

Medication Adherence and Quality of Life among Adults with Schizophrenia in Northwestern Nigeria: A Multicentre Cross-Sectional Study

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Abstract

Background: Schizophrenia severely impacts quality of life (QoL), and medication adherence is crucial for managing symptoms and preventing relapse. However, adherence remains a significant challenge in resource-limited settings. **Aims:** This study aimed to evaluate the relationship between medication adherence and quality of life among adult patients with schizophrenia in North-Western Nigeria. **Methods:** A descriptive cross-sectional study was conducted involving 865 patients across seven states in North-Western Nigeria. Participants were selected using a multistage sampling technique. Adherence and QoL were assessed using the 8-item Morisky Medication Adherence Scale (MMAS-8) and the WHOQOL-BREF, respectively. Data analysis included descriptive statistics, chi-square tests, and binary logistic regression ($p < 0.05$). **Results:** Findings revealed that 44.9% of participants had good adherence, 32.8% had moderate adherence, and 22.3% were poorly or non-adherent. Significant predictors of non-adherence included high medication costs (AOR = 4.25), adverse side effects (AOR = 3.14), poor drug accessibility (AOR = 2.94), polypharmacy (AOR = 2.71), and low educational attainment (AOR = 2.08). Good medication adherence was significantly associated with improved QoL across the physical, psychological, social, and environmental domains ($p < 0.001$). **Conclusion:** Medication adherence among these patients is suboptimal, primarily due to socio-economic and clinical barriers. Since adherence strongly predicts improved QoL, interventions should focus on affordable medication access, side-effect management, and psychoeducation.

Keywords: Schizophrenia, Medication adherence, Quality of life, Antipsychotics, Nigeria



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Introduction

Schizophrenia is a chronic mental disorder affecting approximately 1% of the global population. It contributes significantly to disability-adjusted life years (DALYs) because of its complex symptoms, including hallucinations and impaired functioning (Werner & Coveñas, 2025). Consequently, achieving an optimal quality of life (QoL) is increasingly recognised as a critical outcome in schizophrenia treatment (Bhatarasakoon et al., 2025). However, research indicates that only about one-third of patients achieve an acceptable QoL (Hasan, 2019; Caqueo-Urizar et al., 2020). Medication adherence is a primary determinant of both QoL and overall clinical outcomes and remains a persistent global challenge.

Globally, nearly half of individuals with schizophrenia are non-adherent or partially adherent to their treatment regimens, with adherence rates around 47.1% (Zhan et al., 2025; Yaegashi et al., 2024; Hasan, 2019; Caqueo-Urizar et al., 2020). In Sub-Saharan Africa, this challenge is even more pronounced; a systematic review reported a pooled non-adherence prevalence of 45.3%, exacerbated by cultural stigma and systemic barriers (Addisu et al., 2025). This non-adherence is driven by both intentional and unintentional factors, including younger age, depressive symptoms, substance use, inadequate caregiver support, adverse effects, and high medication costs (Caqueo-Urizar et al., 2020; Addisu et al., 2025; Misdrahi et al., 2023). For instance, therapy costs and side effects consistently predict poor patient outcomes (Hasan, 2019).

Non-adherence can be severe, leading to higher relapse rates and reduced QoL, whereas strict adherence is strongly associated with improved self-esteem and emotional well-being (Caqueo-Urizar et al., 2020). In North-Western Nigeria, individuals with schizophrenia face substantial region-specific challenges that further compromise treatment efficacy. Poor medication adherence in this region is compounded by systemic issues, including an inconsistent drug supply and inadequate community psychiatric services (Lauriello, 2020; Lauriello & Perkins, 2019). While various global strategies—such as long-acting injectable (LAI) antipsychotics, patient-centred care, active family involvement, and technology-based reminders—have shown promise in improving adherence (Lauriello, 2020; Lauriello & Perkins, 2019; Misdrahi et al., 2023; Richards et al., 2023; Cahaya et al., 2022), their implementation and effectiveness in this resource-constrained setting remain limited.

Despite the well-documented impact of medication adherence on clinical outcomes, the specific relationship between adherence and QoL among individuals with schizophrenia in North-Western Nigeria remains underexplored. Furthermore, methodological

inconsistencies in measuring QoL often hinder the effective application of global findings to local clinical practice (Bhatarasakoon et al., 2025). Generating comprehensive, context-specific empirical data is essential to inform policymakers and to develop targeted interventions for this vulnerable population. Therefore, this study aims to determine the relationship between quality of life and medication adherence among individuals with schizophrenia across seven states in North-Western Nigeria.

Methods

Study Design and Setting

This study used a descriptive cross-sectional design to assess the association between medication adherence and quality of life (QoL) among patients with schizophrenia in North-Western Nigeria. A cross-sectional approach was chosen because it systematically collects quantitative data at a single point in time, making it suitable for simultaneously analysing exposures and outcomes (Wang & Cheng, 2020). It also enhances the detection of relationships between adherence behaviours, quality of life, and health service characteristics (Setia, 2016). The research was conducted across all seven states in North-Western Nigeria, namely Jigawa, Kano, Katsina, Kebbi, Sokoto, Zamfara, and Kaduna. This region was selected because it represents a relatively homogeneous socio-cultural and economic setting, encompassing both tertiary and secondary healthcare facilities that provide specialised psychiatric services.

Study Population and Sampling Technique

The target population comprised adult patients aged 18 years and older with a clinical diagnosis of schizophrenia who were receiving outpatient or inpatient treatment in psychiatric units at the selected facilities. To be included, participants had to have been on antipsychotic medication for at least six months before the study and to have provided voluntary or caregiver-assisted informed consent. Conversely, patients experiencing acute psychotic episodes, those with significant cognitive impairment that limited their ability to participate meaningfully, or those with notable comorbid physical illnesses at the time of data collection were excluded.

A total sample size of 892 patients was targeted, estimated using Cochran's formula for cross-sectional studies, modified for a finite population. Over a six-month period, a four-stage sampling approach was employed to ensure regional representativeness. Initially, all seven states were purposively selected. Subsequently, one tertiary and one secondary health facility per state were selected using simple random or purposive sampling, depending on facility availability. The total sample of 892

was then proportionally allocated across the states based on patient load, resulting in 128 patients each for Kano, Kaduna, and Katsina, and 127 patients each for Jigawa, Kebbi, Sokoto, and Zamfara. Finally, systematic random sampling was used within each facility to recruit individual participants from outpatient registers and inpatient ward lists.

Data Collection Instruments

Data were collected by trained research assistants using an interviewer-administered, structured questionnaire divided into five primary sections. The questionnaire captured socio-demographic variables, clinical characteristics, and accessibility indicators, including availability of pharmaceuticals, cost, distance to the facility, and supply chain reliability (derived from WHO, 2021). Medication adherence was assessed using the 8-item Morisky Medication Adherence Scale (MMAS-8), a validated measure of adherence behaviour (Morisky et al., 2008). The first seven items of this scale use a dichotomous response format (Yes/No), while the eighth item uses a 5-point Likert scale. Based on standard scoring guidelines, total scores of 0 to 8 were classified as high adherence for a score of 8, medium adherence for scores between 6 and strictly less than 8, and low adherence for scores below 6.

Additionally, quality of life was measured using the World Health Organization Quality of Life-BREF (WHOQOL-BREF) instrument. This 26-item questionnaire was rated on a 1-to-5 Likert scale across four domains: physical health, psychological health, social interactions, and environment (WHO, 1996; updated WHOQOL user handbook, 2021). Raw domain scores were transformed to a 0-100 scale according to official guidelines, with higher scores approaching 100 indicating better quality of life in the respective domains.

Data Management and Analysis

Following data collection, responses from the 892 administered surveys were coded, cleaned, and analysed in SPSS version 26. Descriptive statistics, including means, standard deviations, frequencies, and percentages,

were used to summarise socio-demographic and clinical variables. Bivariate analyses, specifically chi-square tests for categorical variables and independent-samples t-tests for continuous variables, were conducted to assess initial associations. Variables that were statistically significant ($p < 0.05$) in the bivariate analyses were subsequently included in binary logistic regression models to investigate factors associated with medication adherence and QoL. For these regression models, MMAS-8 scores were categorised accordingly, and WHOQOL-BREF values were dichotomised into bad versus good QoL using traditional cut-offs. Statistical significance for all analyses was evaluated at $p < 0.05$, with 95% confidence intervals.

Results

A total of 892 questionnaires were administered across the seven states of North-Western Nigeria. Of these, 865 were correctly completed and recovered, yielding a response rate of 97.0%. A total of 865 participants were included in the study, with a mean age of 39.2 ± 13.9 years. The cohort was predominantly male (53.9%), of Hausa ethnicity (61.7%), and practiced Islam (83.0%). More than half of the participants were married (56.2%) and worked as farmers (47.4%). Regarding educational attainment, the largest proportion had completed secondary-level education (46.1%). The duration of illness was relatively evenly distributed across the cohort, with the largest group having been ill for 5 to 9 years (28.6%). A significant majority of the patients reported a history of hospitalization (59.4%) and experienced side effects from their prescribed medications (67.0%). In terms of pharmacological treatment, nearly half of the participants (48.6%) were managed exclusively with typical antipsychotics. Furthermore, a large majority of the cohort (77.1%) had no comorbid substance use. Medication adherence assessment showed that most participants had good (44.9%) or moderate (32.8%) adherence to their treatment regimens. However, a notable proportion of the cohort (22.3%) had poor adherence or non-adherence.

Table 1. Socio-demographic, Clinical Characteristics, and Adherence Levels of Study Participants (n = 865)

Variable	Category	Frequency	Percent (%)
Socio-demographic Characteristics			
Age group	Mean $\pm$ SD	39.2 ± 13.9	-
Gender	Male	466	53.9
	Female	399	46.1
Education	None	249	28.8
	Primary	125	14.5
	Secondary	399	46.1
	Tertiary	92	10.6
Ethnicity	Hausa	534	61.7
	Fulani	228	26.3

Variable	Category	Frequency	Percent (%)
Religion	Others	103	12.0
	Islam	717	83.0
	Christianity	148	17.0
Occupation	Farmers	410	47.4
	Civil servants	151	17.5
	Housewives	119	13.8
	Students	100	11.6
Marital Status	Business	85	9.8
	Single	332	38.4
	Married	486	56.2
	Divorced	47	5.4
Clinical Characteristics			
Duration of illness	< 5 years	228	26.4
	5–9 years	247	28.6
	10–14 years	201	23.2
	≥ 15 years	189	21.8
History of hospitalization	Yes	514	59.4
	No	351	40.6
Type of antipsychotic	Typical only	421	48.6
	Atypical only	292	33.7
	Combination	152	17.6
Side effects	Yes	579	67.0
	No	286	33.0
Comorbid substance use	Yes	198	22.9
	No	667	77.1
Adherence Level			
Medication Adherence	Good adherence	388	44.9
	Moderate adherence	284	32.8
	Poor/Non-adherence	193	22.3

Figure 1 details the treatment adherence levels across 865 participants. Good adherence made up the largest proportion with 388 individuals (44.9%). Meanwhile, 284

participants (32.8%) demonstrated moderate adherence, and 193 (22.3%) showed poor or non-adherence.

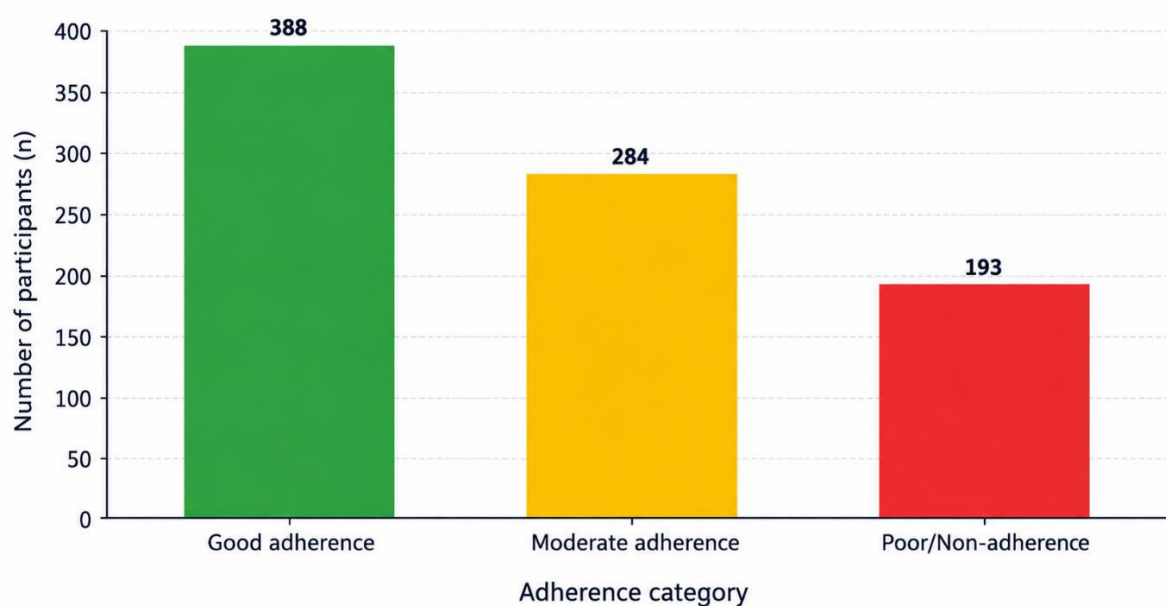


Figure 1. Bar chart of treatment adherence levels – showing proportions of good, moderate, and poor/non-adherence to medication.

Predictors of Drug Accessibility

A logistic regression analysis was conducted to identify factors contributing to poor drug accessibility among the participants. As detailed in Table 2, the results indicated that low household income was the strongest predictor, increasing the likelihood of poor accessibility by more than three times (AOR = 3.42, $p < .001$). Additionally, individuals living in rural areas (AOR = 2.18, $p = .004$) and those facing unemployment (AOR = 1.87, $p = .011$) also demonstrated significantly higher odds of experiencing poor drug accessibility.

Table 2. Predictors of poor drug accessibility (n = 865)

Predictor	AOR	95% CI	p-value
Low household income	3.42	2.41 - 5.36	< .001
Rural residence	2.18	1.36 - 3.12	.004
Unemployment	1.87	1.22 - 2.74	.011

Predictors of Non-Adherence to Medication

Furthermore, a multivariate logistic regression model was utilized to determine the primary predictors of medication non-adherence. As presented in Table 3, the high cost of medication emerged as the most significant barrier, making participants over four times more likely to

be non-adherent (AOR = 4.25, $p < .001$). Other substantial clinical and sociodemographic predictors included experiencing adverse side effects (AOR = 3.14, $p = .002$), polypharmacy (AOR = 2.71, $p = .009$), and low educational attainment (AOR = 2.08, $p = .016$). Notably, drug accessibility was also highly associated with adherence behavior, where poor accessibility significantly increased the odds of medication non-adherence (AOR = 2.94, $p < .001$).

Table 3. Predictors of non-adherence to medication (n = 865)

Predictor	AOR	95% CI	p-value
High cost of medication	4.25	2.37 - 7.63	< .001
Side effects experienced	3.14	1.95 - 5.06	.002
Good vs. poor accessibility	2.94	1.74 - 4.53	< .001
Polypharmacy	2.71	1.33 - 4.29	.009
Low educational attainment	2.08	1.16 - 3.17	.016

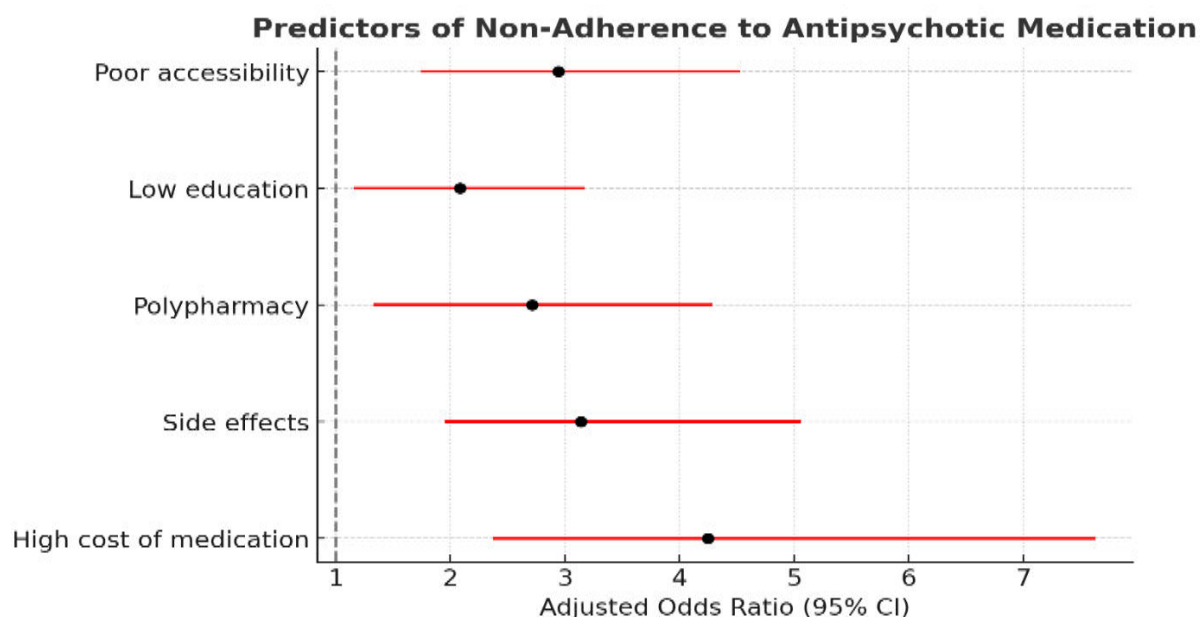


Figure 2. Forest plot of predictors of non-adherence – visualizing odds ratios with confidence intervals for significant predictors.

Association between Adherence and Quality of Life

To explore the connection between medication adherence and quality of life (QoL), cross-tabulation was performed using the WHOQOL-BREF domains. As indicated in Table 4, persons with high adherence were considerably more likely to report positive QoL across all

categories: physical, psychological, social, and environmental. In contrast, non-adherent subjects consistently displayed lower QoL results. Together, these findings reveal a strong positive link between medication adherence and quality of life among individuals living with schizophrenia in North-Western Nigeria ($p < .001$ across all areas).

Table 4. Association between adherence and quality of life among study participants (N = 865)

WHOQOL-BREF Domain	Good Adherence (n=388)	Moderate Adherence (n=284)	Poor/Non-Adherence (n=193)	χ^2 (df)	p-value
Physical	245 (63.1%)	120 (42.3%)	61 (31.6%)	32.7 (2)	< .001
Psychological	230 (59.3%)	115 (40.5%)	55 (28.5%)	29.6 (2)	< .001
Social	210 (54.1%)	108 (38.0%)	47 (24.4%)	28.1 (2)	< .001
Environmental	198 (51.0%)	95 (33.5%)	40 (20.7%)	30.4 (2)	< .001
Overall QoL	248 (63.9%)	122 (43.0%)	54 (28.0%)	34.2 (2)	< .001

Percentages show proportion of individuals reporting good QoL under each adherence category. In keeping with the chi-square results, the visual representation in Figure 3 depicts similar patterns. Patients with excellent adherence revealed consistently higher QoL scores across

all dimensions, while poor/non-adherent participants reported substantially lower scores

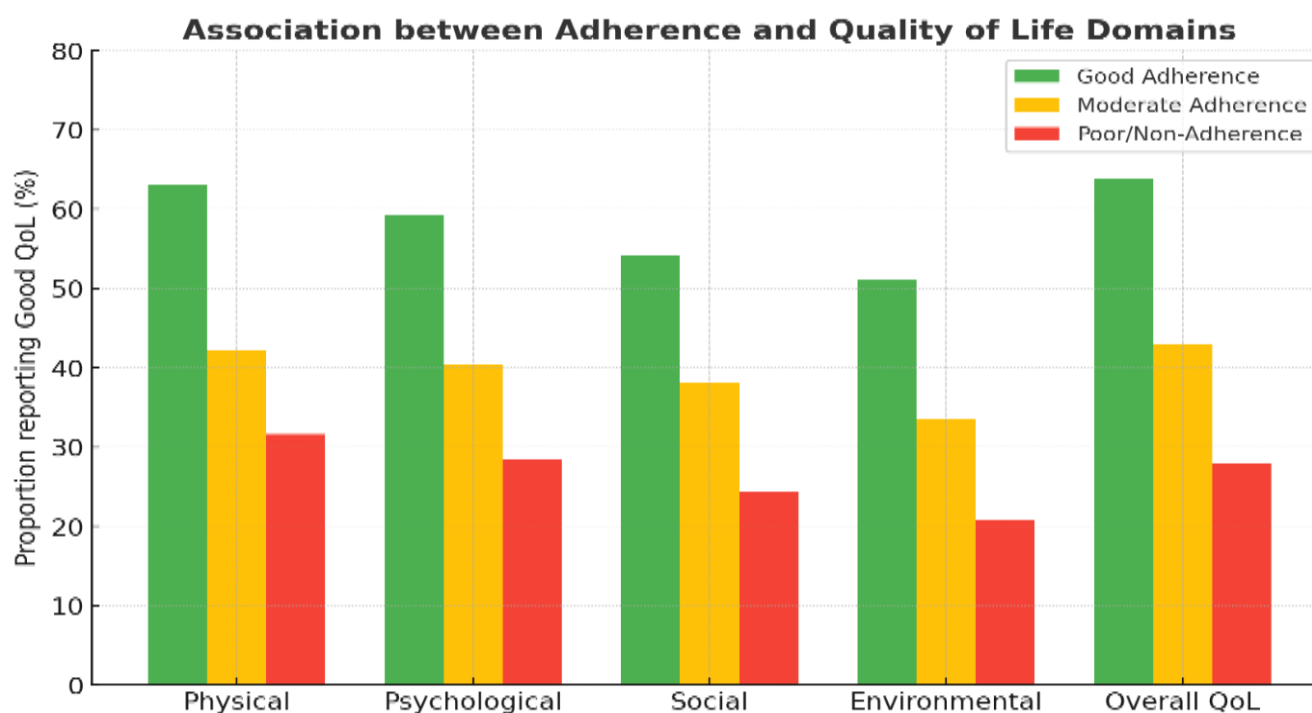


Figure 3. Stacked bar chart comparing Quality of Life outcomes across the four WHOQOL-BREF domains (and overall) by adherence levels.

Discussion

This study explores the association between medication adherence and quality of life (QoL) among individuals living with schizophrenia in North-Western Nigeria. The findings are evaluated against prior studies and current evidence, with attention to both contextual and global implications. The study recorded a remarkable response rate, reflecting robust participation and reliable data quality. Comparable participation levels have been observed in relevant Nigerian psychiatric research (Gomma, 2022; Ibrahim et al., 2021), indicating acceptance of such investigations within the region's mental health communities. The high response rate reduces the potential for non-response bias, although

representativeness may still be affected by the facility selection strategy. The demographic profile of the participants, characterised by early to middle age and a slight male predominance, is consistent with global epidemiological patterns, which show that schizophrenia often emerges in early adulthood (WHO, 2021). Similar findings have been reported across Nigeria (Ogunnubi et al., 2017; Adewuya et al., 2019). Educational attainment in this study was relatively low. While this aligns with some regional studies, it contrasts with research from South-East Nigeria, which indicates higher tertiary attainment (Uwakwe et al., 2013). These disparities likely reflect regional inequities and underscore the debilitating impact of schizophrenia on academic progression.

The socio-cultural composition of the cohort, predominantly Hausa-Fulani and Muslim, with a large

proportion of agrarian workers, mirrors the demographic and economic landscape of North-Western Nigeria. These socio-economic determinants are known to influence explanatory models of mental illness, health-seeking behaviour, and treatment adherence in the region (Kabir et al., 2004). The economic precarity associated with farming and rural livelihoods may further impede patients' ability to finance and sustain therapy (Esan et al., 2020). Clinically, a majority of patients reported a history of psychiatric hospitalisation, underscoring the chronic and recurrent nature of schizophrenia. Similar patterns of frequent hospitalisations, typically linked to poor adherence and inadequate community-based care, have been described in Nigerian settings (Adewuya & Makanjuola, 2009; Ibrahim et al., 2021). These findings underscore the need for culturally relevant, accessible, and community-based treatments to improve continuity of care and prevent relapse in this population.

A central finding of this study is the suboptimal adherence to antipsychotic medication, with fewer than half of subjects demonstrating strong adherence. This parallels previous Nigerian studies (Shehu, 2023) and underscores the persistent challenge of managing adherence in LMICs, where impediments such as financial constraints, limited medicine availability, and underdeveloped mental health infrastructure persist (Tran et al., 2021). By contrast, adherence rates in high-income nations are often higher, reflecting improved access to healthcare resources and supportive systems (Velligan et al., 2020). This comparison illustrates systematic disparities in mental health treatment delivery between resource-rich and resource-limited regions.

This study revealed structural vulnerabilities—specifically low household income, rural residency, and unemployment—as important predictors of inadequate access to antipsychotic drugs. These findings align with Gomma (2022) and Esan et al. (2020), who identified economic hardship and geographic constraints as significant barriers to psychiatric drug accessibility in Nigeria. Similarly, Okpala et al. (2021) and Williams et al. (2025) note that structural inequities in sub-Saharan Africa worsen treatment discontinuity, as poverty and weak health systems limit access to care. In Nigeria, high non-adherence rates are consistently linked to pharmaceutical costs, polypharmacy, and adverse side effects (Adewuya et al., 2011). Caregiver studies also show that cost and side-effect burdens strongly influence treatment continuity (Shehu et al., 2023). Globally, non-adherence is often associated with unpleasant side effects and complex polypharmacy regimens (Velligan et al., 2020). Importantly, poor accessibility was strongly linked to non-adherence, suggesting that structural determinants heavily shape treatment continuation. This aligns with the WHO's (2021) guideline that universal access to

affordable psychotropic drugs is crucial for improving mental health outcomes, emphasising the need for measures that reduce financial barriers and streamline therapy (Anyebe, 2023).

The most striking finding was the strong positive correlation between adherence and QoL across all WHOQOL-BREF dimensions. Participants with good adherence reported greater physical, psychological, social, and environmental well-being than those with poor or moderate adherence. This aligns with Gomma (2022), who reported that adherence improves functional recovery and overall QoL among Nigerian patients. Comparable international research corroborates this association; for instance, Kumar et al. (2021) in India found that adherent patients achieved significantly higher QoL scores, whereas Velligan et al. (2020) emphasised that adherence reduces relapse, improves functioning, and promotes psychosocial outcomes globally. Conversely, poor adherence has consistently been linked to recurrence, frequent hospitalisations, and reduced QoL (Tran et al., 2021; WHO, 2022). The present findings clearly highlight the therapeutic urgency of enhancing adherence strategies as a foundational step towards improving long-term QoL outcomes among patients with schizophrenia.

Implications of Findings

This study's findings underscore the urgent need for government and institutional action to address barriers to mental health care. Foremost is the need to improve the affordability and accessibility of antipsychotic drugs, particularly in rural and economically disadvantaged areas where resource constraints are most severe. Furthermore, there is a critical need to implement culturally tailored psychoeducation and adherence support programmes that proactively engage patients and their carers. To sustain long-term treatment continuity, these educational efforts must be paired with strengthened pharmacovigilance and rigorous clinical monitoring to manage adverse effects that often discourage medication adherence. Finally, it is essential to incorporate community-based care strategies into routine practice; doing so will help reduce entrenched societal stigma, foster vital social support networks, and ultimately improve both treatment adherence and overall quality of life for this patient population.

Conclusion

This study demonstrated a clear beneficial connection between medication adherence and quality of life among patients with schizophrenia in North-Western Nigeria. With less than half of the participants adhering well to therapy, non-adherence was consistently connected to

poorer QoL outcomes. The barriers identified—primarily high pricing, limited medicine access, side effects, and polypharmacy—highlight critical gaps in the current healthcare delivery system. Improving adherence through the provision of affordable and accessible drugs, robust psychoeducation, and proactive side-effect management is critical to promoting QoL and minimizing relapse rates. Future longitudinal studies are needed to establish causal pathways and to evaluate the effectiveness of community- and policy-level interventions in resource-limited contexts.

Declaration of Conflicting Interest

The authors declare no conflicts of interest.

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Author's Contribution

A.S., N.M.A., F.M.A.: conceptualization, methodology, data collection, formal analysis, writing – original draft. **Z.M.A., A.E.A.E.A., A.A.:** supervision, conceptualization, writing – review and editing. **A.S., A.S.A., U.M., F.Z.Y., R.S., A.I.A.:** supervision, writing – review and editing. All authors made substantial contributions to the conception and design of the study, the acquisition, analysis, or interpretation of data, and the drafting or critical revision of the manuscript for important intellectual content; all authors gave final approval of the version submitted and agree to be accountable for all aspects of the work.

Data Availability Statement

The datasets analysed during the current study are available from the corresponding author on reasonable request, in accordance with the journal's data-sharing policy.

Declaration of Use of AI in Academic Writing

AI-based language and formatting assistance (Claude, Anthropic) was used to help condense and reformat this manuscript for journal submission from the authors' original seminar report. The authors conducted the underlying research design, data collection, statistical analysis, and scientific interpretation. The authors did not use AI to generate, alter, or interpret research data or findings.

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