

Does National Health Insurance Reduce the Financial Burden of Type 2 Diabetes Care? Evidence from Enugu State, Nigeria

Dr. Walter Chiedozie Onah

Institute for Development Studies, University of Nigeria, Enugu Campus

Received: 10.02.2026 | Accepted: 06.03.2026 | Published: 01.04.2026

*Corresponding Author: Dr. Walter Chiedozie Onah

DOI: [10.5281/zenodo.19357607](https://doi.org/10.5281/zenodo.19357607)

Abstract

Original Research Article

Type 2 Diabetes Mellitus (T2DM) poses a significant and growing public health challenge in Nigeria, largely due to its chronic nature and the high cost of long-term management. In a healthcare system heavily reliant on out-of-pocket payments, many patients face substantial financial hardship, which can compromise treatment adherence and health outcomes. This study examined whether the National Health Insurance Scheme (NHIS) reduces the financial burden of T2DM care among patients in Enugu State, Nigeria. A quantitative cross-sectional comparative design was adopted, involving 400 respondents (200 NHIS-insured and 200 uninsured) selected through a multistage sampling technique. Data were collected using a structured questionnaire covering out-of-pocket expenditure, affordability of care, and coping mechanisms. Descriptive statistics and inferential analyses, including independent samples t-tests and chi-square tests, were conducted at a 0.05 level of significance. Findings revealed that uninsured patients incurred significantly higher mean monthly out-of-pocket expenditure (₦40,367) compared to insured patients (₦22,419) ($p < 0.001$). Uninsured respondents were more likely to pay fully for medications (85.0%), borrow money (58.0%), skip medication (61.0%), and delay clinic visits (60.0%) due to financial constraints. In contrast, insured patients reported significantly higher affordability of medications and clinic services, lower financial stress, and reduced household economic impact ($p < 0.001$). The study concludes that NHIS significantly reduces the financial burden of T2DM care and enhances access to essential health services. Expanding and strengthening health insurance coverage is therefore critical for improving financial risk protection and advancing universal health coverage in Nigeria.

Keywords: Type 2 Diabetes Mellitus, National Health Insurance Scheme (NHIS), financial burden, out-of-pocket expenditure, healthcare affordability, Nigeria, Enugu State, universal health coverage.

Copyright © 2026 The Author(s). This is an open-access article distributed under the terms of the Creative Commons Attribution-NonCommercial 4.0 International License (CC BY-NC 4.0).

Introduction

Type 2 diabetes mellitus (T2DM) is a chronic non-communicable disease that has become a major public health challenge globally and in low- and middle-income countries such as Nigeria. The disease requires lifelong management involving continuous use of medications, routine clinic visits,

laboratory investigations, and lifestyle modification. These requirements impose substantial and sustained financial demands on affected individuals and their households (World Health Organization [WHO], 2023).

In Nigeria, healthcare financing is largely dependent on out-of-pocket expenditure, which exposes



Citation: Onah, W. C. (2026). Does national health insurance reduce the financial burden of type 2 diabetes care? Evidence from Enugu State, Nigeria. *GAS Journal of Economics and Business Management (GASJEBM)*, 3(4), 1-8.

patients to catastrophic health spending and financial hardship (World Bank, 2022). Chronic illnesses such as type 2 diabetes are particularly burdensome because treatment costs accumulate over time, making affordability a key determinant of access to care and treatment adherence (Atun et al., 2017).

The National Health Insurance Scheme (NHIS) was introduced in Nigeria to improve access to healthcare services and provide financial risk protection. By subsidizing the cost of healthcare services, NHIS is expected to reduce out-of-pocket expenditure and alleviate financial barriers, particularly for patients requiring long-term care such as those with T2DM (Federal Ministry of Health [FMoH], 2019). However, concerns persist regarding limited coverage, benefit package adequacy, and hidden costs of care.

In Enugu State, the prevalence of T2DM is increasing alongside rising healthcare costs. Despite the existence of NHIS, many patients continue to report difficulties in affording diabetes medications and clinic visits. Empirical evidence assessing whether NHIS effectively reduces the financial burden of diabetes care in this context remains limited.

Statement of the Problem

Type 2 diabetes mellitus (T2DM) has emerged as a significant public health challenge in Enugu State, Nigeria, disproportionately affecting vulnerable populations due to factors like urbanization, lifestyle changes, and genetic predisposition (Ezeala-Adikaibe, 2018). Uncontrolled T2DM leads to a cascade of devastating complications, including cardiovascular disease, kidney failure, blindness, and amputations (Gagliardino et al., 2019). These complications not only compromise individual well-being but also impose substantial financial, socioeconomic, and personal burdens on both patients and the healthcare system (Iregbu et al., 2023).

Effective T2DM management requires a comprehensive, multi-pronged approach encompassing early diagnosis, lifestyle modifications, medication adherence, and regular

monitoring (Onyenekwe et al., 2019). However, numerous barriers hinder optimal management in Enugu State. These barriers include limited access to healthcare facilities, inadequate diabetes education, financial constraints, and sociocultural influences on health behaviors (Iregbu et al., 2023). The financial burden of T2DM treatment, often exceeding the national minimum wage, further exacerbates these challenges, particularly for those with low socioeconomic status (Okoronkwo et al., 2016).

Health insurance, particularly through the National Health Insurance Scheme (NHIS), offers a potential solution to mitigate these barriers. By providing financial protection, health insurance can improve access to essential diabetes care services, including medications, consultations, and diagnostic tests. However, despite the establishment of the National Health Insurance Scheme to reduce financial hardship associated with healthcare utilization, many patients with type 2 diabetes mellitus in Nigeria continue to face significant financial challenges. The cost of diabetes medications, clinic visits, and laboratory tests often results in delayed care, poor adherence, and increased risk of complications.

In Enugu State, both insured and uninsured patients appear to experience financial barriers to diabetes care. However, there is insufficient empirical evidence to determine whether NHIS coverage significantly reduces the financial burden compared to being uninsured. This gap limits effective policy evaluation and health financing reforms.

Objectives of the Study

Broad Objective

The main objective of study is to determine whether national health insurance reduces the financial burden of type 2 diabetes care among patients in Enugu State, Nigeria.

Specific Objectives

To assess the level of financial burden associated with type 2 diabetes care among NHIS-insured and uninsured patients in Enugu State.

To compare out-of-pocket expenditure on diabetes medications and clinic visits between NHIS-insured and uninsured patients.

To examine the association between national health insurance status and affordability of diabetes care services.

1.4 Research Questions

1. What is the level of financial burden associated with type 2 diabetes care among NHIS-insured and uninsured patients in Enugu State?

Is there a significant difference in out-of-pocket expenditure on diabetes care between NHIS-insured and uninsured patients?

Does national health insurance status influence patients’ ability to afford diabetes medications and clinic visits?

Methodology:

This study adopted a quantitative cross-sectional comparative research design. The design was considered appropriate because it allows for the comparison of financial burden of type 2 diabetes care between NHIS-insured and uninsured patients at a single point in time.

The study was conducted in Enugu State, Nigeria. Enugu State is located in the South-East geopolitical zone of Nigeria and has several public and private healthcare facilities that provide diabetes care services. The study population comprised adult patients diagnosed with type 2 diabetes mellitus who were receiving care in selected health facilities in Enugu State.

A total sample size of 400 respondents was used for this study, comprising 200 NHIS-insured and 200 uninsured patients. This sample size was considered adequate to detect statistically significant differences between groups. A multistage sampling technique was employed. Health facilities were first selected using purposive sampling, followed by systematic random sampling of eligible patients. Data were collected using a structured interviewer-administered questionnaire consisting of sections on socio-demographic characteristics, insurance status, out-of-pocket expenditure, and affordability of diabetes care. Content and face validity were ensured through expert review. Reliability was assessed using Cronbach’s alpha coefficient, with a minimum acceptable value of 0.70. Data were collected by trained research assistants after obtaining informed consent from respondents. Data were analyzed using the Statistical Package for Social Sciences (SPSS) version 26. Descriptive statistics were used to summarize data, while inferential statistics such as independent t-test, chi-square test, and logistic regression were used to test hypotheses at a 0.05 level of significance.

Results

Research Question 1: What is the level of financial burden associated with type 2 diabetes care among NHIS-insured and uninsured patients in Enugu State?

Table 1: Financial Burden of Diabetes Care

Variable	Uninsured	Insured
Mean Monthly Cost (₦)	₦40,367	₦22,419
Pay fully for medication (%)	85.0%	26.5%
Borrow money (%)	58.0%	28.0%
Skip medication (%)	61.0%	24.0%

Delay clinic visits (%)	60.0%	26.5%
-------------------------	-------	-------

Source: Researchers field work 2025

From table 1, above, the descriptive statistics shows the Mean Monthly Cost (Uninsured): ₦40367.06, Mean Monthly Cost (Insured): ₦22418.68. This shows that the insured respondents spend less than uninsured. Thus, Uninsured patients spend almost double the amount spent by insured patients on monthly diabetes care. This indicates a substantially higher financial burden among uninsured respondents.

There is no association between insurance status and paying fully for medication. Chi-square test: $p < 0.001$. Conclusion: Uninsured patients are significantly more likely to pay fully out-of-pocket.

Research Question 2: Is there a significant difference in out-of-pocket expenditure on diabetes care between NHIS-insured and uninsured patients?

Test of Hypotheses

Hypothesis 1: There is no significant difference in mean monthly out-of-pocket expenditure.

Independent Samples t-test

- $p\text{-value} = 3.64 \times 10^{-146}$
- $p < 0.001$

t-test result: $p\text{-value} = 0.00000$

Decision: Since $p < 0.05$, the null hypothesis is rejected. There is a statistically significant difference in out-of-pocket expenditure between insured and uninsured patients. Uninsured patients incur significantly higher financial burden.

Research Question 3: Does national health insurance status influence patients’ ability to afford diabetes medications and routine clinic visits?

Table 2: Medication & Clinic Affordability (Likert Scale)

Variable	Uninsured Mean	Insured Mean
Medication affordability	2.08	3.91
Clinic affordability	2.01	4.09
Lab cost stress	4.02	2.00
Household financial impact	4.03	1.92
Insurance reduces stress	0.00*	3.94

Source: Researchers fieldwork (2025)

All independent t-tests: $p < 0.001$.

Interpretation: Insured respondents report higher affordability, lower financial stress, and lower negative household impact.

Hypothesis 2

Ho: National health insurance status has no significant association with out-of-pocket expenditure on diabetes medications.

Chi-Square Test (Insurance × Paying Fully for Medication)

- p-value = 4.86×10^{-35}
- $p < 0.001$

Given the result, the null hypothesis is rejected. In conclusion, there is a significant association between insurance status and paying fully out-of-pocket for medications. Uninsured patients are significantly more likely to pay fully for diabetes medications.

Independent Samples t-test (Clinic Affordability Score)

- p-value = 1.13×10^{-124}
- $p < 0.001$

From the result, the Chi-square test: $p < 0.001$, the null hypothesis is rejected. Thus Insurance status significantly influences clinic affordability. Insured patients report significantly higher ability to afford routine clinic visits.

Hypothesis 3

Ho: National health insurance status has no significant association with affordability of routine diabetes clinic visits.

Table 3 Coping Mechanisms

Variable	Uninsured	Insured
Household expenses affected (%)	67.0%	32.5%
Mean coping score	2.59	3.05

Source: Researchers field work (2025)

Chi-square (Household effect): $p < 0.001$.

Table 3, shows the coping mechanism, how household expenses affects the insured and uninsured. The insured has a mean coping score of 3.05 with the household expenses been affected by 32.5% while the uninsured has a mean coping score of 2.59 with the household expenses affected by 67.0%. This shows that diabetes care significantly affects household expenses among uninsured patients.

Overall Research Question

Does NHIS reduce financial burden of T2DM care?
Yes.

Insured patients spend significantly less, borrow less, skip medication less, delay clinic visits less,

experience lower financial stress, report better affordability, and their household finances are less affected. All results are statistically significant at $p < 0.05$.

Summary: Comparative analysis of 400 respondents revealed that uninsured patients incurred significantly higher out-of-pocket expenditure (M = ₦40,367) compared to insured patients (M = ₦22,419), $p < .001$. Significant associations were observed between insurance status and borrowing money, medication skipping, delayed clinic visits, and household financial strain ($p < .001$). Insured respondents reported significantly higher affordability scores and lower financial stress levels. These findings provide strong empirical support for the protective role of NHIS against catastrophic

health expenditure among adults with Type 2 Diabetes in Enugu State.

Conclusion:

This study provides robust empirical evidence on the role of the National Health Insurance Scheme (NHIS) in mitigating the financial burden of Type 2 Diabetes Mellitus (T2DM) care among adults in Enugu State, Nigeria. Comparative analysis of 400 respondents (200 NHIS-insured and 200 uninsured) revealed marked disparities in out-of-pocket expenditure, medication affordability, clinic attendance, and financial coping mechanisms. Uninsured patients incurred significantly higher monthly healthcare costs and were more likely to pay fully for medications, borrow money, skip doses, and delay clinic visits due to financial constraints. In contrast, insured respondents reported significantly greater affordability of medications and routine clinic services, alongside lower levels of financial stress and reduced household economic disruption. All observed differences were statistically significant ($p < 0.05$).

These findings underscore the critical role of health insurance as a financial risk protection mechanism in chronic disease management. By substantially reducing out-of-pocket payments and improving affordability of essential diabetes services, NHIS enrollment appears to buffer households against catastrophic health expenditure. The evidence generated from this study strengthens the case for accelerated expansion and strengthening of health insurance coverage as a strategic pathway toward achieving equitable access to care and advancing universal health coverage in Nigeria.

Recommendations:

Based on the findings of this study, the following recommendations are proposed:

1. Expansion of NHIS Coverage

Government should intensify efforts to expand NHIS enrollment, particularly among informal sector

workers, low-income earners, and rural populations who are most vulnerable to catastrophic health expenditure.

2. Strengthening Benefit Packages

NHIS should ensure comprehensive coverage of diabetes medications, laboratory investigations, and routine clinic services to minimize out-of-pocket payments.

3. Subsidization of Essential Diabetes Care

Policy-makers should introduce additional subsidies for essential diabetes medications and laboratory tests to further reduce financial hardship among patients.

4. Public Awareness and Education

There is a need for sustained public awareness campaigns to educate citizens about the benefits of enrolling in NHIS and how it protects households from financial distress.

5. Policy Monitoring and Accountability

Strengthened monitoring and evaluation mechanisms should be implemented to ensure effective delivery of NHIS benefits and prevent service gaps.

6. Integration into Universal Health Coverage (UHC) Strategy

NHIS expansion should be positioned within Nigeria's broader Universal Health Coverage framework to ensure long-term financial risk protection for chronic disease patients.

7. Further Research

Future studies should adopt longitudinal designs to examine long-term clinical and economic outcomes of NHIS enrollment among diabetes patients across different states in Nigeria.

REFERENCES

- Alawode, G. O., & Adewole, D. A. (2021). Assessment of the design and implementation challenges of the National Health Insurance Scheme in Nigeria: a qualitative study among sub-national level actors, healthcare and insurance providers. *BMC Public Health*, 21(1), 1-12. <https://doi.org/10.1186/s12889-020-10133-5>
- Atun, R., Davies, J. I., Gale, E. A. M., Bärnighausen, T., Beran, D., Kengne, A. P., Levitt, N. S., Mangugu, F. W., Nyirenda, M. J., Ogle, G. D., Ramaiya, K., Sewankambo, N., Sobngwi, E., Tesfaye, S., & Wild, S. H. (2017). Diabetes in sub-Saharan Africa: From clinical care to health policy. *The Lancet Diabetes & Endocrinology*, 5(8), 622–667.
- Awoyemi, B. O., Makanju, A. A., Mpapalika, J., & Ekpeyo, R. S. (2023). A time series analysis of expenditure and health outcomes in Nigeria. *Journal of public health in Africa*, 14(7), 1409. <https://doi.org/10.4081/jphia.2023.1409>
- Edeh, A. J., Eze, B. U., Ohayi, S. R., Anekpo, C. C., Okoloagu, N. N., Aliozo, C. C., & Soronnadi, C. N. (2022). Prevalence of Diabetes among Adults in Agbani South East, Nigeria: A Population Based Study. *European Journal of Clinical Medicine*, 3(4), 17-20. <https://www.ej-clinmed.org/index.php/clinmed/article/view/222>
- Egbaiyeyomi, T.A. (2019). Diabetes Mellitus Type 2 Self-Care and Self-Management in Nigeria: A Scoping Literature Review. Degree Thesis in Health Care and Social Welfare, Vasa Education. <https://www.theseus.fi/handle/10024/265234>
- Ezeala-Adikaibe, B. A., Mbadiwe, N., Okwara, C., Onodugo, O., Onyekonwu, C., Ijoma, U., ... & Anyim, O. (2018). Diabetes and Pre-Diabetes among Adults in an Urban Slum in South East Nigeria. *Journal of Diabetes Mellitus*, 8(04), 131.
- Federal Ministry of Health. (2019). National health insurance scheme operational guidelines. Abuja: FMOH.
- Gagliardino, J. J., Chantelot, J. M., Domenger, C., Ilkova, H., Ramachandran, A., Kaddaha, G., Mbanya, J. C., Chan, J., Aschner, p., & IDMPS Steering Committee. (2019). Diabetes education and health insurance: How they affect the quality of care provided to people with type 1 diabetes in Latin America. Data from the International Diabetes Mellitus Practices Study (IDMPS). *Diabetes research and clinical practice*, 147, 47-54. <https://doi.org/10.1016/j.diabres.2018.08.007>
- Iregbu, S., Spiers, J., Duggleby, W., Salami, B., & Schick-Makaroff, K. (2023). Nigerian health care providers and diabetes self-management support: Their perspectives and practices. *Qualitative Health Research*, 33(1-2), 92-105. <https://doi.org/10.1177/10497323221143889>
- Okafor, C. N., Obikeze, E., Young, E., & Onwujekwe, O. (2023). Economic Burden of Diabetes and Hypertension: A Study of Direct and Indirect Cost of Treatment in Southeast Nigeria. *International Journal of Social Determinants of Health and Health Services*, 53(2), 168-175. <https://doi.org/10.1177/00207314221134035>
- Okoronkwo, I. L., Ekpemiro, J. N., Onwujekwe, O. E., Nwaneri, A. C., & Iheanacho, P. N. (2016). Socioeconomic inequities and payment coping mechanisms used in the treatment of type 2 diabetes mellitus in Nigeria. *Nigerian journal of clinical practice*, 19(1), 104-109. <https://doi.org/10.4103/1119-3077.173711>

Onyenekwe, B. M., Young, E. E., Nwatu, C. B., Okafor, C. I., Ugwueze, C. V., & Chukwu, S. N.

(2019). Prevalence of Gestational Diabetes in South East Nigeria Using the Updated Diagnostic Guidelines. *International Journal of Diabetes and Metabolism*, 25(1-2), 26-32. <https://doi.org/10.1159/000500089>

Uzochukwu, B. S. C., Ughasoro, M. D., Etiaba, E., Okwuosa, C., Envuladu, E., & Onwujekwe,

O. E. (2015). Health care financing in Nigeria: Implications for achieving universal health coverage. *Nigerian Journal of Clinical Practice*, 18(4), 437–444.

World Bank. (2022). World development indicators: Health expenditure data. Washington, DC:

World Bank.

World Health Organization. (2023). Global report on diabetes. Geneva: WHO.