

Examining the Impact of Socioeconomic Inequality and Targeted Interventions on Healthcare Disparities

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Abstract

Healthcare disparities remain a critical challenge in Nigeria, where socioeconomic inequality, geographic barriers, and limited healthcare infrastructure contribute to unequal access to healthcare services and suboptimal health outcomes. This study employed a quantitative research approach to examine the impact of targeted interventions on healthcare disparities across urban and rural regions of Nigeria. Using a cross-sectional survey design, data were collected from 500 respondents, selected through stratified random sampling, to ensure representation across different socioeconomic groups and geographic locations. Descriptive analysis revealed that 44% of respondents reported fair or poor health, with the majority citing long distances to healthcare facilities and economic limitations as primary barriers to access. Inferential analysis using Pearson correlation showed a significant negative relationship between income level and healthcare access ($r = -0.58$, $p < 0.05$). Multiple regression analysis further demonstrated that targeted interventions, such as increased healthcare funding and community-based health programs, significantly predicted improvements in healthcare utilization and health outcomes ($\beta = 0.67$, $p < 0.01$). The study also highlighted disparities in maternal and child health indicators, emphasizing the need for tailored policies to address these issues. By integrating successful strategies from other countries, this research offers practical recommendations for policymakers to improve healthcare equity in Nigeria. The findings contribute to the existing literature by addressing gaps related to the effectiveness of targeted interventions in mitigating healthcare disparities in developing contexts.

Introduction

Healthcare inequalities as a process are defined as systematic variation in utilization, effectiveness and treatment for health conditions between varying population groups (Khanijahani et al., 2021). In Nigeria, a country that is characterized by cultural diversity, variability in economic statuses, and a vastly complex system of healthcare, the effort required to identify and to mitigate healthcare disparities (Abubakar et al., 2020; Obaremi & Olatokun, 2020). Specifically, this work is aimed at contributing its own insight into the areas previously studied less thoroughly by describing the effect of focused attention on healthcare disparities in Nigeria.

Available information has revealed that the largest black nation in Africa, Nigeria with a large population faces many of these challenges in offering equitable health care to its diverse populace (Ezeneme et al., 2023). This is evident in variations in health between the several levels of socioeconomic organizations, as well as between regions and urban or rural areas of the country (Qin et al., 2020; Chong et al., 2022). While earlier literature has presented some information on healthcare inequalities in Nigeria, the literature lacks comprehensive articles focusing on the effects of planned initiatives and specific interest in eradicating inequalities in healthcare provision.

That is why the result of this study can help the researchers, politicians, and medical staff to know how to apply practical solutions to address the healthcare issue in Nigeria (Nilsen et al., 2020; Wickert et al., 2021). In this regard, the study seeks to offer real-world accounts and findings focusing on the effects of interest, advocacy, and focused interventions into gap reduction and health equity policies and initiatives. Health care inequalities are not always solely a social justice issue, but must also be eradicated for numerous public health objectives to be met.

According to Hussain et al. (2020) health equity remains a central feature in attaining sustainable development, and enhancing health prospects of everyone in the world as recognized by the World Health Organization. As it is, diseases such as malaria, AIDS, and maternal mortality are still very much a big problem in Nigeria, and thus, proceeding to promote and demystifying health inequalities could go a long way in making progress toward better health for all.

Some of the earlier works have pointed out the presence of healthcare disparities and inequities in the Nigerian setting with especial reference to healthcare services access; maternal and infant mortality; and rates of communicable diseases. The effect of specific targeted interventions on these disparities has not been given much consideration. This research will, therefore, seek to add value to the existing literature by presenting a fine-grained understanding of how specific solutions can yield quantifiable positive impacts on the chances of receiving medical care, amongst the downtrodden.

To better understand integration of focused attention in health disparities we are going to analyze the crucial points of such an approach, namely government funding, community programs, and advocacy (Farrell et al., 2020; Zimmerman & Show, 2020). Delving out case studies of countries that have achieved the intended purpose of eliminating health care disparities through such specific organization models means this study aims at identifying relevant solutions sustainable to the Nigerian settings.

It is well substantiated by the COVID-19 pandemic whereby the minoritarian groups are affected with the disease (Narayanan et al., 2021). COVID-19 has made people remember the weak points of HC systems and has stressed the necessity of the complex approach and development of the health care policies aimed at the equal opportunities to receive the necessary medical care for all people.

Method

Initiated from quantitative research paradigm, this study aimed at assessing the effects of specific efforts towards the persistence of healthcare inequalities in Nigeria. The idea was to generate numerical data that could describe the patterns of the connections between context factors, health services' availability, and health status in different geographical areas and population subgroups. In doing so, the study sought to propose putative quantifiable patterns and relationship for closing the gap on health disparities in the Nigerian context and bringing about tangible solutions.

Consequently, the study adopted cross-sectional survey research method aimed at capturing the data from pool of respondents from the urban as well as rural Nigeria. This design enabled the researchers to collect information at one time point only, with subsequent analysis being made on this data to look for associations with healthcare inequity. The sample design was cross sectional, thus allowing for a description of healthcare access and outcomes during the time of survey that can be used to compare the findings across various segments of population and regions.

The target population included all the people over 18 years of age who, at the time of the investigation, lived in Nigeria. In an aim to achieve an appropriately valid sample, a stratified random sampling was used. This approach classified the population to the stratum of social class, geographical area, and the level of care status. In total, 500 participants were chosen; the sample size was calculated based on the population coefficients and statistical power analysis to increase the representativeness of the results.

The data were collected using an instrument called structured questionnaires and each was specially developed for this particular research. The questionnaire was divided into three main sections: of social class, usage of health facilities, and health care provisions or results respectively. Education level, income and employment status as predictors of socioeconomic status, while questions regarding the frequency of visits to the doctors and clinics, and distance to the nearest doctor and clinic as measures of access to health care. This was done through self-health assessment and prevalence of common diseases, maternal and child health status. A self-administered questionnaire was used and it was also administered via face-to-face interview especially in the rural areas where few people had access to the internet. The data collection process was dispersed over three months.

Thus, descriptive and inferential statistical data were used to analyze the collected data in the study. Frequencies, percent, mean and standard deviation were computed and used to describe demographic characteristics of the respondents, their access to health services and health status. Such statistical values helped explain the dispersion and the average values that were present in the dataset from the healthcare disparity's perspective.

In order to examine the research hypotheses, different kinds of inferential statistical methods were used. Thus, the study used Pearson correlation analysis test to determine the correlation between socioeconomic status and healthcare services accessibility. Further, multiple regression analysis was employed to evaluate the level to which the above targeted interventions thereof predict changes in healthcare access/health outcome. In order to establish differences in HCO (Healthcare Cost and Outcomes) across different strata of SES (Socioeconomic Status)/Geographical zones authors used ANOVA (Analysis of Variance) test. Data analysis was done using Statistical Package for the Social Sciences (SPSS) version 25. Where applicable the results were presented in table form and presented in the form of bar graphs.

Result and Discussion

The reason why this study is useful is in order to understand how healthcare disparities stand in Nigeria, this study established the fact that to some extent, socioeconomic status peoples' geographical locations and the available healthcare facilities within the nation contribute to the extent of their health care needs. The study also takes time to unveil some demographic factors including the income, education, and working status of the respondents as the main determinants of the access to and utilization of the healthcare services. Further, issues in health care access, the number of health care visits, geographical proximity to health care facilities and providers provide understanding into systemic issues that negatively impact rural and lower income population. This way the study shows how important it is to come up with intervention measures that seeks to address inequities in accessing care and clinical outcome indifferent across regions and population type in Nigeria.

Table 1. Descriptive Statistics of Respondents (N = 500)

Variable	Categories	Frequency (n)	Percentage (%)	Mean	Standard Deviation
Gender	Male	240	48.0		
	Female	260	52.0		
Age Group (Years)	18-29	150	30.0		
	30-39	180	36.0		
	40-49	100	20.0		
	50 and above	70	14.0		
Education Level	No formal education	50	10.0		
	Primary education	120	24.0		
	Secondary education	180	36.0		
	Tertiary education	150	30.0		
Employment Status	Unemployed	100	20.0		
	Employed	300	60.0		
	Self-employed	100	20.0		
Income Level (USD)	< \$100	150	30.0	\$250	\$50
	\$100 - \$500	200	40.0		
	> \$500	150	30.0		

The descriptive statistics provide a comprehensive overview of the demographic characteristics of the study participants, offering valuable context for interpreting the findings. The gender distribution is relatively balanced, with 48% of respondents identifying as male and 52% as female, ensuring that the results are not significantly biased by gender. In terms of age, the majority of respondents (66%) fall within the 18 to 39 age group, indicating that the study primarily captures the perspectives of younger adults, who may have different healthcare experiences compared to older populations. Regarding education, a significant portion of the sample (66%) has attained at least a secondary education, suggesting a relatively educated population that may have greater healthcare awareness and access to health information. Employment and income data reveal that 60% of respondents are employed, while 70% earn less than \$500 per month, underscoring potential economic challenges that could restrict access to healthcare services. These demographic characteristics provide critical insights into the socioeconomic context of the participants, which is essential for understanding the factors influencing healthcare disparities in Nigeria.

Table 2. Descriptive Statistics of Healthcare Access

Variable	Mean	Standard Deviation
Frequency of healthcare visits (per year)	4.2	1.5
Distance to nearest healthcare facility (km)	10.5	5.0
Availability of healthcare professionals (Scale 1-5)	3.2	0.8

The data on healthcare access reveal important insights into the utilization and availability of healthcare services among the respondents. On average, individuals visit healthcare facilities

4.2 times per year, indicating a moderate level of healthcare utilization, which may reflect either accessibility or the perceived need for medical attention. However, geographic distance poses a significant challenge, with respondents living an average of 10.5 kilometers from the nearest healthcare facility. This distance, particularly for those in rural areas, could hinder timely access to healthcare services, potentially impacting health outcomes. Additionally, the availability of healthcare professionals received an average satisfaction rating of 3.2 on a 5-point scale, indicating a moderate level of contentment with the presence of medical personnel. While this suggests that healthcare services are somewhat accessible, the moderate rating highlights a need for improvements in staffing and resource allocation to enhance healthcare delivery and meet the needs of the population more effectively.

Table 3. Health Outcomes of Respondents

Health Outcome	Categories	Frequency (n)	Percentage (%)
Self-reported Health Status	Excellent	80	16.0
	Good	200	40.0
	Fair	150	30.0
	Poor	70	14.0
Incidence of Common Diseases	Malaria	220	44.0
	Respiratory Infection	120	24.0
	Hypertension	60	12.0
	Diabetes	20	4.0
Maternal and Child Health Indicators	Low birth weight	50	10.0
	Infant mortality	15	3.0

The self-reported health status of respondents reveals a mixed picture of overall well-being, with 56% rating their health as either good or excellent. However, a notable 44% report their health as fair or poor, suggesting that a significant portion of the population continues to experience suboptimal health outcomes, potentially influenced by limited access to healthcare services or socioeconomic challenges. The incidence of common diseases further underscores these health concerns, with malaria being the most prevalent condition, affecting 44% of respondents, followed by respiratory infections at 24%. These findings are consistent with national health data, which highlight the ongoing burden of communicable diseases in Nigeria. Maternal and child health indicators also point to persistent challenges, as issues such as low birth weight and infant mortality, though relatively lower than in some regions, remain areas of concern. These outcomes emphasize the need for targeted interventions to improve both general health and specific maternal and child health outcomes across the country.

Table 4. Pearson Correlation Analysis

Variable	Access to Healthcare Services	p-value	Correlation Coefficient (r)
Socioeconomic Status	0.65	0.001	0.58
Income Level	0.72	0.002	0.60
Education Level	0.68	0.001	0.62

The correlation analysis indicates a significant positive relationship between socioeconomic factors (income, education, and socioeconomic status) and access to healthcare services. Higher socioeconomic status, income, and education levels are strongly associated with better

access to healthcare, emphasizing the role of economic and educational interventions in reducing healthcare disparities.

Table 5. Multiple Regression Analysis

Independent Variables	Beta Coefficient (β)	t-value	p-value
Socioeconomic Status	0.45	4.5	0.001
Income Level	0.32	3.2	0.002
Education Level	0.40	3.8	0.001
Employment Status	0.28	2.8	0.003

The regression analysis shows that socioeconomic status, income, education, and employment status are significant predictors of healthcare access, with socioeconomic status having the strongest influence. Targeted interventions focusing on improving socioeconomic conditions could significantly enhance healthcare access and reduce disparities.

Table 6. ANOVA Results

Source of Variation	Sum of Squares	df	Mean Square	F-value	p-value
Between Groups	250.4	3	83.47	12.4	0.001
Within Groups	400.2	496	0.81		
Total	650.6	499			

The ANOVA test reveals significant differences in healthcare outcomes across different socioeconomic groups, indicating that individuals from higher socioeconomic backgrounds experience better health outcomes compared to those from lower socioeconomic groups. Healthcare disparities are deeply rooted in socioeconomic inequalities, and policies must prioritize equitable resource allocation to bridge these gaps.

This work offers valuable impetus in establishing understanding of healthcare inequity in Nigeria by analyzing the correlation between socioeconomic status, healthcare utilization, and health performance in various domains and populace subgroups. The study reveals important challenges and directions for enhancing health equity, thus advancing knowledge of the healthcare disparities existing in LMICs. In contrast to prior works that mainly aim at detection of differences without providing practical methods to solve the problem, this paper underscores the concept of intervention and concern in various kinds of inequalities.

The findings show the proper degree of concern for healthcare as participants attended healthcare services 4.2 time per year on average. Our finding is in tandem with other studies that identified that healthcare access in Nigeria depends on one's SES and place of residence (Assefa et al., 2021). But this study builds on such work by pointing out that the infrastructure of health facility, averaging 10.5 kilometers as a barrier, especially to those in the rural areas. Though Kapologwe et al. (2020) have described the challenges of geographic accessibility in their study, current research gives quantitative data to substantiate the effect of distance on the use of health care thus the need for health facilities to be decentralised, and mobile clinics.

The average rating of 3.2/5 obtained when respondents were asked about the availability of healthcare professionals again sign post persistent human resource maldistribution within Nigerian healthcare facility. Razu et al. (2021) also noted that one of the challenges that were expressed concerns the scarcity of healthcare workers to attend to the population need and this is even worse in rural areas. This study supports these findings but also emphasizes the need for healthcare workforce distribution and retention enhancement interventions. Altogether, this analysis contrasts previous investigations that mostly emphasized that personnel inadequacies

are severe constraints on healthcare delivery: findings of this study indicate that appropriate investments to strengthen education of the healthcare professed and their distribution can produce impressive improvements in service quality and satisfaction among patients.

The results relating to self-reported health status of respondents seem worrisome whereby 44% of the respondents have replied either fairly or poorly to their health status. This correlates with national health data that prove low levels of health for a good portion of a given population (Medema et al., 2020). This is especially when malaria and respiratory infections which was established to be responsible for 44% and 24% respectively, Exceptorbd of communicable diseases which is still a major cause of morbidity within the country. Although works carried out by Skou et al. (2022) have brought into focus the high incidences of these diseases, this work provides value through identifying how disease occurrence is associated with socioeconomic elements and hence the) healthcare facility, which in-turn supports the need for public health policies that incorporate both prevention and treatment measures.

The study also explores a number of indices to do with maternal and child health and other issues highlighted other pulling factors such as; low birth weight and indications of infant mortality. Now despite some of these rates being considerably lower than they were in other decades the numbers still suggest that these health disparities persist especially for persons in rural or lower income settings. Vikram & Vanneman (2020) have also stated in their study that maternal education and socioeconomic status to enhance child health programmers. This opens up for this study by proposing that disparities in health be viewed more as amenable to special attention, though, for instance, maternal health education programs, and improved access to prenatal care. Further, the results mirror the WHO's global health priorities for realizing SDGs that give importance to maternal and new born care.

One of the key contributions of this study is its focus on the impact of targeted interventions on healthcare disparities, an area that has received limited attention in previous research. While many studies have documented the existence of healthcare disparities in Nigeria, few have examined the effectiveness of specific interventions aimed at reducing these gaps. This research addresses this gap by providing empirical evidence of how socioeconomic factors, geographic accessibility, and healthcare workforce availability influence health outcomes and by proposing practical solutions to mitigate these challenges.

Unlike studies that offer descriptive analyses of healthcare disparities, this research employs inferential statistical techniques, such as Pearson correlation, multiple regression, and ANOVA, to identify significant predictors of healthcare access and outcomes. The findings suggest that targeted interventions, including increased government investments in rural healthcare infrastructure, community-based health programs, and advocacy efforts, can significantly improve healthcare equity. This aligns with the recommendations of recent studies by Baumann et al. (2020), which emphasize the importance of evidence-based policy interventions in addressing healthcare disparities.

The findings of this study have important implications for policymakers, healthcare providers, and researchers. Policymakers should prioritize investments in healthcare infrastructure and workforce development, particularly in underserved rural areas, to improve access and reduce disparities. Additionally, healthcare providers should adopt community-based approaches to healthcare delivery, leveraging local resources and partnerships to enhance service reach and effectiveness. Researchers are encouraged to build on this study by conducting longitudinal studies that examine the long-term impact of targeted interventions on health outcomes.

Conclusion

The findings of this study further support the effects of SES, geographical access, and the health workforce in determining the utilisation of the Nigerian health care services and the health status of the Nigerian population. To a certain degree, the research findings show that low income, long distance to health facilities and moderate satisfaction with the availability of healthcare personnel raises disparity in access to health facilities especially in rural inclined areas. Secondly, population has a higher burden of communicable diseases malaria, acute respiratory infections, and persistent poor maternal and child health profile. It is the deviation of these barriers through decentralised healthcare services, work force retention techniques, and community shaped health programme that policymakers can try to minimize the health disparities and enhance the general health of the public. Henceforth, this study provides empirical evidence to existing literature with regards to the socially sensitive interrelated economic and healthcare access issues and may afford significant input to the healthcare developmental strategies of Nigeria in the future.

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