EFFECTS OF BASIC HEALTH CARE PROVISION FUND HEALTH INSURANCE ON HEALTHCARE ACCESS AND UTILIZATION IN ADAMAWA STATE: EVIDENCE FROM STRUCTURAL EQUATION AND THOMAS & PENCHANSKY MODELS

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ABSTRACT

Nigeria's path to Universal Health Coverage is hindered by law access, financial and systemic challenges, notably impacting vulnerable populations. Basic Health Care Provision Fund (BHCPF) health insurance, a safety-net intervention in Nigeria, aims to enhance access to and utilisation of healthcare services for the vulnerable. This study examines the influence of the BHCPF health insurance on healthcare access and utilisation, among the vulnerable in Adamawa State. Data were collected from 793 BHCPF health insurance beneficiaries via a cross-sectional survey in Adamawa State between January and June 2025. A multistage sampling approach was used to determine the sample size. Structural Equation Modelling based on the Thomas Model for healthcare access was applied for the measurement of the structural relationships among the study latent variables. The variables are; BHCPF, healthcare access and utilisation (AccessUHC), frequency of healthcare facility visits (AUHC1), availability and ease of access to services (AUHC2) and coverage of health needs of the beneficiaries by the BHCPF (AUHC3). Model fit indices and standardised path coefficients were also conducted. The results indicate that the BHCPF health insurance significantly enhances healthcare access and utilisation for the vulnerable in Adamawa State. Thus; AUHC1- β =0.71 p-value 0.001, AUHC2- β= 0.64 p-value 0.000-AUHC3 β = 0.82 p-value-0.000. This study emphasises the significance of BHCPF health insurance as a safety net in improving healthcare access for vulnerable populations. It recommends effective policies to enhance the implementation of BHCPF health insurance in Adamawa State and beyond, for optimising the intervention's impact on healthcare access and utilisation.

Keywords: *BHCPF health insurance, healthcare access and utilization, vulnerable population Thomas Healthcare access Model, & Structural Equation Modeling*

1. Introduction

Due to high out-of-pocket costs leading to catastrophic health expenditures, vulnerable populations in Nigeria, predominantly rural and low-income workers, face significant barriers to access and utilisation of quality healthcare. The Basic Health Care Provision Fund (BHCPF), health insurance gateway established by Nigeria's

National Health Act (2014). The intervention aims to enhance Universal Health Coverage by reducing poverty among marginalised groups and improving access to essential health services (HIS Act, "Profile of Vulnerable Nigerians," 2022). BHCPF health insurance focuses on lowering costs for a Basic Minimum Package of Health Services (BMPHS), particularly for women, children, the elderly, and internally displaced individuals Ibrahim et al.,2023 and Chukuma 2023). In conflict-affected regions like Northeast Nigeria, BHCPF aims to alleviate financial burdens associated with illness, which often lead to poverty and distress financing (FMOH 2016, 2020).

BHCPF, as a safety-net intervention in Nigeria, aims to enhance access to and utilisation of healthcare services for the vulnerable. However, the intervention's effectiveness is hampered by several factors. As suggested by Chukuma (2023) and Onwujekwe et al. (2019), multiple factors contribute to the limited impact of the BHCPF health insurance in Adamawa State. These factors include poor accountability, restricted coverage, low public awareness, and fragile health infrastructure. More so, other factors hindering the intervention are inefficiencies in the allocation and management of funds, and the absence of robust systems for monitoring and evaluation

Conceptually, Health care access, according to the World Health Organisation (WHO), is the timely use of personal health services to attain the best possible outcomes; services must be accessible, affordable, acceptable, and available. Underpinned by Universal Health Coverage (UHC), healthcare utilisation (coverage) refers to the actual, equitable, and efficient usage of these services to meet population needs without financial hardship, Satsuki et al (2026)

Health care access refers to the ability of individuals and populations to obtain appropriate healthcare services promptly, (Gulliford et al., 2002). Furthermore, access requires gaining entry into the healthcare system, securing access to sites of care where patients can receive needed services, and finding providers who meet patients' needs and with whom patients can develop a relationship based on mutual communication and trust. However, it is not a binary concept of simply having a health facility nearby (National Academies of Sciences, 2018).

In addition, access to and utilisation of health care are complex yet essential elements of a successful health system. Health Care access and utilisation are one of the objectives of this study. The Health Access Framework has been extensively discussed in the literature since the work of Thomas & Penchansky (1984) and the Andersen (1995) model and other famous frameworks. And these famous theories will continue to dominate global public health and policy discussions. In recent times, studies including Piquer-Martinez et al. (2024) and Cu et al. (2021) have adopted the health access framework in their evaluations of health care access. One objective of the BHCPF health insurance is to provide

health care services to vulnerable populations in Nigeria. Understanding the concept of access to health care is pertinent in this study.

The healthcare access for vulnerable populations in Nigeria, including the rural poor, women, children, the elderly, and internally displaced persons, is hindered by various barriers such as financial, geographic, structural, and social factors. These barriers force difficult choices between health and other essential needs. The BHCPF aims to mitigate these issues by providing dedicated funding for primary healthcare, enhancing service quality, incentivising performance, and fostering community oversight, ultimately ensuring healthcare becomes a sustainable right for all Nigerians.

Against the above background, the principal empirical hypothesis of this study is that health insurance may be an endogenous variable that influences access and utilisation of health care services as identified in the literature (Wada et al., 2023). This study, therefore, examines the influence of the BHCPF health insurance on healthcare access and utilisation among the vulnerable in Adamawa State. Section 2 discuss on the review of related literature and establishes the theoretical framework. Section 3 outlines the study's methodology, including data sources and the analytical model employed. Section 4 presents and analyzes the estimation results, while Section 5 focus on conclusion and recommendations.

2. Literature Review

2.1 Theoretical framework

Theoretically, the "Health Access Framework", developed by Thomas & Penchansky (1984), is a theoretical framework for assessing healthcare access and utilisation. It focuses on understanding how people engage with the healthcare system and its dimensions. Empirical studies, including Levesque (2013) and Maser et al. (2020), show that individual demographic, socioeconomic, and health system dynamics influence their ability to use health services effectively. Access is a multifaceted concept with diverse interpretations.

According to Thomas & Penchansky's (1984) framework, healthcare access involves not only the availability of services but also factors that affect individuals' ability to obtain treatment. The WHO defines "access" as the ability to utilise health services when needed. Levesque et al. (2013) and Penchansky & Thomas (1981) identified five dimensions of Access: (a) *Availability*, which measures the adequacy of health services relative to patient demand; (b) *Accessibility*, which considers geographic factors influencing patients' Access to services; (c) *Accommodations*, assessing how well services meet patient needs regarding scheduling and organisation; (d) *Affordability*, which relates to the financial viability of treatments for patients; and (e) *Acceptability*, reflecting the compatibility of values and expectations between providers and patients. In the same vein, Penchansky & Thomas (1981) and Goudge (2009) emphasised that Access is a critical concept in health policy and health

services research; however, it has not been well defined or consistently used. For many scholars, "access" denotes entrance into or use of the health care system, but for others, it describes the elements that affect entry or utilisation.

In view of the above, the application of the Thomas & Penchansky framework of health access to BHCPF health insurance could be established as follows: Availability: Are BHCPF-supported facilities adequately staffed and stocked? Accessibility: Are rural and displaced populations physically able to reach health centres? Accommodation: Do BHCPF services take into account working hours and transport constraints? Affordability: Does BHCPF effectively remove or reduce out-of-pocket payments? Acceptability: Are services delivered in a way that respects local norms and expectations?

2.2 Empirical Review

Empirical studies conducted since 2020 have shown that health insurance dramatically increases the use of healthcare services across settings and demographics. Using data from nationally representative surveys, Zhang & Caban-Martine (2021) conducted a comprehensive cross-sectional investigation in China. According to their study, those with health insurance are significantly more likely to seek outpatient services, such as primary care visits, and inpatient care, such as hospital stays. The study underlined that insurance coverage increases utilisation rates by lowering financial barriers and facilitating prompt access to healthcare (Fetene et al., 2023 and Tuolong et al., 2024).

On the role of health insurance on access to health care, Fetene et al. (2023) evaluated the impact of Community-Based Health Insurance (CBHI) on healthcare utilisation in northwest Ethiopia using a quasi-experimental mixed-methods design. The study found that CBHI members utilised health services 1.3 times per capita annually, with enrolment increasing healthcare utilisation by 6.9 percentage points. However, the program faced systemic implementation challenges, including shortages of human resources, out-of-stock drugs and supplies, and long waiting times for services and reimbursement claims, which hampered its overall effectiveness.

In other attempts to establish the role of health insurance on health access and utilisation, a study was conducted by Tuolong et al. (2024) in Ghana, which investigated access to quality primary healthcare services under the National Health Insurance Scheme (NHIS), its effect on NHIS enrolment, and its contribution to UHC. Using a mixed-methods approach with data from 413 insured individuals and 47 healthcare facilities, the study employed binary logistic regression. Findings from the survey revealed that enhanced access to and utilisation of primary healthcare (PHC) services significantly correlated with increased NHIS membership renewal. Key influencing factors included the availability, acceptability, and affordability of healthcare services.

Further, Osei et al. (2021) also used a regression discontinuity methodology to analyse data on Ghanaian health insurance enrolment. They discovered that individuals barely above the insurance eligibility line are significantly more likely to visit medical facilities and receive necessary treatments. Accordingly, this result highlights the link between insurance coverage and higher healthcare utilisation in resource-constrained environments. Additionally, Liu et al. (2021) used a longitudinal panel data study from Vietnam to document the growth in health insurance coverage over several years. Higher use of preventive care services, including health education, screenings, and vaccinations, is correlated with greater coverage. According to the study, increasing access to health insurance also promotes the adoption of more early-stage and preventive therapies, which are crucial for lowering the burden of chronic illnesses.

In a similar study conducted in Rwanda, Saksena (2011) found that enrolment in Mutual Health Insurance (MHI) coverage significantly increases the use of health services. In fact, when people in families with MHI coverage were sick, they used health services twice as often as those in households without insurance.

To sum it up, the empirical evidence revealed that Nigeria's most vulnerable populations—including rural residents, women, internally displaced persons (IDPs), and informal workers—continue to face severe and intersecting barriers to healthcare access and utilisation. Costs related to health care remain the most critical deterrent, with catastrophic health expenditure affecting over 25% of the poorest households, a figure significantly higher than the national average of 15% (World Bank, 2022). This financial burden is compounded by geographical marginalisation, with more than 60% of rural northern residents living beyond 5km from a functional primary healthcare centre (Jia et al., 2025), and by systemic weaknesses such as frequent stock-outs of essential medicines in over 70% of primary facilities (Uzochukwu et al., 2015).

These findings therefore underscore the potential of BHCPF health insurance to increase access and utilisation of health care services by intervention beneficiaries in Adamawa State if effectively implemented.

3. Methodology

3.1 Study Design

This study used a cross-sectional survey design, ensuring geographic and demographic representativeness through a multistage sampling approach. Using quantitative primary data that was collected from 793 BHCPF health insurance beneficiaries in Adamawa State.

3.2 Study population

The target population for this study comprises eligible enrolees who are beneficiaries of the BHCPF health insurance intervention in Adamawa State, and non-eligible enrolees of any health insurance using the same PHCs as the BHCPF enrolees. The quantitative data for this study comprise enrollees in the BHCPF health insurance, available in the ASCHMA database at the end of December 2025, totalling 74,552 across the state's 21 LGAs. The selection of enrolees' approach, using the BHCPF intervention implementers database, was consistent with previous literature (Shobiye et al., 2021).

3.4 Sample and sampling Technique

A multistage cluster sampling technique was utilized in this study across nine LGAs in Adamawa State. This approach, as explained by Davis et al., (2009), is effective for large-scale surveys that involve multiple levels of sample selection (Bolarinwa et al., 2022; Ogundeji et al., 2019; Hankin, 1984). The state was divided into three senatorial zones, with three LGAs chosen from each zone, including two primary health facilities in both urban and rural settings. Beneficiaries of BHCPF were systematically sampled. While the study design supports analysing healthcare access outcomes, the cross-sectional nature limits causal inference. Conducted between January and June 2025, the study's findings are specific to Adamawa State and provide valuable insights into the impact of BHCPF. Additionally, Yamane's (1967) method was used to determine the sample size, valued for its simplicity, which requires only the total population size (N) and the desired margin of error (e), thus making it accessible for researchers with limited statistical skills.

Yammane is computed using the formulas:

$$n = \frac{N}{1+N(e^2)} \quad (3.1)$$

Where:

n = sample size
N = population size
e = margin of error (typically 5% or 0.05)

As of the end of 2024, the BHCPF health insurance intervention in Adamawa State had benefited 74,552 individuals. The study includes 400 beneficiaries and 400 non-beneficiaries, with a 5% error margin to account for potential population variability. This configuration allows for a comprehensive analysis of healthcare access and utilisation among the vulnerable Population. Therefore, applying the

total Population of the study, the sample size and the error margin, the final sample size for the study was determined as;

$$n = \frac{74552}{1+74552(0.05^2)} = \frac{74552}{1+74552(0.0025)} = \frac{74552}{74553(0.0025)} = \frac{74552}{186.3825} = 399.99 \approx = 400$$

Accordingly, the study involved a sample of approximately 400 beneficiaries and 400 non-beneficiaries of the BHCPF health insurance, drawn from 18 primary health centres across nine local government areas in Adamawa State. The sample was selected without preference to enable an effective comparison of healthcare access and utilisation between the two groups.

3.5 Study data and variables

To assess the impact of the BHCPF health insurance on poverty reduction and healthcare access in Adamawa State, quantitative data were collected from 18 primary healthcare centres using a validated semi-structured questionnaire, following Fleming et al. (2013). The instrument, developed and refined through pretesting in two local government areas, consisted of seven sections, including demographic characteristics and healthcare access and utilisation. The research team, trained in data collection and support for non-English speaking respondents, followed structured protocols to ensure data quality and compliance with research objectives. The final questionnaire was aligned with existing literature including Ibiwoye & Adeleke (2008), Sirag & Nor (2021), and Getachew (2023).

In this study, a questionnaire was developed to assess the access to and utilisation of healthcare services among beneficiaries of the BHCPF health insurance in Adamawa State. The focus is on enhancing equity in healthcare access for vulnerable populations. Key areas addressed include beneficiaries' awareness of the health intervention, the functionality of accredited health facilities, their enrollment status, the enrollment process, and the overall ease of accessing services. The questionnaire was adopted from previous studies, including Kim & Park (2023) and Mwangi et al. (2022), and features 12 items that employ a five-point Likert scale, with item sources based on prior of the above studies. This domain for the access and utilisation of health care services contained 12 items in the questionnaires. The questions for this domain also applied a five-point Likert Scale with 1 = strongly disagree to 5 = agree.

This study evaluates the effects of the BHCPF health insurance program on access to healthcare, financial risk protection, and poverty alleviation among vulnerable populations in Adamawa State. Utilising selected outcome variables from previous studies, such as El-Omari & Karasneh (2021) and Demissie & Negeri (2020), the research focuses on health service utilisation indicators like outpatient

services, inpatient care, antenatal visits, and child immunisation. BHCPF serves as the independent variable reflecting participation in the health insurance intervention. In contrast, the dependent variables include the household head's demographic and socio-economic characteristics, such as age, education, income, and illness incidence. Detailed operational areas from the BHCPF intervention guidelines (FMOH 2016, 2020).

Specifically, to evaluate the effects of the BHCPF on healthcare access and utilisation, the study developed five constructs or latent variables in line with the Structural Equation Model (SEM). The constructs cover variables related to access and utilisation of health services, measured by five indicators: frequency of healthcare facility visits *(AUHC1*), availability and ease of access to services (*AUHC2*), coverage of health needs by the BHCPF BMHSP *(AUHC3)*, satisfaction with health services *(AUHC4),* and promptness of treatment *(AUHC5).* These variables collectively depict the multidimensional nature of healthcare access and utilisation. Recent research (Adepoju et al., 2022) confirms that ease of access, satisfaction, and promptness are critical factors influencing health-seeking behaviour, utilisation intensity, and perceived quality of care. The frequency of visits provides an objective measure of utilisation, while other variables capture perceived accessibility and responsiveness, which are essential for understanding service uptake in health systems.

3.6 Analytical model

The measurement model defines how the latent variables or hypothetical constructs are measured in terms of the observed variables. To account for the effect of BHCPF on Access and Utilisation of Health Services (*AUHC)*, Financial Risk Protection (*FRPR)* and Poverty Reduction (*POVR*) in Adamawa State, the model is composed of the following four structural equations:

Health accessibility and utilisation*:* $y_1 = \Lambda_y \eta_1 + e_1$ - - ----------*(3.2)*

From the above model 1 y_1, represents the set of observed indicators that collectively capture the construct related to Health equity- accessibility and utilisation, financial risk protection, and Poverty reduction, η_1, as the latent dependent variables, Λ_y are parameters to be estimated. Finally, e_1 is an error terms with zero expectation. As described by Giuffrida et.al., (2005).

In the measurement model, the variable y_1 denotes the set of observed indicators that collectively capture the construct related to health equity- access and utilisation of health care services. These observed variables include a range of specific measures, such as the frequency of health care visits by individuals, which indicates how often people seek medical attention within a given period.

Additionally, it encompasses the ease with which individuals can access healthcare services, reflecting factors such as proximity, availability, and the affordability of health facilities. Coverage of health needs pertains to the comprehensiveness of services accessed; for example, the BHCPF Basic Minimum Health Service Package (BMHSP) is purchased by the BHCPF health insurance. Also, ensuring that individuals receive care that meets their health needs. Satisfaction with health services assesses the perceived quality and responsiveness of care from the patient's perspective. At the same time, promptness of treatment evaluates the timeliness of medical intervention following a request for services, among other factors. These observed indicators serve as tangible, measurable representations of the broader, unobserved construct labelled "Access and Utilisation of Health Services," denoted by the latent variableη_1.

The latent variable η_1 (*AUHC*) encapsulates the underlying concept that is not directly observable but can be inferred through the patterns and relationships among these observed indicators. By modelling η_1 as a latent construct, the study aims to understand the underlying propensity or level of health equity-access and utilisation influenced by the BHCPF health insurance within the vulnerable population, which cannot be captured through any single observed variable alone. The measurement model essentially posits that each observed indicator y_1 is a function of the latent variable η_1, scaled by respective factor loadings, which quantify the strength of the relationship between the latent constructs and each observed variable.

Furthermore, the error term, represented as e_1, accounts for the measurement inaccuracies, unexplained variations, or other factors influencing the observed indicators that are not captured by the latent variable η_1.

3.7 Structural Model

The structural model defines the relationships between the latent dependent variable (*AUHC*) and the independent variable (*BHCPF*).'

$$\eta = \beta\eta + \Gamma\xi + \zeta \quad - - - - - - - - - \quad (3.3)$$

Where;

$\eta = \eta_1$, represents the dependent variables (Access and Utilization of Health Services)

ξ= (BHCPF) represents the independent variable, BHCPF, which affects Access and Utilization of Health Services Financial Risk Protection, and Poverty Reduction in the study area.

β= represents the coefficients for the relationships among the dependent variables (intra-relationship between the BHCPF and *AUHC,).*

Γ= represents the coefficient that captures the direct effect of the BHCPF health insurance on Access and Utilization of Health Services Financial Risk Protection, and Poverty Reduction.

ζ= represents the error term, capturing any unobserved factors affecting the dependent variable.

3.8 Covariance Matrix

The covariance matrix of the latent variables η in the measurement model is the same as the covariance matrix of the error term ζ in the structural equation model. This ensures consistency in the model's specification and aligns the measurement and structural components in capturing the role of BHCPF on Access and Utilization of Health Services.

This model specification will be used to assess the effect of BHCPF on Access and Utilization of Health Services

3.9 Method of data analysis

The study employs AMOS version 23 and SPSS for the data analysis, focusing on the impact of Basic Health Care Provision Fund (BHCPF) health insurance on healthcare access among vulnerable populations in Adamawa State. Structural Equation Modelling (SEM), facilitated by AMOS for its graphical interface and integration with SPSS (Marcoulides & Kyriakides, 2010 and Cohen, 1998), is central to the analysis. The study includes confirmatory factor analysis (CFA) to derive factor loadings and examine relationships among constructs, utilising techniques such as path analysis to assess standardised estimates and p-values. It also permits the analysis of moment structures (Medrano, 2006). Additionally, as described by Byrne (2013).

Key model-fit indices such as CFI and RMSEA were used to validate the statistical model. The findings lead to the rejection of null hypotheses, establishing that BHCPF significantly enhances healthcare access and financial protection and reduces poverty, supported by parameter estimation and bootstrap resampling. Additionally, the study combines descriptive statistics to summarise variable characteristics with SEM's sophisticated analysis to capture complex interactions among multiple variables, a critical advancement over traditional methods.

CFA plays an essential role in ensuring measurement reliability and validity, while SEM's capability

to handle non-normal distributions and missing data broadens the applicability of the findings (Hu & Bentler, 1999). Ultimately, based on the robust findings of this study using AMOS, the study rejected the null hypotheses, concluding that the BHCPF significantly improves healthcare access in Adamawa State, facilitated by parameter estimation, standard error calculation, and bootstrap resampling via AMOS (Hair et al., 2019), leading to valid and generalizable conclusions.

4. Result and Discussion

4.1 Effects of BHCPF on Access and Utilisation of Health Care Services

The effect of the BHCPF health insurance on poverty reduction through improved access and utilisation of health care by the beneficiaries in Adamawa State is another objective of this study. An analysis of the structural models of the interventional effects on the individual hypothesised variables of this study is presented in Table 1. According to the analysis, the standardised results for healthcare access and utilisation ranged from 0.64 to 0.82, all of which are statistically significant (p 0.001). The most potent effect is observed for "Coverage of health needs of the vulnerable by the BHCPF BMHSP" (β "0.82, CR = CR3.1). Other variables, according to the analysis, are also relevant to improvement in access and utilisation of health care services by the vulnerable population in Adamawa State. These findings support that BHCPF significantly improves both physical access to healthcare (facility visits and ease of access) and the comprehensiveness of coverage, particularly at the primary care level. This aligns with the conceptual framework that health insurance schemes play an important role in improving both access and utilisation (2013). Furthermore, the powerful effect on coverage of health needs (*AUHC3)* suggests that BHCPF in Adamawa State may be successfully addressing the service coverage dimension of UHC, which has historically been challenging in Nigerian healthcare systems (Onoka et al., 2015).

Table 1: Testing the Moderating Effects of BHCPF on Access and Utilisation of Healthcare Services

Constructs	Standardised mate Path Coefficient	Unstandardised mate Path Coefficient *(β)*	P-Value
Frequency of healthcare facility visits (AUHC1)	0.71	1.00	0.001**
Ease of access to services (AUHC2)	0.64	1.302	0.000***
Coverage of health needs by the BHCPF BMHSP (AUHC3)	0.82	1.173	0.000***

Source: Generated by the researcher using STATA version 23 using study data from quantitative data collection and analysis plan.

4.2 Discussion of major findings

The findings of this study using SEM underscore the pivotal role that improvements in BHCPF health insurance and its adequate financing (that is, foundational health infrastructure, services, and sustainable financial mechanisms) play in advancing key health and socioeconomic outcomes particularly, improved health equity in terms of access and utilisation of health services, measured the extent to which populations can obtain and use health services.

Based on the findings of this study, health equity outcomes were found to be statistically significantly associated with the BHCPF health insurance among the vulnerable population in Adamawa State. The findings substantively reveal that strengthening health systems through effective implementation of health insurance intervention can catalyse broader social and economic development (Table 1). The discussion herein contextualises these findings within existing literature, highlighting consistencies, differences, and implications for health policy and system strengthening.

Findings of this study indicate a positive association between improvements in BHCPF health insurance and health equity, access to health services in Adamawa State. These findings align with prior expectations for this research. The findings also emphasised the importance of health infrastructure, resource allocation, and financing mechanisms in expanding healthcare access. According to the result, an increase in funding for health care infrastructure was reported to improve access to health care services. For example, Houeninvo (2022) emphasises that investments in health infrastructure and financing are fundamental for achieving universal health coverage, especially in low- and middle-income countries where resource constraints are prevalent. His findings suggest that health system strengthening directly correlates with increased service coverage. This is corroborated by the current study's results, which show that a unit increase in BHCPF funding and performance leads to a substantial rise in access to and utilisation of health care services by the vulnerable population in Adamawa State.

5.1 Conclusion

This study highlights a significant gap in existing literature on the reporting of implementation fidelity for BHCPF health insurance in Adamawa State. To fill this gap, it contributes valuable insights into health policy evaluation in Adamawa State. The study`s findings revealed predominantly moderate to low fidelity levels. Key issues identified include insufficient capitation payments for healthcare providers, which is exacerbated by macroeconomic shocks and systemic flaws. Ultimately this is affecting the quality of care, leading to drug shortages and negatively impacting health worker attitudes. In contrast, adherence to guidelines regarding beneficiary enrolment and provider accreditation

demonstrates higher fidelity, somewhat alleviating the adverse effects of low fidelity. The study also underscores key challenges, such as inadequate funding, a human resource crisis, and poor infrastructure, that further inhibit the effective implementation of the BHCPF health insurance program. Additionally, it notes that existing quality assurance and community structures have not ensured compliance or maintained service quality.

In addition, the study evaluated the poverty-reduction effects of the BHCPF health insurance on health equity, financial risk protection, and catastrophic health spending and impoverishment for the vulnerable population in Adamawa State. Consequently, the study found a significant positive relationship across the three outcomes (health equity, financial risk protection, and poverty reduction). This significantly indicate that health investments do not operate in isolation but intersect with broader social determinants. This study, therefore, affirms that investments in BHCPF are instrumental in expanding access, reducing poverty, and enhancing financial security. Further, the study emphasised the multifaceted role of health systems in promoting social equity and economic resilience. The evidence advocates for comprehensive, sustained, and context-sensitive health reforms, including infrastructure development, equitable financing, and community participation. This will enable the realization of the full potential of health systems strengthening as drivers of sustainable development.

Policy Implications of the Study

Based on the study's findings, several policy implications are proposed regarding the BHCPF health insurance in Nigeria. The current capitation rate is deemed inadequate due to inflation, necessitating a revision of the rate and payment mechanisms to reflect economic realities. The study emphasises health system strengthening, particularly by reviewing the BMHSP to include additional services at the PHC level. Community engagement is highlighted as crucial to effective BHCPF implementation, and the government is urged to enhance its community engagement framework to meet enrollee expectations.

Investment in health infrastructure and the workforce is essential for improving access to healthcare, especially for marginalised populations, thereby supporting the goal of Universal Health Coverage. The government, therefore, needs to develop a policy regarding periodic upgrades to the health sector infrastructure. Furthermore, policies are required to facilitate the implementation of innovative approaches, such as mobile clinics and telemedicine. They should be strengthened to improve equitable access to health care and reach underserved areas. Additionally, policies are needed to bolster health financing, promote financial protection, and reduce out-of-pocket costs for low-income households. Lastly, health must be integrated into poverty reduction strategies, with cross-sectoral coordination to enhance the impact of interventions on economic growth and address social determinants of health and poverty. Strengthening the BHCPF health insurance intervention, therefore, will fast-track the

attainment of Universal Health Coverage through improved health equity and health outcomes, and will also facilitate the achievement of the BHCPF's desired goal in Adamawa State.

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