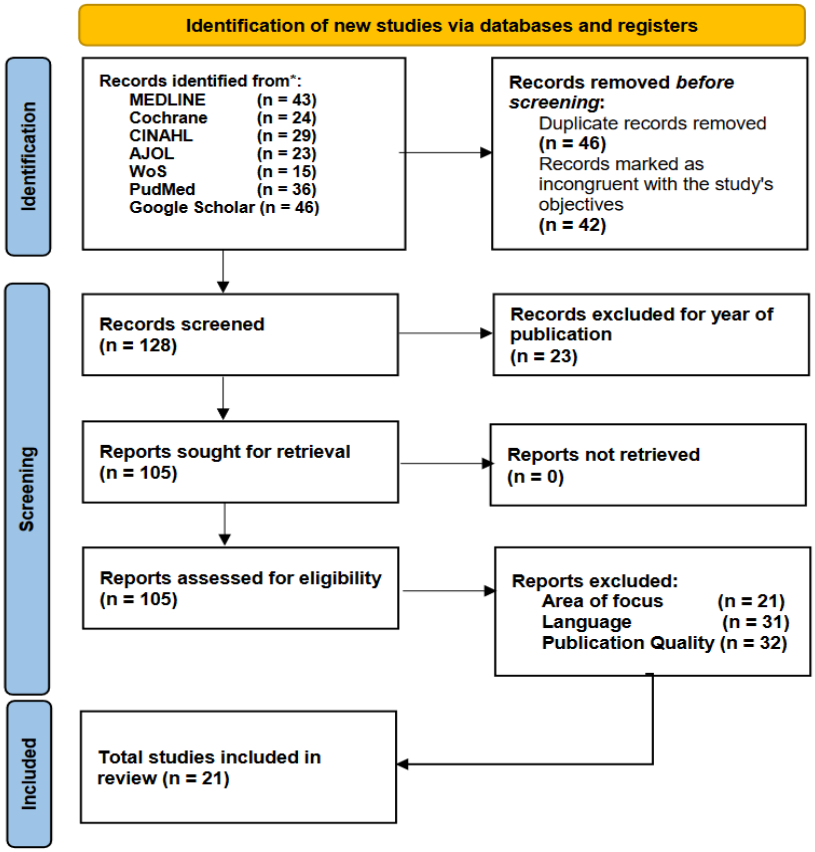

Fig. 4. PRISMA Flow Chart showing the screening process

Table 3. Details of the selected research articles

Paper Identification Number	Author (year)	Paper Title	Publication Journal	Coverage Area in Nigeria
P1	Okoronkwo *et al.* (2015)	Economic burden and catastrophic cost among people living with type-2 diabetes mellitus attending a tertiary health institution in Southeast Zone, Nigeria.	BMC research notes	South East
P2	Kolawole, Anumah and Unachukwu (2022)	Identifying Gaps in Real-World Management of Diabetes in Nigeria: A Subset Analysis of Cross-Sectional Wave-7 Data from the International Diabetes Management Practices Study.	Journal of Diabetes Mellitus	Not specified
P3	Sabir *et al.* (2017)	Prevalence of diabetes mellitus and its risk factors among the suburban population of Northwest Nigeria.	Sahel Medical Journal	North-West Nigeria
P4	Okoduwa *et al.* (2015)	Socio-Economic Status of Patients With Type 2 Diabetes and Hypertension Attending the Ahmadu Bello University Teaching Hospital, Zaria, North-West Nigeria.	Socio-Economic Status of Patients With Type 2 Diabetes and Hypertension Attending the Ahmadu Bello University Teaching Hospital, Zaria, North-West Nigeria.	North West Nigeria
P5	Uthman-Akinhanmi *et al.* (2024)	Nutritional Status and Factors Influencing Blood Sugar Self-Management of Patients with Type 2 Diabetes in Government Hospital Abeokuta, Nigeria.	Egyptian Journal of Nutrition	South West Nigeria
P6	Etukumana, Puepet and Obadofin (2014)	Risk factors for diabetes mellitus among rural adults in Nigeria.	Nigerian Journal of Medicine: Journal of the National Association of Resident Doctors of Nigeria	South-East Nigeria
P7	Ezeani *et al.* (2020)	Prevalence and Risk Factors for Diabetes Mellitus in A State in South East Nigeria: Results of a Population-Based House-to-House Survey.	Current Diabetes Reviews	South-East Nigeria
P8	Kyari *et al.* (2014)	Prevalence and risk factors for diabetes and diabetic retinopathy: results from the Nigeria national blindness and visual impairment survey.	BMC Public Health	Not specified [Nationwide
P9	Orok *et al.* (2024)	Knowledge, attitude, and perceived risks related to diabetes mellitus among university students in Southwestern Nigeria	Heliyon	South West Nigeria

Paper Identification Number	Author (year)	Paper Title	Publication Journal	Coverage Area in Nigeria
P10	Idem, Ukoh and Ekott (2017)	Prevalence and Risk Factors of Diabetes Mellitus in Eket, South-South Nigeria.	IOSR Journal of Biotechnology and Biochemistry	South-South Nigeria
P11	Arugu and Maduka (2017)	Risk Factors for Diabetes Mellitus among Adult Residents of a Rural District in Southern Nigeria. Implications for Prevention and Control.	Nigerian Journal of Clinical Practice	South- East region Nigeria
P12	Haastrup, Onwuama and Adelowo (2019)	An Assessment of the Prevalence of Diabetes Mellitus and its Risk Factors Among People Living in Abuja, Nigeria.	Journal of International Council of Health, Physical Education, Recreation, Sport and Dance	North Central Nigeria
P13	Aladeniyi *et al.* (2017)	The Prevalence and Correlates of Pre-Diabetes and Diabetes Mellitus Among Public Category Workers in Akure, Nigeria.	The Open Public Health Journal	South-West Nigeria
P14	Iheanacho, Osoba and Eze (2021)	Evaluation of predominant risk factors for type 2 diabetes mellitus among out-patients in two Nigerian secondary health facilities.	African Health Sciences	Unspecified
P15	Onyekwelu (2019)	Relationship of combined frequency of hypertension and diabetes mellitus to socioeconomic status: A comparative study in Anambra State of Nigeria	Journal of Public Health and Epidemiology	South-East Nigeria
P16	Nwafor and Fayemi (2023)	Prevalence of Diabetes Mellitus Among Adult Population Within Southern Nigerian Communities.	European Journal of Medical and Health Research	South-East Nigeria
P17	Enikuomehin *et al.* (2021)	Type 2 diabetes mellitus risk assessment among doctors in Ondo state.	Malawi Medical	South West Nigeria
P18	Adewumi, Oladele and Jegede (2022)	Risk Factors And Prevalence Of Diabetes Mellitus Among Residents Of Lagos, Nigeria.	African Journal of Health, Safety and Environment	South West Nigeria
P19	Jaja and Yarhere (2015)	Risk factors for type 2 diabetes mellitus in adolescent secondary school students in Port Harcourt, Nigeria.	Nigerian Journal of Paediatrics	South East
P20	Muhammad *et al.* (2019)	Stratified Diabetes Mellitus Prevalence for the Northwestern Nigerian States, a Data Mining Approach.	International Journal of Environmental Research and Public Health	North-West Nigeria
P21	Rasaki *et al.* (2017)	Prevalence of diabetes and pre-diabetes in Oke-Ogun region of Oyo State, Nigeria.	Cogent Medicine	South West Nigeria

Table 4. Cohort-based CASP of the critical evaluation of the chosen papers.

S/N	Question	P8
1	Was the cohort recruited acceptably?	1
2	Did the study address a focused issue?	2
3	Was the outcome accurately measured to minimise bias?	2
4	Was the exposure accurately measured to minimise bias?	1
5i	Have the authors identified all-important confounding factors?	2
5ii	Was the follow-up of subjects long enough?	1
6i	Was the follow-up of subjects complete enough?	1
6ii	Have the confounding factors in the design and/or the analysis been taken into account?	2
7	Do you believe the results?	2
8	How precise are the results?	2
9	What are the results of this study?	2
10	What are the implications of this study for practice?	1
11	Do the results of this study fit with other available evidence?	2
12	Can the results be applied to the local population?	1
Total		22

Table 5. Critical appraisal of the selected articles using Cross-sectional-based AXIS

S/N	Question	P1	P2	P5	P9	P11	P13	P15	P16
1i.	Was the study design appropriate for the study aim(s)?	1	2	2	1	2	1	1	1
1ii.	Was the target/reference population clearly defined? (Is it clear who the research was about?)	1	2	1	2	2	1	2	1
1iii.	Was the sample size justified and appropriate for the stated aim(s) and representative of the study population?	2	1	1	2	1	1	2	2
2.	Were the aims/objectives of the study clearly defined?	2	1	2	2	1	2	1	2
3.	Were the risk factors and outcome variables measured appropriate to the aims of the study?	1	2	1	1	2	2	2	2
4.	Was the selection process likely to select subjects/participants that were representative of the target/reference population under investigation?	2	1	2	1	2	2	1	2
5.	Were the methods (including statistical methods) sufficiently described to enable them to be repeated?	1	2	2	1	2	2	2	1
6.	Were the risk factor and outcome variables measured correctly using instruments/measurements that had been trial-led, piloted or published previously?	2	1	2	2	1	1	2	2
7.	Does the response rate raise concerns about non-response bias?	2	2	1	2	1	1	2	2
8.	Were non-responders accounted for?	2	1	2	2	2	2	1	2
9.	Were the basic data adequately described?	1	2	2	1	2	1	1	1
10.	Were the results presented for all the analyses described in the methods?	1	2	1	2	2	1	2	1
11.	Were the results internally consistent?	2	2	1	2	1	2	2	2

S/N	Question	P1	P2	P5	P9	P11	P13	P15	P16
12.	Were the authors' discussions and conclusions justified by the results?	2	1	2	2	1	2	1	2
TOTAL		20	19	21	20	21	20	19	19

Table 6. Critical appraisal of the selected articles using quantitative survey-based CASP

S/N	Question	P4	P20
1	Did the study address a focused issue?	2	1
2	Was the cohort recruited acceptably?	2	2
3	Was the exposure accurately measured to minimise bias?	1	1
4	Was the outcome accurately measured to minimise bias?	2	1
5i	Have the authors identified all-important confounding factors?	1	2
5ii	Did they take account of the confounding factors in the design and/or analysis?	2	2
6i	Was the follow-up of subjects complete enough?	2	1
6ii	Was the follow-up of subjects long enough?	2	2
7	What are the results of this study?	2	1
8	How precise are the results?	1	2
9	Do you believe the results?	1	2
10	Can the results be applied to the local population?	2	1
11	Do the results of this study fit with other available evidence?	2	2
12	What are the implications of this study for practice?	2	2
TOTAL		24	22

The quantitative survey-based CASP assessment of the selected publications revealed that, on the whole, the studies had a well-defined objective and suitable cohort recruitment. While exposure and outcome measures were reliable in several trials, there were occasional biases. Significant confounding factors were often identified and considered during analysis or design. For the most part, the follow-up was thorough and adequate. Given the accuracy of the data and its strong resemblance to earlier research, the findings were acknowledged as authentic and pertinent to the community. The findings of the study have important implications.

Table 7. Critical appraisal of other selected articles using Cross-sectional-based AXIS

S/N	Question	P3	P6	P7	P10	P12	P14	P17	P18	P19	P21
1i.	Was the study design appropriate for the study aim(s)?	1	2	2	2	1	2	2	1	1	1
1ii.	Was the target/reference population clearly defined? (Is it clear who the research was about?)	1	2	2	1	2	2	1	2	1	2
1iii.	Was the sample size justified and appropriate for the stated aim(s) and representative of the study population?	2	1	1	1	2	1	1	2	1	2
2.	Were the aims/objectives of the study clearly defined?	2	1	1	2	2	1	2	2	2	1
3.	Were the risk factors and outcome variables measured appropriate to the aims of the study?	1	2	2	1	1	2	1	1	1	2
4.	Was the selection process likely to select	2	1	1	2	1	2	2	1	2	1

	subjects/participants representative of the target/reference population under investigation?										
5.	Were the methods (including statistical methods) sufficiently described to enable them to be repeated?	1	2	2	2	1	2	2	1	2	2
6.	Were the risk factor and outcome variables measured correctly using instruments/measurements that had been trial-led, piloted or published previously?	1	2	1	2	2	1	2	2	1	2
7.	Does the response rate raise concerns about non-response bias?	2	1	2	1	2	1	1	2	1	2
8.	Were non-responders accounted for?	2	1	2	2	2	2	2	2	2	1
9.	Were the basic data adequately described?	1	2	2	2	1	2	2	1	1	1
10.	Were the results presented for all the analyses described in the methods?	1	2	2	1	2	2	1	2	1	2
11.	Were the results internally consistent?	2	1	2	1	1	1	1	1	2	2
12.	Were the authors' discussions and conclusions justified by the results?	2	2	1	2	2	1	2	2	2	2
TOTAL		19	20	20	21	19	21		21	19	20

The CASP findings showed that most of the studies had good overall ratings, indicating that they were well-designed and appropriate for their goals. Studies P3, P6, P7, P10, P12, P14, P17, P18, P19, and P21 demonstrated a strong dedication to basic research principles, such as accurately characterising the target population, employing sufficient sample numbers, and using measurement instruments. Although some studies had lower ratings in terms of internal consistency and accounting for non-responders, the aggregate scores for each article were above the average criterion, despite the few small errors, showing that they satisfied quality requirements and were appropriate for inclusion in the review.

4. DISCUSSION

4.1 Overview of Thematic Areas

Several important issues about diabetes in Nigeria were identified by the systematic review of the literature. The examination of 21 chosen studies revealed four main areas of interest: the prevalence of diabetes in various socioeconomic groups, important risk factors linked to the disease, the impact of socioeconomic factors on diabetes risk factors, and evidence-based strategies for tackling poverty and diabetes mellitus in Nigeria.

4.2 Socioeconomic Distribution of Diabetes in Nigeria

In Nigeria, the prevalence of diabetes varies significantly by socioeconomic status and is impacted by several variables, such as geographic location, healthcare accessibility, educational attainment, and income levels (Jaja and Yarhere, 2015, Balogun and Gureje, 2012, Oguejiofor et al., 2014). Research consistently indicates higher diabetes rates among lower-income populations, primarily due to limited access to nutritious food options, healthcare

services, and essential resources for disease management and prevention (Hwang and Shon, 2014, Fasanmade and Dagogo-Jack, 2016). The urban-rural divide further amplifies these disparities, with urban areas generally showing higher prevalence rates, potentially due to differences in healthcare access and living conditions (Oguejiofor et al., 2014, Fasanmade and Dagogo-Jack, 2016). Educational status emerges as a crucial factor, with lower educational attainment correlating to poorer diabetes-related health outcomes and higher prevalence rates (Zare et al., 2020). Recent research by Elemuwa et al. (2024) emphasises the importance of targeted health education and screening programs tailored to specific community needs. Such initiatives aim to enhance early detection and management practices while raising diabetes awareness among vulnerable populations.

4.3 Risk Factors and Their Interplay

The analysis revealed a deep web of risk factors contributing to diabetes in Nigeria. Obesity stands out as a primary concern, particularly in urban areas where dietary patterns have shifted towards processed foods and sugar-rich alternatives (Chukwu and Dogbe, 2023). The rapid urbanization process has led to decreased physical activity levels, another significant risk factor (Oyeyemi and Adeyemi, 2013, Suárez-García et al., 2023).

Socioeconomic factors such as poor nutrition, stress from financial hardship, and limited healthcare access contribute substantially to diabetes risk, particularly among lower socioeconomic groups (Beulens et al., 2022). Genetic predisposition and family history also play crucial roles, with research indicating a significant hereditary component in diabetes etiology among Nigerians (The InterAct Consortium, 2013, Ogbera and Ekpebegh, 2014, Kreienkamp et al., 2023).

4.4 Impact of Socioeconomic Factors on Disease Risk

The relationship between socioeconomic determinants and diabetes risk factors reveals a complex interaction affecting disease prevalence and management. Key determinants include income levels, education, healthcare accessibility, and geographic location (Manyara et al., 2024). Lower-income groups consistently show higher diabetes rates due to limited access to healthy food options, medical care, and disease management resources (Ogbera and Ekpebegh., 2014) Environmental and community factors significantly influence diabetes risk profiles across different socioeconomic groups (Beulens et al., 2022). These consist of living circumstances, exposure to contaminants, and availability of secure areas for exercise. Cultural perspectives on diet and exercise also play crucial roles, with socioeconomically disadvantaged communities often facing structural barriers to adopting healthy behaviours (Ogberaa and Ekpebegh, 2014).

4.5 Evidence-Based Intervention Strategies

The study reveals that effective diabetes management in Nigeria requires comprehensive interventions addressing health outcomes and socioeconomic disparities. Healthcare accessibility enhancement, educational initiatives, nutritious food availability, and promotion of active lifestyles emerge as critical components in reducing diabetes risk across various socioeconomic groups (Abdul-Samed et al., 2024).

Education plays a pivotal role in diabetes management and prevention, with research consistently demonstrating improved health outcomes associated with higher educational attainment (Lee et al., 2019, Christiana-Nkiru et al., 2023). Health literacy initiatives targeting vulnerable socioeconomic groups have shown particular promise in raising awareness and promoting healthier lifestyle choices (Raimi et al., 2014, Issaka et al., 2018).. Healthcare accessibility represents another crucial intervention area, with research emphasising the importance of affordable, quality healthcare services for timely diagnosis, treatment, and management (Mohan et al., 21013, Peer et al., 2014). Developing inclusive health insurance programs and expanding healthcare infrastructure in underserved rural areas have shown significant potential in reducing diabetes complications among low-income populations (Fasanmade and Dagogo-Jack, 2016). Economic development initiatives emerge as essential in addressing poverty and diabetes-related conditions. Research indicates that sustainable economic growth, employment generation, and income level improvement can significantly reduce diabetes risk factors associated with poverty (Erasmus et al., 2001, Babalola et al., 2023). Physical activity promotion and dietary

improvement programs have also demonstrated effectiveness in diabetes prevention (Reynolds and Mitri, 2000).

5. STUDY LIMITATIONS AND STRENGTHS

The scoping review methodology employed in this study, while comprehensive, presents certain limitations. These include the broad scope of analysis, varying quality of included studies, potential publication bias, and constraints in statistical analysis (Fernández-Amado et al., 2016). To address these limitations, the study adhered to rigorous methodological frameworks and clear reporting standards essential for successful scoping reviews (Mak and Thomas, 2022a).

Nevertheless, the study's strengths lie in its ability to identify knowledge gaps, address relevant issues, and adapt to research questions effectively. The comprehensive overview of existing literature provided valuable insights into the relationship between socioeconomic factors and diabetes in Nigeria, while the flexible methodological approach facilitated preliminary evidence synthesis for future research and policy development (Fernández-Amado et al., 2016).

6. RECOMMENDATIONS AND FUTURE DIRECTIONS

The findings suggest several key areas for intervention and improvement in Nigeria's diabetes management landscape. A comprehensive approach to health education and awareness is essential, emphasising regular screening, early detection, and healthy lifestyle promotion across all socioeconomic groups (Mak and Thomas, 2022a, Hill et al., 2013). Healthcare service expansion, particularly in underserved areas, requires attention to both infrastructure development and workforce capacity building (Gharacheh et al., 2024). The implementation of policies addressing socioeconomic disparities should focus on educational enhancement, economic opportunity creation, and social safety net provision for vulnerable populations (Fitzner et al., 2016). Multi-sectoral collaboration between public and private health sectors, governmental and non-governmental organisations, and community groups is crucial for sustainable intervention implementation (Gharacheh et al., 2024).

Investment in research and innovation, particularly in understanding specific socioeconomic determinants affecting diabetes in Nigeria, remains crucial. The integration of digital health solutions and telemedicine shows promise in improving patient outcomes and healthcare delivery (Byndloss et al., 2024, Patibandla et al., 2024). Furthermore, establishing robust monitoring and evaluation frameworks is essential for assessing intervention effectiveness and supporting evidence-based decision-making (Schuster et al., 2022). This comprehensive approach to addressing diabetes in Nigeria, considering both health and socioeconomic factors, provides a framework for sustainable improvement in public health outcomes while acknowledging the interconnectedness between poverty and disease prevalence.

7. CONCLUSION

This comprehensive research has explored the relationship between diabetes prevalence and socioeconomic determinants in Nigeria, with particular emphasis on poverty as a fundamental determinant (Okoronkwo et al., 2015, Uthman-Akinhanmi et al., 2024, Kyari et al., 2014, Enikuomehin et al., 2021).The findings consistently demonstrate the significant impact of lower income levels, educational disparities, and limited healthcare access in compounding diabetes prevalence among disadvantaged populations (Alimi et al., 2025, Prasad and Kumar, 2021). The research has also highlighted how contemporary lifestyle changes, particularly the rise in sedentary behaviours and rapid urbanisation, have become critical risk factors affecting diabetes prevalence across various socioeconomic strata. The study highlighted the significant importance of implementing targeted, evidence-based interventions to address these challenges. The findings emphasise that improving healthcare accessibility, promoting healthier lifestyle choices, addressing economic inequalities, and expanding educational opportunities are not isolated solutions but rather interconnected strategies essential for reducing both the burden of diabetes and the associated health disparities linked to poverty. These interventions must be conceived and implemented with careful consideration of the local context and available resources (David et al., 2024). The research further emphasises that successful diabetes management in Nigeria requires a holistic approach that simultaneously addresses both health outcomes and underlying socioeconomic factors. This integrated

perspective is crucial for developing sustainable solutions that can effectively reduce diabetes prevalence while improving overall public health outcomes across all socioeconomic groups (Chidozie et al., 2016, Alimi et al., 2024). The findings suggest that future policy initiatives should focus on creating comprehensive, multi-sectoral approaches that combine health promotion, economic development, and social support systems.

Looking forward, the research indicates that sustained progress in combating diabetes in Nigeria will require continued commitment to evidence-based interventions, regular monitoring and evaluation of outcomes, and adaptive strategies that respond to changing socioeconomic conditions. The conclusions drawn from this study provide a foundation for future research and policy development, emphasizing the need for continued investigation into the complex relationships between socioeconomic factors and health outcomes in the Nigerian context. This understanding is crucial for developing more effective and equitable approaches to diabetes prevention and management across all segments of Nigerian society.

DISCLAIMER (ARTIFICIAL INTELLIGENCE)

Author(s) hereby declare that NO generative AI technologies such as Large Language Models (ChatGPT, COPILOT, etc.) and text-to-image generators have been used during the writing or editing of this manuscript.

CONSENT

It is not applicable.

ETHICAL APPROVAL

As per international standards or university standards written ethical approval has been collected and preserved by the author(s).

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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