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PATIENTS' SATISFACTION AND HEALTHCARE SERVICE QUALITY IN THE NIGERIAN NATIONAL HEALTH INSURANCE SCHEME: A SYSTEMATIC REVIEW OF METHODOLOGICAL INSTRUMENTS

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Abstract
This study presents a systematic review of methodological instruments used in assessing patient satisfaction and healthcare service quality within the Nigerian National Health Insurance Scheme (NHIS). Despite the NHIS's objective to provide affordable and accessible healthcare to Nigerians, existing literature reveals significant methodological inconsistencies in evaluating its performance. The review critically examines data collection, processing, and analysis techniques used in selected peer-reviewed studies from 2000 to 2024, sourced from five academic databases. The findings are organized into three thematic areas: overreliance on basic descriptive and associative tools, limited application of advanced statistical techniques, and fragmented use of qualitative methods. Most studies utilize descriptive statistics and chi-square tests without accounting for confounding variables or validating assumptions, thereby limiting their analytical depth. While a few studies attempt regression and mixed-methods designs, they often lack contextual adaptation and methodological rigor. Additionally, qualitative analyses frequently rely on predetermined coding frameworks, restricting the emergence of nuanced insights. The study concludes with a call for more robust, theory-driven, and integrative methodological frameworks that combine multivariate statistical modelling with inductive qualitative analysis. Such approaches are essential for producing more accurate, generalizable, and policy-relevant evaluations of patient satisfaction and service quality under the NHIS, ultimately enhancing healthcare delivery outcomes in Nigeria.

Keywords: Patients Satisfaction, Healthcare Service Quality, National Health Insurance Scheme, Systematic Review, Methodological Instrument, Nigeria

1.0 Introduction

The Nigerian healthcare system is structured across three levels primary, secondary, and tertiary care administered by local, state, and federal governments respectively. Despite this formal structure, the system continues to face significant challenges that hinder effective healthcare delivery. These include inadequate infrastructure, insufficient medical personnel, poor funding, and a heavy reliance on out-of-pocket payments, which account for a substantial portion of healthcare financing in the country. In response to these systemic weaknesses, the Nigerian

government established the Nigerian National Health Insurance Scheme (NHIS), established by Act 35 of 1999, was designed to enhance Nigerians' access to quality healthcare through a system of financial risk pooling. Its primary objectives is to provide accessible, affordable, and quality healthcare services to all Nigerians, particularly the formal sector workforce, with plans to gradually extend coverage to the informal sector and vulnerable populations.

The scheme operates through various programs such as the Formal Sector Social Health Insurance Program (FSSHIP), Voluntary Contributors Program (VCP), and the Tertiary Institution Social Health Insurance Program (TISHIP), among others. Despite the NHIS's ambition to promote universal health coverage (UHC), its implementation has faced several operational and structural challenges, including issues related to service delivery, provider accountability, equity, and enrollees' experiences (Okpani & Abimbola, 2015). By pooling resources from enrolees and employers and delivering services through accredited healthcare providers, the NHIS seeks to prevent the catastrophic financial consequences of out-of-pocket payments, especially for low-income households, while promoting social equity in healthcare service delivery (Johnson et al., 2007).

However, the NHIS has struggled to achieve its goal of universal health coverage. Coverage remains limited, primarily benefiting formal sector workers, while the majority of the population especially those in the informal sector and rural areas remain uninsured. Moreover, the scheme is plagued by operational inefficiencies such as weak regulation of Health Maintenance Organizations (HMOs), poor accountability, and inconsistent service quality. Enrollees often report dissatisfaction due to long wait times, inadequate drug availability, poor staff attitudes, and lack of effective grievance redress mechanisms. Compounding these issues is the absence of standardized tools to measure and monitor patient satisfaction and healthcare service quality, which makes it difficult to evaluate the scheme's effectiveness and implement targeted improvements.

In assessing patient satisfaction becomes highly significant as it is a key indicator of healthcare service quality and plays a vital role in evaluating the performance of health systems like the NHIS. It reflects patients' perceptions of care received, including their experiences with healthcare providers, the availability of services, the quality of treatment, and the responsiveness of the system. High levels of patient satisfaction are associated with improved health outcomes, increased service utilization, and greater trust in the healthcare system. Conversely, dissatisfaction can indicate systemic failures and lead to reduced engagement with health services, particularly among already underserved populations. Understanding patient satisfaction within the NHIS is especially critical because the scheme's success depends not only on expanding access but also on ensuring that the healthcare provided meets acceptable standards of quality.

This systematic review on Patient Satisfaction and Healthcare Service Quality in the Nigerian National Health Insurance Scheme (NHIS) addresses a critical gap in the literature: the methodological inconsistencies and variations that have hindered a clear understanding of patient satisfaction and service quality within the scheme. Existing studies have limited uniformity in the data collection, processing, and analysis instrument, making it difficult to assess the NHIS's effectiveness in delivering equitable, high-quality healthcare. Therefore, this study aims to identify, analyze, and critique the variations in data collection, processing, and analysis instruments used across these studies. By doing so, it seeks to propose a standardized

methodological framework that more accurately captures patient experiences and service quality under the NHIS. The ultimate goal is to enhance the reliability of future research and provide evidence-based recommendations to improve the effectiveness and equity of healthcare delivery through the NHIS. Through a systematic review, the study focuses on identifying and analyzing the diverse methodological approaches employed across different studies. It critiques the limitations posed by these variations and assess how they affect the validity and comparability of findings related to patient satisfaction and service quality. Based on these insights, the review will develop a more standardized and reliable methodological framework that future research can adopt to ensure consistency and accuracy.

2.0 Literature Review

This section presents a brief review of literature on patients' satisfaction and quality healthcare service in the Nigerian National Health Insurance Scheme.

2.2 Patients' Satisfaction and Quality Healthcare Service in the Nigerian National Health Insurance Scheme

Patient satisfaction and healthcare service quality in the Nigerian National Health Insurance Scheme (NHIS) are critically examined through a systematic meta-synthesis approach, revealing key methodological strengths and limitations in the studies analysed. The existing literature presents a mixed landscape regarding patient satisfaction and healthcare service quality under the NHIS. Akande et al. (2011) employed a descriptive cross-sectional approach to analyse the NHIS's impact on healthcare utilization at the University of Ilorin Teaching Hospital, reporting significant increases in service usage following the scheme's implementation. Meanwhile, Adebisi et al. (2019) conducted a critical review of NHIS performance among Small and Medium Scale Enterprises (SMEs), utilizing mixed sampling methods and regression analyses to reveal correlations between the scheme's objectives and healthcare outcomes. In another context, Daramola et al. (2019) focused on patient satisfaction at the University of Abuja Teaching Hospital, identifying operational challenges such as long waiting times and limited drug availability that negatively affect patient experiences. Broadening the scope, Awojobi (2018) synthesized qualitative and quantitative studies to highlight the NHIS's financial protection benefits for formal sector employees. However, the exclusion of experimental designs and a predominant focus on qualitative data in many studies limit the ability to establish causal relationships between NHIS policies and patient outcomes. This gap underscores the need for more rigorous methodologies that can effectively measure and interpret the dynamics of patient satisfaction and service quality within the NHIS framework.

Similarly, Uguru et al. (2024) employ a mixed-methods approach to assess NHIS's effectiveness in improving access to essential medicines. Ibiwoye and Adeleke (2008) analyse participation rates among formal sector employees, effectively identifying low awareness as a barrier to NHIS uptake. Adewole and Osungbade (2016) demonstrate a commitment to empirical rigor by synthesizing secondary data on health indices to evaluate NHIS performance. Ikenna et al. (2012) highlight the importance of a well-defined population approach, yet concerns regarding location bias and representativeness of findings persist. Yusuf and Akinmola (2015) empirically evaluate NHIS impact on healthcare delivery, identifying a negative correlation between program effectiveness and healthcare outcomes. Kofoworola et al. (2020) critique NHIS enrollees' dissatisfaction, identifying key areas for improvement, such as billing systems and wait times. Their focus on a single hospital highlights the need for broader studies that capture diverse experiences, aligning with findings from Enwerem et al. (2022), which reveal variability in

satisfaction across service domains. Pariya and Nasiru (2021) connect NHIS benefits to employee productivity but suggest the need for broader investigations across sectors. Ajobiewe et al. (2024) shed light on financial burdens associated with healthcare access, yet the implications for national policy remain insufficiently explored. The collective insights from these studies reveal a pronounced gap in the systematic review of patient satisfaction and healthcare service quality within the NHIS.

The studies examining the National Health Insurance Scheme (NHIS) present a diverse methodological landscape that reflects both strengths and weaknesses in data collection, processing, and analysis instruments. Adewole and Osungbade (2016) utilize secondary data from reputable sources like the World Bank and National Population Commission, showcasing empirical rigor; however, this reliance on secondary data limits the capture of stakeholder experiences and operational nuances, suggesting the need for qualitative methods to fully understand the scheme's complexities. Similarly, Ikenna et al. (2012) adopt a structured questionnaire method for data collection but face potential bias in location selection, raising concerns about representativeness that are echoed across the reviewed literature, highlighting the necessity for transparency in sampling methods. Yusuf and Akinmola (2015) empirically evaluate NHIS effectiveness but call attention to the importance of qualitative assessments to understand discrepancies in healthcare delivery, emphasizing that quantitative methods alone may overlook critical operational challenges. Kofoworola et al. (2020) and Enwerem et al. (2022) both address patient dissatisfaction and variability in satisfaction, yet their methodologies focusing on single hospitals limit generalizability, suggesting a broader approach to capture diverse experiences in varying contexts. Ndung and Matthew (2019) use simple percentage analysis, which, while providing valuable insights, lacks depth and sophistication, calling for more advanced statistical techniques to explore the complexities of patient-provider interactions.

In contrast, Uguru et al. (2024) implement a mixed-methods approach, recognizing the need for a comprehensive understanding of NHIS impacts; however, the limited qualitative sample size compromises the robustness of the insights gained. The collective analysis of these studies reveals a consistent theme: while various methodologies have been employed, a more integrative approach combining qualitative and quantitative methods is essential for a nuanced understanding of NHIS performance and its implications for healthcare access and quality in Nigeria. The review gap lies in the absence of comprehensive studies that employ an integrative approach combining both qualitative and quantitative methods to fully explore patient satisfaction and service quality in the NHIS. A consistent weakness across studies is the limited geographic and demographic scope, with most research focusing on urban centers or specific institutions, reducing the generalizability of findings to broader contexts. This indicates the need for future research to apply more diverse sampling methods, broader geographic coverage, and mixed-methods designs to gain deeper insights into the factors influencing patient satisfaction and healthcare service quality under the NHIS.

3.0 Methodology

This study employs a qualitative systematic meta-synthesis approach to examine the methodological perspectives of studies focusing on patient satisfaction and healthcare service quality within the Nigerian National Health Insurance Scheme (NHIS). The literature search was conducted across five reputable academic databases: PubMed, Google Scholar, Web of Science, Scopus, and African Journals Online (AJOL). A combination of Boolean search operators and controlled vocabulary terms were employed to optimize precision and comprehensiveness. The

primary keywords used were: *"patient satisfaction," "quality healthcare services,"* and *"Nigerian National Health Insurance Scheme"*, alongside their related synonyms and variations. These terms were systematically combined using search operators such as AND, OR, and NOT. For instance, searches included combinations like *"NHIS" AND "patient satisfaction" AND "healthcare quality"*, and *"Nigerian health insurance" AND ("service delivery" OR "care quality")*.

To refine results and enhance relevance, filters were applied for publication date (2000–2024), peer-reviewed articles, studies focused on Nigeria, and availability of full-text access. Grey literature, conference abstracts, non-peer-reviewed reports, and articles that did not explicitly investigate the NHIS or that lacked methodological clarity were excluded. The study selection process followed a transparent screening protocol involving an initial title and abstract review, followed by full-text assessment to ensure methodological relevance. Reference lists of selected articles were also manually scanned to identify additional relevant studies that may not have been captured in the initial search. This rigorous and transparent approach not only enhances the reliability of the synthesis but also ensures that the findings reflect a comprehensive and methodologically sound understanding of how patient satisfaction and healthcare quality are measured and interpreted within the NHIS framework.

4.0 Analysis and Results

This section of the paper present different research on patients' satisfaction and quality of health service delivery under National Health Insurance Scheme (NHIS) and analyse the methodologies of the studies with a view to assess their strengths and weaknesses.

Ibeneme et al. (2024), investigates the satisfaction of National Health Insurance Scheme (NHIS) enrollees with the quality of care and their willingness to retain membership in a tertiary hospital in Nigeria.

The study uses IBM SPSS to conduct descriptive statistics, Chi-square tests, Cramér's V, and Lambda for quantitative data analysis. This approach enables the identification of associations but has limitations in depth and interpretability. Descriptive statistics and association measures like Cramér's V and Lambda provide insights into satisfaction and retention patterns but do not capture causal relationships. The absence of advanced statistical modeling, such as regression analysis, restricts the study's ability to control for confounding variables, which would offer a clearer understanding of the factors influencing enrollee satisfaction and retention. Moreover, the McNemar test, used to assess proportional significance, provides only limited insights into the predictive impact of satisfaction factors on retention outcomes, making it difficult to generalize findings. On the qualitative side, the study uses MAXQDA and thematic analysis to analyze interview data, which adds valuable depth to the findings. However, potential researcher bias is a concern given the subjective nature of thematic coding. Despite efforts to improve reliability through pre-testing and consensus-building, thematic saturation may not fully capture the diversity of enrollees' experiences. The analysis primarily focuses on predetermined themes, which limits the study's capacity to uncover new or unexpected themes that could provide additional insights. This methodological limitation reduces the depth of the qualitative findings, ultimately affecting the study's potential contributions to improving NHIS strategies. Integrating exploratory techniques in both quantitative and qualitative analysis would enhance the study's robustness and applicability to broader NHIS improvement efforts.

Mustapha et. al (2017) study on NHIS client satisfaction among staff of Usmanu Danfodiyo University Sokoto.

The study utilizes the Logit Regression Model and Chi-square tests to examine the relationship between satisfaction and independent variables, a methodological approach that introduces some notable limitations in capturing the nuanced aspects of client satisfaction. Although the Logit Regression Model effectively evaluates the influence of categorical predictors on a binary outcome, its direct adaptation from previous studies (Mohammed et al., 2011; Jadoo et al., 2012) without tailored adjustments for the Nigerian NHIS context may impact its applicability and accuracy. The Chi-square test provides basic associations but lacks depth in analyzing the direction or strength of relationships, which is essential for understanding satisfaction as a multidimensional construct. Additionally, logistic regression's binary categorization of satisfaction reduces participant experiences to "satisfied" or "not satisfied," potentially overlooking important nuances. This binary approach can miss varying satisfaction levels across NHIS service elements—such as access, waiting times, and care quality—failing to pinpoint specific areas for improvement. Employing ordinal or interval data analysis techniques would allow a more detailed examination of these aspects, helping to generate insights that could more effectively inform targeted NHIS improvements.

Emmanuel and Obioma's (2019) study on the impact of the National Health Insurance Scheme (NHIS) among civil servants in Abuja.

The study employs descriptive statistics, including frequency distributions and percentages, to provide an overview of respondents' health perceptions under the NHIS. While this approach offers a general snapshot of participant responses, it lacks the analytical depth necessary to explore complex relationships or causative factors influencing civil servants' health outcomes. Descriptive statistics alone cannot establish statistical significance or reveal the NHIS's specific impact on health status, limiting the study's capacity for detailed insights. Though content analysis of in-depth interview (IDI) responses introduces qualitative depth, the lack of advanced techniques, such as thematic or grounded theory analysis, restricts the richness of these insights. This reliance on basic qualitative and quantitative methods reduces the study's potential to fully capture nuances in participant perspectives, including variations in satisfaction and health outcomes. The absence of more sophisticated statistical analyses, such as regression or correlation, limits the study's ability to identify key factors driving satisfaction and health perceptions, constraining its potential to inform meaningful policy recommendations for NHIS improvements. Integrating advanced statistical and qualitative techniques would enhance the study's depth, yielding more comprehensive findings and actionable insights.

Eyong's et al. (2016) study provides a useful evaluation of the National Health Insurance Scheme (NHIS) among civil servants in Cross River State, focusing on awareness and the perceived quality of health care.

The study employs tables, percentages, and the Pearson Product Moment Correlation Coefficient to analyze relationships within the data. While these methods effectively summarize and establish basic associations, they lack the analytical depth needed to explore complex, multi-layered interactions. Pearson's correlation limits the analysis to linear associations, potentially missing non-linear relationships and other underlying variables influencing NHIS awareness and perceptions of healthcare quality. Furthermore, reliance on tables and

percentages provides clear but limited insights without the statistical depth required for broader generalizations.

Kofoworola et al.'s (2020) study on enrolees' dissatisfaction with the NHIS at Kubwa General Hospital, Abuja.

The study leverages SPSS version 22 and primarily uses Chi-square tests to examine relationships between dissatisfaction factors and sociodemographic variables among NHIS enrollees. However, this exclusive reliance on Chi-square tests limits the study's analytical depth. Since Chi-square is confined to categorical data and cannot assess causation or the strength of associations, it may overlook nuanced dynamics influencing dissatisfaction, such as those related to service quality or provider interactions. More advanced methods, like logistic regression or factor analysis, would provide a stronger framework for uncovering underlying patterns and relationships. Additionally, using Likert scales to measure sentiment offers a broad view but may narrow the range of nuanced responses, especially since Likert data is typically ordinal but often analysed as interval data, which can skew interpretation. The presentation of results solely in tables restricts the visual accessibility of trends, while the lack of longitudinal data fails to capture how dissatisfaction may change over time. Although a pre-test was conducted to improve questionnaire design, the current analysis approach limits the study's ability to generate in-depth, actionable insights on factors contributing to NHIS enrolee dissatisfaction.

Pariya and Nasiru (2021) assess the impact of the NHIS on employee productivity across two educational institutions in Adamawa State.

This study examines the National Health Insurance Scheme's (NHIS) impact on employee productivity at two educational institutions, employing Poisson and negative binomial regression models to analyse count data. These models are suited for event count analysis, yet they face significant limitations in the study's context. Firstly, the Poisson model's assumption that the mean and variance are equal may be unrealistic, as overdispersion—where the variance exceeds the mean—is common in productivity studies. This can lead to biased estimates and unreliable results, with the negative binomial model generally providing a better fit for over dispersed data. However, transitioning between these models without thoroughly testing for overdispersion risks inadequate model selection, impacting the robustness of the findings. Another concern is the assumption of independent observations, which is essential for both models. If employees' productivity data are correlated, such as among those in close collaboration, this could lead to inefficiencies and bias in the estimates. Additionally, omitted variable bias remains a risk if critical predictors of productivity are excluded, as this could misrepresent NHIS effects on productivity. Thus, these limitations collectively suggest a need for more rigorous testing and model verification to enhance result validity and reliability.

Ajobiewe et al. (2024) provide a critical examination of the role of health insurance in achieving universal healthcare in Nigeria, emphasizing the persistent challenge of out-of-pocket expenses that have remained steady over the past two decades.

The study provides insightful findings on health insurance uptake by examining sociodemographic factors through a cross-sectional design. However, this methodological choice limits the study's ability to establish causation between these factors and health insurance uptake, leading to only associative rather than definitive conclusions. Additionally, the reliance on descriptive statistics for initial data interpretation lacks depth, as it overlooks the multidimensional aspects of health insurance dynamics. The use of chi-squared tests and

bivariate logistic regression further constrains the analysis, as these methods do not adequately control for confounding variables. By not exploring multivariate relationships, the study potentially misses intricate interactions that could reveal more about the patterns of insurance uptake. Critically, setting the significance level at $p<0.05$ is conventional but may be insufficient in the healthcare context, where smaller effect sizes can carry crucial implications. The lack of effect sizes or confidence intervals might lead to misinterpretations of statistical significance. Lastly, while STATA 15.0 was used for analysis, the study does not address the researchers' proficiency with the software, which could affect the accuracy and reliability of the results if expertise is lacking.

Akande et al. (2011) conducted a descriptive cross-sectional study to examine the impact of the National Health Insurance Scheme (NHIS) on the utilization of healthcare services at the University of Ilorin Teaching Hospital.

The study utilizated a descriptive cross-sectional design. Key analytical tools, including frequency tables, percentages, means, and cross-tabulations, help present a basic overview of the data. However, these methods primarily offer a snapshot without examining deeper variable interactions, limiting the study's capacity to explore complex relationships within the data. A major limitation of the analysis is the reliance on descriptive statistics, which provide initial insights but lack the depth needed to understand the nuanced factors affecting healthcare utilization. While chi-square tests are applied to assess associations between variables, they are restricted to categorical data and do not control for potential confounders, raising the risk of capturing spurious correlations rather than true associations. Furthermore, the choice to rely solely on a p-value threshold of 0.05 for significance, without incorporating effect sizes or confidence intervals, may result in overemphasized conclusions. Effect sizes and confidence intervals are particularly crucial in healthcare studies to determine the real-world impact of findings. The absence of multivariate analysis further restricts the study, as it overlooks the possible interactions between variables that could reveal a more complex picture of healthcare utilization patterns, which would better inform policy recommendations.

Daramola et al. (2019) investigates patient satisfaction with the National Health Insurance Scheme (NHIS) services at the University of Abuja Teaching Hospital, highlighting both positive feedback and areas of concern.

The study utilizes IBM SPSS Statistics 20.0 to analyse patient satisfaction with NHIS services at the University of Abuja Teaching Hospital, using frequency tables, cross-tabulations, t-tests, and ANOVA. While these methods provide an organized framework for data interpretation, there are key methodological limitations that may impact the validity of the findings. Firstly, t-tests and ANOVA assume data normality and homogeneity of variance, assumptions that may not always be met in satisfaction studies, where responses can be skewed. If these assumptions are violated, the results may be unreliable, potentially leading to incorrect conclusions about patient satisfaction levels. Additionally, the study's use of a p-value threshold of 0.05 does not account for the possibility of Type I errors, especially with multiple comparisons across various satisfaction components. Without adjustments for multiple testing, there is a heightened risk of falsely identifying significant differences. Furthermore, cross-tabulations are limited to showing associations without establishing causal links, which restricts the depth of insights. Given the study's exploration of both positive feedback and areas needing improvement, a more advanced

approach—such as multivariate regression analysis—could provide a more comprehensive view by accounting for potential confounding variables that influence patient satisfaction.

Adewole and Osungbade (2016) critically evaluate the National Health Insurance Scheme (NHIS) of Nigeria, established to achieve universal health coverage (UHC) within a decade.

The study use Microsoft Excel for data triangulation and strengthens the study's validity by cross-verifying information from multiple sources. However, several methodological limitations stem from the reliance on Excel, which may hinder the depth and precision of the findings. Excel's limited capability for handling large and complex datasets restricts advanced statistical analyses that specialized software, such as SPSS or Stata, can perform. This limitation affects the robustness of pattern identification, particularly in larger datasets where multivariate analysis could reveal more intricate relationships. Additionally, manual analysis introduces a higher risk of human error, which could impact data accuracy despite triangulation. While the study's methodological approach adds credibility, the use of Excel constrains its capacity for deeper statistical exploration, potentially limiting insights into NHIS performance, particularly when analysing demographic or regional variability.

Ikenna et al. (2012) provide an evaluative study of Nigeria's National Health Insurance Scheme (NHIS), focusing on enrolment rates, user satisfaction, and the broader implications for the country's health indices.

The study uses chi-square analysis to investigate the relationship between categorical variables, such as NHIS enrolment rates and user satisfaction, aligning with its primary objectives. However, this approach has limitations that affect the depth of the analysis, as chi-square alone may not reveal the full range of factors influencing NHIS outcomes. One key limitation is the reliance on self-reported data, which introduces risks of bias from respondents' recall or subjective interpretations. This reliance may lead to inaccurate reflections of user experiences. Additionally, the structured questionnaire restricts respondents' ability to share nuanced feedback on complex aspects of health insurance, potentially missing insights into user satisfaction and barriers to enrolment.

Yusuf and Akinmola (2015) offer an insightful evaluation of the National Health Insurance Scheme (NHIS) in Nigeria, focusing on its impact on health care delivery through a case study at a Teaching Hospital in Lagos.

The study employs correlational and regression analyses to assess the NHIS's impact on healthcare delivery, finding a significant positive relationship with healthcare quality and a surprising negative correlation with program effectiveness in relation to healthcare delivery. While these methods offer valuable insights into associations between variables, they are limited in establishing causality, leaving the drivers behind these relationships unexplored. The unexpected negative correlation between program effectiveness and healthcare delivery raises methodological concerns, as it may suggest that other unexamined factors are influencing this outcome. Correlational and regression analyses, while useful for exploring relationships, lack the depth required to reveal causative factors or control for potential confounders in complex healthcare settings. To strengthen the study, more advanced causal methods, such as structural equation modeling or longitudinal analysis, could provide a deeper understanding of how and

why NHIS impacts healthcare delivery, better addressing the complexity of healthcare systems and program effectiveness.

Adebisi et al. (2019) critically reviews Nigeria's National Health Insurance Scheme (NHIS) with a focus on its objectives and effectiveness, particularly within Small and Medium Scale Enterprises (SMEs).

The study assesses NHIS effectiveness in Lagos State using a cross-sectional design, with a 5-point Likert scale and multiple regression analysis as core analytical methods. These approaches lend rigor to the analysis but also introduce limitations that may impact the findings. The 5-point Likert scale effectively captures respondent attitudes but may restrict nuanced views on complex aspects of healthcare service quality, potentially oversimplifying participants' perspectives. Additionally, while multiple regression analysis helps explore relationships between NHIS objectives and predictor variables, it may fall short of accounting for unobserved confounding variables, such as healthcare-specific or socio-economic factors unique to Lagos. As a cross-sectional study, it is also unable to track longitudinal changes, limiting insights into evolving perceptions or the NHIS's effectiveness over time.

Uguru et al. (2024) explore the effectiveness of the National Health Insurance Scheme (NHIS) in improving access to essential medicines in Nigeria by examining accessibility, affordability, and availability.

This study uses a mixed-methods design to evaluate NHIS effectiveness in Enugu State, combining quantitative analysis via STATA 11 with qualitative insights from NVivo 11. While this approach and choice of tools add depth, certain methodological decisions raise concerns. Notably, the exclusion of four questionnaires due to incomplete responses may impact the representativeness of the findings. Discarding these responses, especially if they included unique demographic or experiential perspectives, could introduce bias, affecting the reliability and generalizability of the results. The study's relatively small sample size (300 respondents) further limits its statistical power, reducing the likelihood of identifying significant relationships. Although qualitative data provides valuable context, the study risks incomplete interpretation if qualitative and quantitative findings aren't thoroughly triangulated. A more inclusive approach to missing data, perhaps through imputation techniques, and stronger integration of qualitative insights would enhance the study's robustness and offer a more comprehensive view of NHIS's effectiveness in the region.

Ndung and Matthew (2019) investigate the effectiveness of the National Health Insurance Scheme (NHIS) at Federal Medical Center Keffi (FMC Keffi) in Nasarawa State, Nigeria.

The study employs simple percentage analysis to interpret collected data regarding NHIS effectiveness. While this method offers a clear and straightforward summary of findings, it has several methodological limitations. Primarily, percentage analysis lacks the depth necessary to understand complex relationships among variables, such as socio-demographic factors and patient satisfaction levels, which could be better examined using multivariate analyses. This simplistic approach may overlook critical interactions between different factors that influence NHIS effectiveness, potentially obscuring trends or patterns among various subgroups of enrolees or healthcare providers. Moreover, the absence of inferential statistical techniques restricts the ability to generalize findings beyond the sample, as well as the opportunity for

hypothesis testing that could validate the observed relationships. Therefore, relying solely on simple percentage analysis limits the study's analytical rigor, reducing the robustness of its conclusions and undermining its contributions to understanding NHIS's effectiveness in delivering healthcare services.

Akinyemi (2021) provides an insightful examination of civil servants' perceptions and participation in the National Health Insurance Scheme (NHIS) in Ibadan, highlighting both the successes and challenges of the program.

The study utilizes descriptive statistics and chi-square tests to analyse civil servants' participation and perceptions of the National Health Insurance Scheme (NHIS), providing a straightforward method for identifying significant associations. However, several methodological limitations may undermine the study's robustness and validity. While the chi-square test is suitable for assessing associations between categorical variables, it fails to reveal the strength or direction of these associations, potentially oversimplifying the interpretation of complex relationships. Additionally, using a 5% level of significance, though standard, may result in misinterpretation of findings due to not accounting for potential Type I errors, particularly in studies with multiple comparisons or small sample sizes. Although descriptive statistics effectively summarize data, they may overlook the nuances of participants' experiences and perceptions. Furthermore, the study does not address the control of confounding variables, which could significantly influence the outcomes, limiting the causal inferences that can be drawn from the results. Therefore, the reliance on descriptive statistics and chi-square tests without deeper analytical methods restricts the study's capacity to provide comprehensive insights into the NHIS's impact, suggesting the need for more rigorous statistical approaches to enhance the validity of the findings.

Thematic Analysis Results

Using thematic analysis, a robust method for identifying, analyzing, and critiquing patterns across datasets, this critique synthesizes the methodological variations in data collection, processing, and analysis instruments used in studies assessing the National Health Insurance Scheme (NHIS) in Nigeria. Three major themes emerge from the literature:

Theme 1: Overreliance on Basic Descriptive and Associative Tools

A dominant theme across most studies Akande et al. (2011), Emmanuel and Obioma (2019), Eyong et al. (2016), and Kofoworola et al. (2020) is the extensive reliance on descriptive statistics such as frequency tables, percentages, and cross-tabulations. While these tools offer a surface-level view of satisfaction, awareness, or utilization, they fall short in revealing complex interactions between variables or explaining causality. For example, Akande et al. limit analysis to frequencies and chi-square tests, which do not adjust for confounders or allow for a nuanced understanding of health service utilization under NHIS. Similarly, Eyong et al.'s use of Pearson correlation assumes linearity and overlooks deeper, possibly non-linear associations, thereby restricting interpretative depth.

Theme 2: Limited Application of Advanced Statistical Techniques

Another recurring limitation is the underutilization or inadequate application of advanced statistical tools, especially regression models that account for confounding variables or non-binary outcomes. While Mustapha et al. (2017) attempt to move beyond descriptive statistics through the use of logit regression, their methodology suffers from lack of contextual adaptation

and a binary treatment of satisfaction. This binary approach potentially masks variability across service components like access, waiting time, and staff behavior. Ajobiewe et al. (2024) and Pariya and Nasiru (2021) use logistic and count regression models, respectively, but both studies fail to test critical assumptions such as overdispersion in Poisson models or multicollinearity in logistic regression reducing the robustness of their findings. Moreover, studies such as Daramola et al. (2019) employ t-tests and ANOVA without verifying normality and homoscedasticity, violating key assumptions and raising doubts about the validity of their results. These limitations collectively reveal a methodological gap in the design and application of inferential tools.

Theme3: Fragmented and Underdeveloped Use of Qualitative Methods

Qualitative data collection and analysis are largely underutilized or poorly integrated, with the exception of Ibeneme et al. (2024) and Emmanuel and Obioma (2019). Ibeneme et al. incorporate MAXQDA and thematic analysis, adding interpretative depth, yet their use of predetermined coding categories risks confirmation bias and limits the emergence of novel insights. Although they claim to have used pre-testing and consensus-building, their thematic framework appears rigid, constraining the ability to capture the full spectrum of enrollee experiences. Similarly, Emmanuel and Obioma's content analysis lacks theoretical grounding such as grounded theory or phenomenological approaches which limits the richness and contextual depth of their qualitative data. Across most studies, there is a notable absence of mixed-method triangulation, reducing the potential to validate quantitative findings through qualitative narratives or vice versa.

5.0 Discussion of Findings

The results of the study on the analysis of data collection, processing, and analytical instruments across the reviewed studies reveals significant methodological inconsistencies and limitations that impact the depth and reliability of their findings. A prominent pattern, as encapsulated in Theme 1, is the *overreliance on basic descriptive and associative tools*. Studies such as those by Akande et al. (2011), Emmanuel and Obioma (2019), Eyong et al. (2016), and Kofoworola et al. (2020) primarily utilize basic descriptive statistics, including frequency tables, percentages, and cross-tabulations. While these tools are valuable for presenting surface-level patterns in satisfaction or awareness levels under the National Health Insurance Scheme (NHIS), they inherently lack the analytical capacity to uncover deeper associations or causal relationships. For example, Akande et al.'s application of chi-square tests does not control for confounding variables, thus failing to explain the intricate factors that influence health service utilization. Likewise, Eyong et al.'s application of Pearson correlation assumes linear relationships and neglects the possibility of more complex or non-linear interactions between variables, thereby limiting the scope of interpretive insights.

Building on this shortfall, Theme 2 highlights the *limited application of advanced statistical techniques*. Although some researchers, such as Mustapha et al. (2017), attempt to adopt more complex tools like logit regression, their methodologies often lack contextual sensitivity and critical assumption checks. Mustapha et al.'s binary classification of patient satisfaction oversimplifies the nuances across various components of health service delivery, such as accessibility, staff responsiveness, and patient waiting time. Similarly, Ajobiewe et al. (2024) and Pariya and Nasiru (2021) introduce logistic and count regression models, but overlook essential diagnostic tests such as checking for multicollinearity or overdispersion which undermines the validity and reliability of their results. Even more concerning is the widespread use of parametric tests like t-tests and ANOVA, as seen in Daramola et al. (2019), without

validating assumptions of normal distribution and equal variance (homoscedasticity), which casts doubt on the robustness of their inferences. Collectively, these shortcomings point to a methodological gap in the sophistication and appropriateness of inferential techniques applied in NHIS-related studies.

Theme 3 brings to light the *fragmented and underdeveloped use of qualitative methods*. Qualitative inquiry remains either underexplored or poorly implemented in most of the reviewed literature. Notable exceptions include Ibeneme et al. (2024) and Emmanuel and Obioma (2019), who incorporate thematic and content analysis, respectively. Ibeneme et al.'s integration of MAXQDA software and thematic coding adds a valuable interpretative layer to their analysis; however, their reliance on predetermined coding frames introduces a risk of confirmation bias, limiting the potential for emergent themes that reflect the actual voices of enrollees. Despite claims of pre-testing and coder consensus, the rigidity of their thematic structure constrains a fuller representation of participant experiences. Similarly, Emmanuel and Obioma's qualitative approach lacks grounding in established theoretical traditions such as grounded theory or phenomenology, thereby diluting the contextual richness and interpretive strength of their findings. Furthermore, the absence of methodological triangulation in most studies weakens the credibility of conclusions, as qualitative data are not employed to validate or enrich quantitative findings. This fragmentation underscores a missed opportunity to harness the strengths of mixed-methods designs that could yield more comprehensive and nuanced insights into healthcare satisfaction and utilization under the NHIS framework.

6.0 Conclusion and Recommendations

In conclusion, the thematic critique reveals a need for a more rigorous, theoretically grounded, and analytically comprehensive approach to studying NHIS satisfaction, utilization, and policy effectiveness. Based on the thematic critique of existing studies, future studies should move beyond simplistic descriptive and associative tools by adopting *multivariate and hierarchical statistical models* that can control for confounding variables, capture nested data structures (such as patients within facilities), and allow for more nuanced interpretation of predictors of satisfaction and utilization. These models should be rigorously tested for underlying assumptions, such as normality, multicollinearity, and homoscedasticity, and should report *effect sizes and confidence intervals* to improve interpretive accuracy and practical relevance.

Secondly, qualitative components should be strengthened through the use of *inductive, theory-informed approaches* such as grounded theory or phenomenology, rather than relying on predetermined coding frames. This would allow for the emergence of deeper, context-specific insights that reflect the lived experiences of enrolees. The use of qualitative analysis software such as NVivo or MAXQDA should be coupled with transparency in coding processes, thematic saturation, and validation techniques such as member checking and inter-coder reliability.

Thirdly, researchers are encouraged to embrace *methodological integration* through mixed-methods designs, combining quantitative robustness with qualitative depth. Triangulating findings across diverse data sources and methods can greatly enhance the *credibility, generalizability, and policy relevance* of results. By embedding these recommendations into the research design, future studies will be better positioned to generate evidence that can effectively inform health system reforms and improve the performance of NHIS in Nigeria.

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