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Access and Utilization of Health Care Services Among Residents of Selected Rural Communities in Moro Local Government Area, Kwara State, Nigeria

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Abstract **Original Research Article**

Background: Access to healthcare continues to be difficult to achieve in the rural areas of Nigeria owing to poor infrastructural development, shortage of personnel, financial barriers, and isolation. The importance of understanding access and utilization trends cannot be underestimated.

Objective: This study investigated access to and utilization of healthcare services among people residing in Moro Local Government Area, Kwara State, Nigeria and factors affecting them.

Methods: A descriptive cross-sectional survey was carried out in three rural communities through selection of 166 adult participants using multistage sampling technique. Data were collected via pre-tested questionnaire and analyzed using SPSS version 26. Descriptive statistics were used to summarize frequencies and percentages, while Chi-square tests examined associations between variables at a significance level of $p < 0.05$.

Results: Majority of the respondents (88.6%) reported access to healthcare facilities and 89.8% utilized them whenever ill. But only 63.9% demonstrated regular utilization. Government health centers constituted the highest proportion of visits (72.3%). The treatment of diseases was the most utilized service (73.5%) whereas preventive care was less utilized. The main obstacles to utilization were costs (46.4%), lack of health insurance (36.7%), long waiting hours (36.1%), and distances (41.0%). Family support (71.7%) and staff respectfulness (82.5%) were some of the facilitators to utilization.

Conclusion: The utilization of health care services was less than optimal and dependent on financial, structural, and socio-cultural variables. The underutilization of preventative services is an indication that there are inadequacies in the provision and delivery of health education and health care services. The government needs to ensure adequate provision and accessibility of health care facilities. Community-based health education by health workers is advised to encourage preventive healthcare use.

Keywords: *Barriers to Health Services, Health Access and Utilization, Rural Community, Moro Local Government Area, Kwara State, Nigeria.*

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Introduction

Healthcare access is an essential element of public health and development. However, for many people living in rural parts of Nigeria, gaining access to healthcare remains one of the major hurdles. Poor health leads to difficulties for many individuals, both in terms of loss of income and reduced productivity at work, as well as increasing expenses related to healthcare costs (Uroko & Morgan, 2024). The health of the adult members of the family has an influence on the well-being of the family, whether it is a direct or indirect effect, due to the agricultural nature of the economy in rural areas and the need for manual labor (Ahmed et al., 2021). Many developing countries, such as sub-Saharan Africa, experience disparities in access to healthcare services, affecting their rural populations primarily. These discrepancies occur for various reasons related to culture, geography, socioeconomics, and health issues, and influence the health-seeking behavior of the community (Tejería-Martínez et al., 2025).

Among these barriers is economics. Out-of-pocket payment for services rendered by the medical facilities is prevalent in most African nations, leading to delayed treatment as a result of income forgone every day (Arhin et al., 2023). Culture also plays a key role in determining healthcare utilization. Customs, beliefs, and traditions significantly influence how individuals in rural communities engage with available healthcare systems, with some opting to consult traditional medicine practitioners or rely on home-based remedies before seeking care at formal healthcare facilities (Ahmed et al., 2025). Some elements associated with the healthcare system that could affect healthcare utilization include the quality of healthcare, availability of skilled healthcare personnel, adequate healthcare tools, poor quality of services offered, lengthy waiting period, and unfriendly disposition of healthcare providers (Orok et al., 2024).

In Nigeria, the state of the health care sector is dysfunctional, with little funding, averaging US$ 9.44 per capita (World Bank, 2024). For this reason, Nigeria is still counted among nations that have poor health indices, and unfortunately, among the 10 percent of nations responsible for all maternal deaths globally (Ajegbile, 2023). There are inefficiencies within the country's health care management system, especially in terms of its information system as well as disease monitoring, prevention, and management practices (Omonona et al., 2015). Rural communities are facing great challenges in accessing health care services due to poor infrastructure, inadequate staffing, and geographical remoteness (Dassah et al., 2018). Similarly, the rural community of Moro Local Government Area (LGA) of Kwara State, Nigeria also faces difficulties, resulting in poor treatment and suffering. Although there have been past initiatives to enhance health care in rural areas, the lack of empirical knowledge about the facilitators and barriers to rural health care utilization makes it difficult to formulate sound policies.

The main objective of this study is to tackle the above-mentioned lacuna in health access studies, as this study will try to shed light on the health care service access and utilization in rural areas in Moro LGA, and the factors behind it. These findings can help formulate strategies that can be used for the purpose of designing interventions that will improve the delivery of health services in rural areas and reduce health disparities. Thus, the objective of this study is to investigate access to and utilization of health services in selected rural communities in Moro LGA, Kwara State, Nigeria.

Literature Review

Theoretical framework

This study was based on Andersen's Behavioral Model of Health Services Use (Andersen, 1995). This theory identifies three categories affecting healthcare utilization: predisposing, enabling, and need factors. Predisposing factors are socio-demographic variables, enabling factors relate to economics and the environment, while need factors refer to an individual's perception of their health status. This framework guides the examination of factors influencing access to and utilization of

healthcare services among residents of rural communities in Moro LGA, Kwara State, Nigeria.

Empirical framework

Empirical evidence has indicated that socio-demographic determinants like education and income significantly predict health care utilization (Adepoju, 2014; Olaniyan & Lawanson, 2010). Other socio-economic determinants like cost, insurance coverage, and income levels influence healthcare utilization (Onwujekwe et al., 2010). Cultural practices, beliefs, and environmental determinants have also been identified to impact health care utilization in rural populations (Ibrahim et al., 2016; Oleribe et al., 2015). In Nigeria, healthcare utilization is associated with socio-demographic factors, economic factors, and healthcare system factors. For example, general hospitals represent the most commonly used health institutions, with factors like quality treatment, services, and cost impacting health services utilization (Joseph et al., 2017; Jimoh & Babatunde, 2022). Economic determinants like costs and income have been identified as significant factors determining healthcare utilization. For example, the use of orthodox health care centers is relatively low because of the cost, non-availability, and long distance to the government health institutions (Salmanu et al., 2023; Uthman et al., 2023). Other studies have also emphasized the role of cultural and environmental variables in influencing healthcare utilization, such as cultural practices, age, and income levels (Adongo & Asaarik, 2018; Mobosi et al., 2022). In general, this shows that healthcare utilization in Nigeria is subject to a range of socioeconomic variables.

Conceptual Framework

The conceptual framework for this study presents the relationship between socio-demographic, economic, cultural, and environmental factors (independent variables) and access to and utilization of healthcare services (dependent variables) by inhabitants of selected rural areas in Moro LGA of Kwara State, Nigeria (Figure 1). The figure demonstrates that independent variables affect access to and use of healthcare. Socio-demographic factors like education and income influence accessibility. Economic variables such as cost affect utilization. Cultural factors, such as beliefs, shape perceptions and, thus, utilization. Environmental factors like distance influence healthcare accessibility.

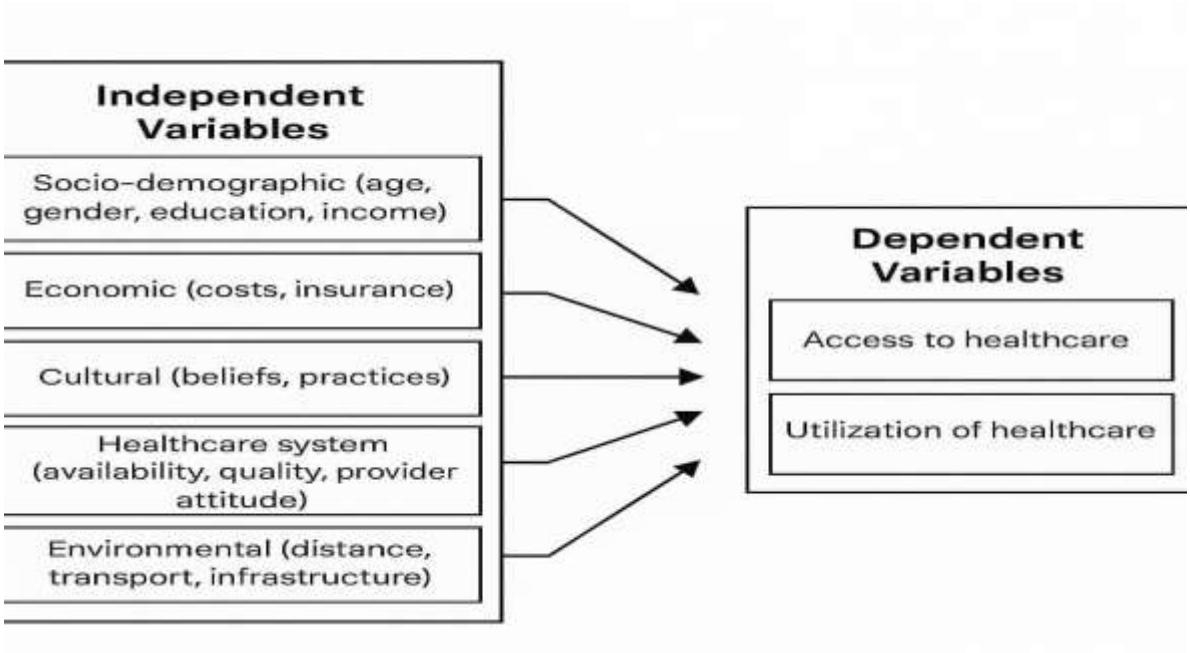

Figure 1: Relationship independent and dependent variables
Source: Adapted from Andersen, R. M. (1995).

Materials and Methods

Study Area

This study was conducted in selected rural communities in Moro LGA, Kwara State, Nigeria. Moro LGA covers an area of 3,272 km² with a population of 108,792 (2006 census). The LGA is bordered by Niger State to the north, Oyo State to the northwest, Ilorin West LGA to the south, and Patigi LGA to the east. The administrative headquarters is Bode Sa'adu, and the main economic activities include subsistence farming, small-scale fishing, and local crafts. The LGA has a network of healthcare facilities, including primary health centers and maternity clinics.

Study Design and Population

A community-based descriptive cross-sectional study was conducted among adult residents (≥18 years) of selected rural communities in Moro LGA who had lived in the area for at least six months. The study aimed to assess access to and utilization of healthcare services among the residents.

Inclusion and Exclusion Criteria

Inclusion criteria: adult residents (≥18 years) who had lived in the area for at least six months, present on the day of the survey, and consented to participate. Exclusion criteria: individuals <18 years, temporary visitors, those who had lived in the community for <6 months, mentally or physically unable to participate, or who declined consent.

Sample Size Determination

The minimum sample size (n=185) was calculated using Fisher's formula, with a 95% confidence interval, 89.2% prevalence of healthcare utilization in a rural community from a previous study (Ojo et al, 2021), and 5% error tolerance. The desired sample size obtained by calculation was 148, but to

compensate for non-response and assuming an 80% response rate, the sample size was adjusted to 185.

Sampling Technique

A multistage sampling technique was used to select respondents in this study. Three rural communities (Malete, Elemere, and Asomu) were randomly selected from a list of all rural communities in Moro LGA. The total sample size of 185 respondents was proportionally allocated across the three selected communities based on their relative population sizes. Twenty compounds were randomly selected within each community using simple random sampling. The overall sample size will be proportionally distributed across these selected compounds to ensure adequate representation, with a minimum of 10–12 respondents per compound.

Households were systematically selected within compounds, with a sampling interval determined by dividing the total number of households by the required sample size. In each selected household, one eligible adult (aged 18 years or older) who is knowledgeable about the household's health-seeking behavior and utilization of healthcare services was selected for the interview. Where an eligible individual declined participation, the next household and individuals in the sampling frame were approached and selected until the required number of participants was obtained.

Instrument and Methods of Data Collection

Data were collected using a pretested, structured questionnaire that was adapted from standardized tools. The questionnaire was available in English and Yoruba and was administered through face-to-face interviews by trained research assistants. The questionnaire assessed socio-demographic characteristics, access to healthcare services, utilization of healthcare services, and factors influencing healthcare utilization. The validity and reliability of the questionnaire were ensured through expert review and pretesting (Cronbach's alpha=0.82).

Measured Variables

The study measured the following variables: Socio-demographic characteristics (age, sex, marital status, education, occupation); Access to healthcare services (distance to healthcare facility, availability of healthcare services); Utilization of healthcare services (type of healthcare services used, frequency of use); and Factors influencing healthcare utilization (cost, quality of care, cultural beliefs).

Analysis of Data

Data were analyzed using SPSS version 26.0. Descriptive statistics (frequencies, percentages, means, and standard deviations) were used to summarize the data. Chi-square tests were used to examine associations between variables, with a p-value of ≤ 0.05 considered statistically significant.

Consent and Methods of Protection of Human Subjects

This study obtained informed consent from all participants, providing information sheets in English and Yoruba (local language) explaining the study's objectives, procedures, benefits, and risks. Participants' signatures or thumbprints were obtained on consent forms, ensuring voluntary participation and understanding of their right to withdraw without consequence. To safeguard privacy, participants were assigned unique identification numbers, and consent forms were stored separately from anonymized questionnaires in a locked cabinet. Data were entered and stored in a password-protected electronic system, ensuring confidentiality and compliance with ethical guidelines approved by the Kwara State Ministry of Health. Anonymity and confidentiality of all information from respondents were assured and maintained throughout the study process, and no personal identifiers were collected.

Ethical Considerations

This study was approved by the Ethical Review Committee of the Kwara State Ministry of Health

through permission number ERC/MOH/2026/02/598. Additionally, permission and clearance for the study were sought from the community leaders and local authorities in the selected communities to enlist their support and cooperation throughout the study period. No form of coercion, inducement, or undue influence was used to secure participation. The study posed minimal risk to participants, and the benefits of the study outweighed the risks. The study was conducted in accordance with the principles of the Declaration of Helsinki.

Results

A total of 185 participants were selected for this study but only 166 gave consent and had the study questionnaire administered on them, given a response rate of 90%. The analysis was therefore based on the completed 166 questionnaires and the results is as below:

Socio-Demographic Characteristics of Respondents

The most common ages of the respondents were between 18 to 25 (31.3%), religion as Muslims (74.7%), annual income was ₦51,000 and above (36.1%), secondary school (28.3%), and the distances of living area was 1-5 km from a health facility (40.4%), mostly reached by walking (48.2%) as shown in Table 1.

Table 1: Socio-demographic characteristics of respondents (N=166)

Variable	Categories	Frequency (n=166)	Percentage (%)
Age	18–25	52	31.3
	26–35	34	20.5
	36–45	33	19.9
	46–55	30	18.1
	56 and above	17	10.2
Gender	Female	89	53.6
	Male	77	46.4
Marital Status	Divorced/Separated	12	7.2
	Married	82	49.4
	Single	52	31.3
	Widowed	20	12.0
Educational Level	Arabic / Islamic Edu.	26	15.7
	No formal education	42	25.3
	Primary	16	9.6
	Secondary	47	28.3
	Tertiary	35	21.1
Occupation	Artisan	11	6.6
	Civil servant	11	6.6
	Farmer	42	25.3
	Trader	71	42.8
	Unemployed	31	18.7
Religion	Christianity	39	23.5

	Islam	124	74.7
	Traditional	3	1.8
Household Size	1–3	45	27.1
	4–6	84	50.6
	7–9	27	16.3
	10 and above	10	6.0
Monthly Household Income	Less than ₦10,000	24	14.5
	₦10,000–₦30,000	42	25.3
	₦31,000–₦50,000	40	24.1
	₦51,000 and above	60	36.1
Distance to Nearest Health Facility	Less than 1 km	54	32.5
	1–5 km	67	40.4
	6–10 km	31	18.7
	More than 10 km	14	8.4
Means of Transportation to Health Facility	Bicycle	10	6.0
	Motorcycle	51	30.7
	Vehicle	25	15.1
	Walking	80	48.2

As per the distribution of the respondents by selected communities, Figure 2 illustrates that Malete had the highest number of respondents (42.2%), while Elemere had 36.1%, and Asomu had the lowest number (21.7%) as shown in Figure 2.

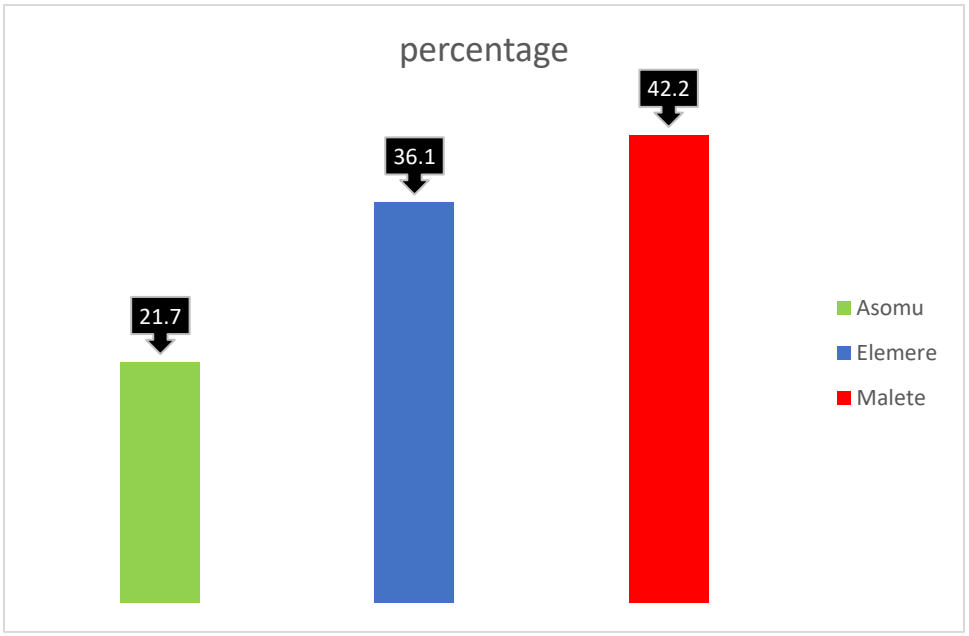

Figure 2: Distribution of respondents by selected communities in Moro LGA, Kwara State, Nigeria

Healthcare Access and Utilization among Respondents

The majority of the respondents (88.6%) had access to healthcare facilities. Out of this, 87.3% of them indicated that the healthcare facilities were operational. About 89.8% of them had gone to the healthcare facility during times of illness, while 84.9% were able to afford their costs at times when the healthcare services were required. The majority of them utilized the healthcare facilities for vaccinations (69.9%) and maternity/childcare services (59.6%). More than three quarter of the respondent (78.9%) were satisfied with the healthcare services rendered in health facilities as depicted in Table 2.

Table 2: Healthcare Access and Utilization among Respondents (N=166)

Variable	Response	Frequency	Percentage (%)
I have access to a healthcare facility	Yes	147	88.6
	No	19	11.4
The health facility is open and functional regularly	Yes	145	87.3
	No	21	12.7
I visit a healthcare facility when I am sick	Yes	149	89.8
	No	17	10.2
I can afford the cost of healthcare services when needed	Yes	141	84.9

	No	25	15.1
I have access to maternal and child health services	Yes	99	59.6
	No	67	40.4
I use the health facility for preventive services (e.g., immunization, health education, etc.)	Yes	116	69.9
	No	50	30.1
I visit the health center for chronic illness management (e.g., diabetes, hypertension)	Yes	100	60.2
	No	66	39.8
I feel welcomed and respected by the healthcare staff	Yes	137	82.5
	No	29	17.5
The services provided are timely and efficient	Yes	141	84.9
	No	25	15.1
I am satisfied with the healthcare services available in my community	Yes	131	78.9
	No	35	21.1

For the overall level of access and utilization of healthcare services among residents in selected rural communities, most of the respondents (63.9%) reported having a high level of access and utilization of healthcare services, while 36.1% indicated a low level of access and utilization (Figure 3). Regarding the type of health care utilization, a vast majority of the respondents visited government health centers (72.3%), followed by private hospitals (13.3%) and chemists (7.8%) as shown in Figure 4.

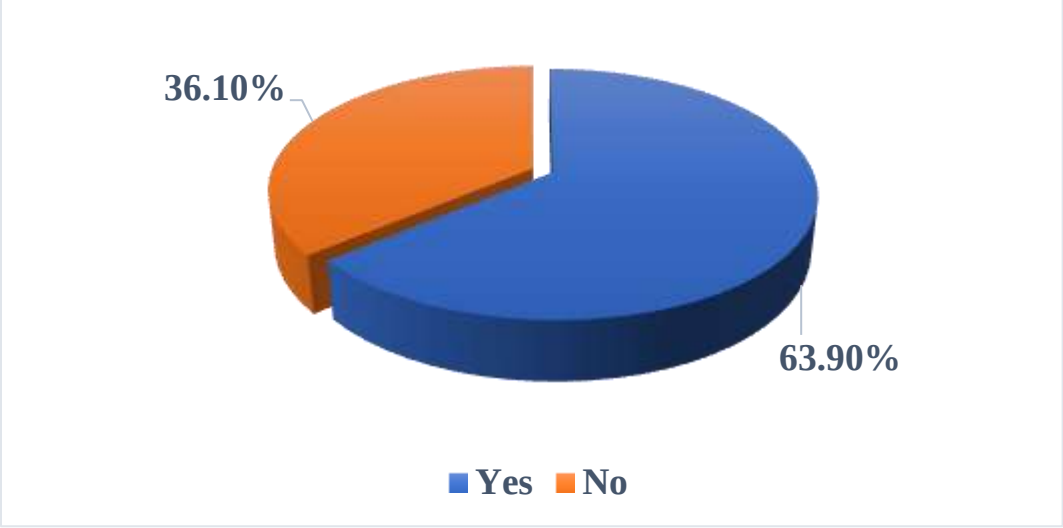

Figure 3: Overall level of access and utilization of healthcare services among residents in selected rural communities.

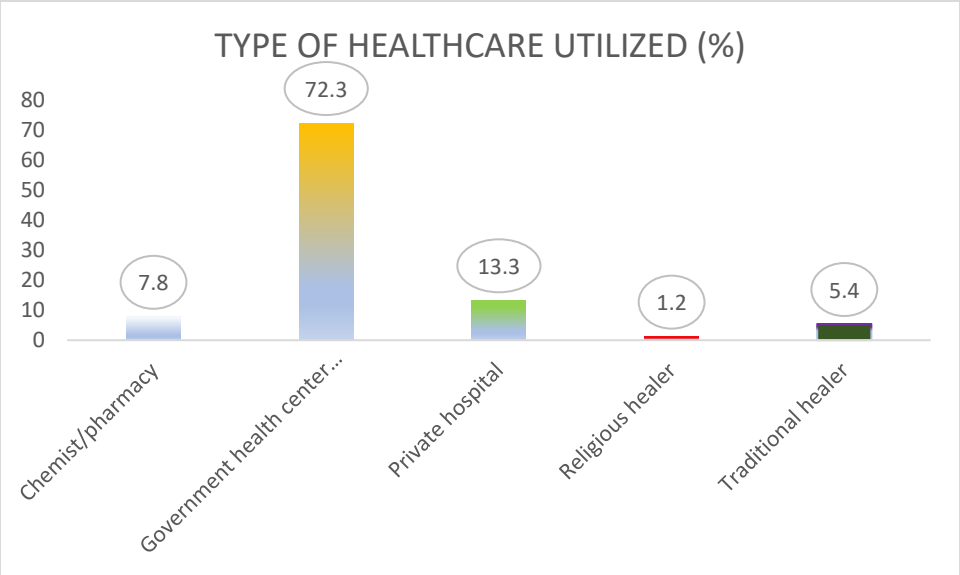

Figure 4: Types of health care utilization

Factors influencing access and utilization of healthcare services

The main determinants of access to and use of healthcare services included drug and equipment availability (64.5%), family support (71.7%), and the attitude of healthcare workers (53.6%). Service cost (46.4%) and distance from healthcare facilities (41.0%) were other factors cited as barriers, as shown in Table 3.

Table 3: Factors influencing access and utilization of healthcare services (N=166)

Variable	Response	Frequency	Percentage (%)
Distance to the health facility affects access	Yes	68	41.0
	No	98	59.0
Cost of services influences whether I go to a health facility	Yes	77	46.4
	No	89	53.6
Availability of drugs and equipment determines my healthcare use	Yes	107	64.5
	No	59	35.5
My cultural beliefs affect whether I visit a health center	Yes	46	27.7
	No	120	72.3
Long waiting times discourage me from going to the clinic	Yes	60	36.1
	No	106	63.9
Gender of healthcare provider affects my comfort in using health services	Yes	47	28.3
	No	119	71.7

Support from family members encourages my use of health services	Yes	119	71.7
	No	47	28.3
Attitude of healthcare workers influences my decision to return to a facility	Yes	89	53.6
	No	77	46.4
Lack of health insurance prevents me from accessing care regularly	Yes	61	36.7
	No	105	63.3
Poor road and transportation systems discourage me from seeking care	Yes	48	28.9
	No	118	71.1

Relationship between sociodemographic variable and access and utilization of health care services

Age, sex, marital status, education, employment status, and religion were found to be statistically significant predictors of health service access and utilization ($p<0.05$) as shown in Table 4.

Table 4: Association between sociodemographic variable and access/utilization of health care services (N=166)

Variable	Categories	Access/Utilization of Healthcare Services		Chi-square	p-value
		Yes (n=106)	No (n=60)		
Age	18–25	25 (48.1%)	27 (51.9%)	11.124	0.025*
	26–35	25 (73.5%)	9 (26.5%)		
	36–45	24 (72.7%)	9 (27.3%)		
	46–55	23 (76.7%)	7 (23.3%)		
	56 and above	9 (52.9%)	8 (47.1%)		
Gender	Female	63 (71.6%)	26 (28.4%)	3.994	0.046*
	Male	43 (55.8%)	34 (44.2%)		
Marital Status	Divorced/Separated	8 (66.7%)	4 (33.3%)	14.827	0.002*
	Married	63 (76.8%)	19 (23.2%)		
	Single	23 (44.2%)	29 (55.8%)		
	Widowed	12 (60.0%)	8 (40.0%)		
Educational Level	Arabic/Islamic Education	20 (76.9%)	6 (23.1%)	9.516	0.049*
	No formal education	32 (76.2%)	10 (23.8%)		
	Primary	11 (68.8%)	5 (31.2%)		
	Secondary	25 (53.2%)	22 (46.8%)		
	Tertiary	18 (51.4%)	17 (48.6%)		

Occupation	Artisan	8 (72.7%)	3 (27.3%)	31.404	0.000*
	Civil servant	4 (36.4%)	7 (63.6%)		
	Farmer	30 (71.4%)	12 (28.6%)		
	Trader	56 (78.9%)	15 (21.1%)		
	Unemployed	8 (25.8%)	23 (74.2%)		
Religion	Christianity	22 (56.4%)	17 (43.6%)	7.048	0.029*
	Islam	84 (67.7%)	40 (32.3%)		
	Traditional	0 (0.0%)	3 (100.0%)		
Household Size	1–3	27 (60.0%)	18 (40.0%)	2.513	0.473
	4–6	56 (66.7%)	28 (33.3%)		
	7–9	15 (55.6%)	12 (44.4%)		
	10 and above	8 (80.0%)	2 (20.0%)		
Monthly Income	< ₦10,000	15 (62.5%)	9 (37.5%)	3.188	0.363
	₦10,000–₦30,000	31 (73.8%)	11 (26.2%)		
	₦31,000–₦50,000	26 (65.0%)	14 (35.0%)		
	₦51,000 and above	34 (56.7%)	26 (43.3%)		
Distance to health facility	<1 km	35 (64.8%)	19 (35.2%)	5.269	0.153
	1–5 km	48 (71.6%)	19 (28.4%)		
	6–10 km	15 (48.4%)	16 (51.6%)		
	>10 km	8 (57.1%)	6 (42.9%)		
Community	Asomu	26 (72.2%)	10 (27.8%)	1.890	0.389
	Elemere	35 (58.3%)	25 (41.7%)		
	Malete	45 (64.3%)	25 (35.7%)		
Means of Transportation	Bicycle	8 (80.0%)	2 (20.0%)	4.042	0.257
	Motorcycle	30 (58.8%)	21 (41.2%)		
	Vehicle	13 (52.0%)	12 (48.0%)		
	Walking	55 (68.8%)	25 (31.2%)		

* Statistically significant

Discussion

The availability and use of healthcare services play an important role in shaping health outcomes, especially in rural areas where there is a barrier that prevents the provision and access to healthcare services effectively. In Nigeria, there are many people living in rural settings, but they have a harder time accessing healthcare compared to other parts of the country, due to a lack of infrastructure, a lack of personnel, and poverty (Nwankwo et al., 2022). This study investigated access to and utilization of healthcare services among people residing in three selected rural communities of Moro Local Government Area, Kwara State, Nigeria and factors affecting them.

Socio-Demographic Characteristics

Most respondents in this study were between the ages of 18 and 25 years, Muslim, and living in a family size of 4-6 members. The respondents earn an income of ₦51,000 and above, while almost half of them are married with secondary education. The result obtained is in tandem with other scholarly works, which have found the same socio-

demographic characteristic of rural residents in Nigeria (Adepoju, 2014; Olaniyan & Lawanson, 2010). In a study conducted in rural Ghana, it was found that most of the respondents are aged between 36 and 45 years, thereby indicating the different demographic structure in the two nations. This may be due to the difference in growth rate and age structures of the populace in both nations.

Access and Utilization of Healthcare Services

The results from this study show that the accessibility and use of health care services in the rural areas under consideration in Moro LGA are high, with the level of use exceeding two-thirds (63.9%). This shows that the level of functionality in the use of the health care system is quite moderate. This observation is similar to 61.3% healthcare service utilization recorded in rural communities of Benue State (Onyeonoro et al., 2023), although not as high as 71.5% found in Oyo State (Adeyemi et al., 2021). It means there are differences between these areas owing to the disparities in health facility structures, health staffing, and the strategies used in providing health care in these areas. In this study, 88.6% of the respondents noted the presence of health facilities near them. Likewise, 87.3% of the respondents reported that these facilities were usually operational. Similar findings have been documented by Bello et al. (2021), with 89.4% of the respondents noting the presence of working facilities near them.

Moreover, most participants indicated that they were satisfied with the health care services offered. These findings are in line with other previous findings that have shown that people living in rural areas are highly satisfied with the health care services provided to them in Nigeria (Salmanu et al., 2023; Uthman et al., 2023). However, a study conducted in rural India showed that only 30% of the participants were satisfied with the health care services provided (Kulu & Sheriffdeen, 2021). This difference may likely be due to variations in healthcare quality and patient expectations between Nigeria and India.

The majority of the participants in this study (89.8%) reported visiting the health care facility in case of illness, indicating proper health-seeking behavior. This finding is in agreement with other studies conducted previously, which have shown high access and use of healthcare services in rural areas in Nigeria (Joseph et al., 2017; Jimoh & Babatunde, 2022). However, the same cannot be said about rural areas in Kenya, where only 40% of the participants in a study indicated having access to any form of healthcare facilities (Oleribe et al., 2015). In all probability, such a difference might have resulted from differences in health service policies and facilities within the two countries. In addition, the high rates of access and utilization identified in this study are not just higher but also surpass those seen in Osun State (84.2%) and Northern Nigeria (68.7%), reported respectively by Ogunmodede et al. (2023) and Ibrahim et al. (2020). The high acceptance rates found in Moro LGA could possibly be attributed to the fact that there are health promotional campaigns in place, and also the revamping of the Primary Health Care system. However, this rate is comparatively less than the rate reported from selected rural areas of Ghana (93.1%) (Yeboah et al., 2021).

Type of Healthcare Utilized

The current study revealed that majority of the participants (72.3%) received health services from government health centers, as their main place of accessing healthcare compared to private hospitals which constituted 13.3%, followed by pharmacists/chemists 7.8%, and finally traditional healers 5.4%. These results have also been replicated in other studies that have been carried out among rural inhabitants in Nigeria (Joseph et al., 2017; Jimoh & Babatunde, 2022). According to one such study carried out in Kwara state, 89.2% of the rural inhabitants utilized government health facilities as their main sources (Ahmed et al., 2021). It is also interesting to note that the result obtained is almost the same as that obtained by a study conducted in rural Bayelsa (Isabu and Adhere, 2023). However, in peri-urban Lagos, the percentage utilization of the private health sector was higher (~45%). A study in rural Ghana has indicated the use of traditional healers as the most frequent source of healthcare

utilization, emphasizing the significance of traditional medicine among rural inhabitants (Adongo & Asaarik, 2018).

Factors Contributing to Access and Utilization of Health Services

It was established by this study that the major factors affecting access and utilization of health care service were availability of medication and equipment, social support of the family members, and attitude of health care personnel. These findings agree with previous research, where availability of drugs and equipment, attitude of the staff, and family support were identified as factors affecting utilization of health care services by the rural inhabitants in Nigeria (Abosede et al., 2020; Mobosi et al., 2022). However, in one rural Ethiopian study, the distance between people and health care centers was reported as the most significant factor determining health care usage (Adongo & Asaarik, 2018).

Obstacles Faced in Seeking Health Care Services

Based on the results of this study, the cost of health care, distance to health care facilities, and absence of health care insurance coverage were some of the most significant problems faced by the participants in accessing health care services. These results correspond to the findings in previous research that found out that rural residents in Nigeria encounter such challenges when trying to access health care services (Abosede et al., 2020; Mobosi et al., 2022). On the contrary, one study conducted in rural areas of Kenya indicated that lack of transport is the major challenge that respondents face in accessing health care services (Oleribe et al., 2015).

Relationship between Socio-demographic Characteristics and Access and Utilization of Healthcare Services

Age was significantly related to utilization ($p = 0.025$). Age pattern showing similar trends has also been seen in rural areas of Nigeria, whereby people aged 45-60 attended health facilities more frequently than other age groups (Abubakar & Sheriffdeen, 2022). However, in rural Ghana, utilization showed a U-shape trend with the highest use recorded by the young age group and the older age group (Mensah et al., 2021). Low use of services by young adults in Moro could be attributed to their perceived immortality.

Gender also showed significance ($p = 0.046$), whereby women (71.6%) utilized more than men (55.8%). The results showed similarities with another research conducted in Ogun State, Nigeria, where females used the services more frequently than males in rural Nigeria (Abubakar & Sheriffdeen, 2022). Marital status was strongly significant ($p = 0.002$) because married participants utilized more services (76.8%) than single participants (44.2%).

Education was highly related ($p = 0.049$), and even more unexpectedly, people with Arabic/Islamic education (76.9%) and no education (76.2%) showed high utilization levels compared to people with tertiary education (51.4%). Although education is expected to enhance health knowledge and care-seeking behavior (Atobatele et al., 2022), community-based interventions in Moro LGA may have facilitated easier access for less educated groups, which can be attributed to the same trend observed in rural India (Patel and D'Costa, 2023).

In addition, occupation and religion were also related to the access and utilization of health care services, thus rejecting the null hypothesis that there is no significant association between socio-demographic variables and access and utilization of health care services. These results are consistent with previous studies that identified similar relationships between socio-demographic factors and health care utilization among rural communities in Nigeria (Adepoju, 2014; Olaniyan & Lawanson, 2010).

Limitations of the study

This study had some limitations. One major limitation was the reluctance or unwillingness of some residents to participate in the study, particularly due to mistrust or suspicion about the

purpose of the research. Language barrier and low literacy levels also posed a challenge, potentially affecting the respondents' understanding of the questions despite translation efforts. Access to remote or hard-to-reach rural communities due to poor road infrastructure hindered timely data collection. Furthermore, some respondents might have provided socially desirable answers rather than truthful responses, especially on sensitive issues relating to healthcare utilization.

To mitigate these limitations, the researcher and assistants established rapport with community leaders; used local interpreters; planned carefully for remote data collection; ensured confidentiality to encourage honest responses; and managed resources efficiently to maximize data quality and generalizability. A thorough training of the research assistants, with effective demonstration and repeated demonstration of the use of the study instrument in the local language, was conducted before data collection to ensure correct and uniform interpretation and content delivery.

Conclusion and recommendations

It can be deduced from this study that even though physical access to healthcare services within the rural communities of Moro LGA is high, general utilization of healthcare services remains moderate. The demographic variables like age, sex, marital status, education, occupation, and religion of the respondents had a significant influence on access and utilization of healthcare services. The availability of drugs and equipment, family support, and attitude of healthcare workers were some of the factors influencing access and utilization of healthcare services. Some of the problems faced by the respondents during access to healthcare services included the cost of service, distance from healthcare facilities, and health insurance.

It is therefore recommended that priority be given by the government and health policy makers towards the availability of essential drugs and equipment, as well as the improvement of the attitude of health personnel, in order to increase the usage of health services among rural communities. Also, it is advised that measures be taken to ensure increased awareness and participation in health insurance programs so as to alleviate the economic strain associated with health costs. Urgent government intervention in the improvement of transport means and health facilities in rural areas so as to eliminate distance as a hindrance to accessing health services is highly advocated.

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Contributions by Authors

Conception and design of the study, as well as supervision of data acquisition and revisions to the paper, were done by Y.F.I. Contribution to design and analysis of data, as well as preparation of the draft for the paper, was done by M.F.A. Literature review and data analysis and interpretation were contributions of O.R.M. Data acquisition and manuscript preparation were contributions of K.O.Y. S.B.S. and R.S.O. participated in data analysis and manuscript preparation. All the authors approved the final version of the manuscript and agreed on its publication.

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Competing Interests

The authors have no conflicts of interest to declare.

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