

National Health Insurance Scheme and Healthcare Delivery Effectiveness in Nigeria Military Hospital, Port Harcourt, 2015-2025

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ABSTRACT

The effectiveness of healthcare delivery within any national health insurance framework depends fundamentally on the institutional capacity of facilities responsible for translating coverage into care. In Nigeria, the National Health Insurance Scheme (NHIS), operational since 2005, continues to confront significant implementation gaps at the facility level, where provider competence, personnel adequacy, and service continuity remain critical yet underexamined determinants of sustainable healthcare delivery. This study examined the relationship between healthcare delivery effectiveness and the National Health Insurance Scheme at the Nigeria Military Hospital, Port Harcourt, 2015-2025, focusing on the role of healthcare providers, adequacy of medical personnel, and healthcare delivery continuity. Anchored on Systems Theory and Donabedian's Quality of Care Theory, the study was guided by three objectives, three research questions, and three null hypotheses. A mixed-method correlational survey design was adopted from a population of 15,035 persons; 390 respondents were determined using Taro Yamane's formula through proportional stratified sampling, and 366 questionnaires were retrieved and usable (93.8% response rate), complemented by interviews with 15 key informants. Cronbach's Alpha reliability coefficients were 0.839, 0.796, and 0.812. Data were analysed using descriptive statistics and PPMC at the 0.05 significance level, with r-values converted to t-values for independent confirmation. Findings revealed statistically significant positive relationships between sustainable healthcare delivery and the role of healthcare providers ($r = 0.643$, $p < 0.05$), adequacy of medical personnel ($r = 0.602$, $p < 0.05$), and healthcare delivery continuity ($r = 0.627$, $p < 0.05$). The military institution's culture of professional discipline and 24-hour operational readiness emerged as structural advantages, while personnel shortages, specialist attrition, and chronic disease management gaps were identified as binding constraints. All three null hypotheses were rejected. The study recommended a formal NHIS administrative training programme, a staffing establishment review with retention incentives, and a dedicated chronic disease management programme.

Keywords: Healthcare delivery effectiveness, healthcare providers, medical personnel adequacy, National Health Insurance Scheme, sustainable healthcare delivery

INTRODUCTION

Healthcare delivery effectiveness constitutes one of the most critical yet underexamined determinants of sustainable healthcare delivery within national health insurance frameworks in developing countries. While enrolment and financing have attracted significant attention in the NHIS implementation literature, the institutional capacity dimensions that ultimately convert financial coverage into actual patient care outcomes have received comparatively limited empirical scrutiny, particularly within specialised healthcare settings. In Nigeria, the National Health Insurance Scheme (NHIS), formally established under Decree 35 of 1999 and operational since 2005, was conceived as a pre-payment, risk-pooling mechanism to guarantee essential healthcare access for all Nigerians regardless of economic status. Yet coverage remains at approximately 5 percent of the population nearly two decades after operationalisation (Eze *et al.*, 2025), a figure that reflects

not only demand-side enrolment challenges but persistent supply-side deficiencies in the institutional capacity of accredited facilities to deliver effective, continuous, and adequately staffed care.

The Nigeria Military Hospital, Port Harcourt, occupies a distinctive position within Nigeria's NHIS framework. As a dual-mandate institution serving both uniformed military personnel and civilian NHIS beneficiaries under a single accreditation, it operates within an institutional culture of professional discipline, hierarchical accountability, and 24-hour operational readiness that differentiates it structurally from civilian-accredited facilities, yet subjects it to the same NHIS regulatory framework and the same provider competence, personnel adequacy, and service continuity imperatives that determine sustainable healthcare delivery at any accredited facility. Understanding how these institutional capacity dimensions have shaped NHIS healthcare delivery sustainability at this facility over the decade spanning 2015 to 2025 is the central concern of this study. This study therefore examines the relationship between healthcare delivery effectiveness and the National Health Insurance Scheme at the Nigeria Military Hospital, Port Harcourt, 2015-2025, focussing specifically on the role of healthcare providers, the adequacy of medical personnel, and healthcare delivery continuity as the three dimensions through which institutional capacity was assessed.

Aim and Objectives of the Study

This study aims to analyse the relationship between National Health Insurance Scheme and Healthcare Delivery Effectiveness in Nigeria Military Hospital, Port Harcourt, 2015-2025. The specific objectives are to:

- i. Assess the role of healthcare providers in ensuring sustainable healthcare delivery under the NHIS at the Nigeria Military Hospital, Port Harcourt, 2015-2025;
- ii. Determine the adequacy of medical personnel for sustainable healthcare delivery under the NHIS at the Nigeria Military Hospital, Port Harcourt, 2015-2025; and
- iii. Examine healthcare delivery continuity under the NHIS at the Nigeria Military Hospital, Port Harcourt, 2015-2025.

Research Questions

The following research questions guided this study. To what extent does:

- i. The role of healthcare providers enhance sustainable healthcare delivery under the NHIS at the Nigeria Military Hospital, Port Harcourt, 2015-2025?
- ii. The adequacy of medical personnel enhance sustainable healthcare delivery under the NHIS at the Nigeria Military Hospital, Port Harcourt, 2015-2025?
- iii. Healthcare delivery continuity enhance sustainable healthcare delivery under the NHIS at the Nigeria Military Hospital, Port Harcourt, 2015-2025?

Research Hypotheses

The following null hypotheses were tested:

- H₀₁:** There is no significant relationship between the role of healthcare providers and sustainable healthcare delivery under the NHIS at the Nigeria Military Hospital, Port Harcourt.
- H₀₂:** There is no significant relationship between the adequacy of medical personnel and sustainable healthcare delivery under the NHIS at the Nigeria Military Hospital, Port Harcourt.
- H₀₃:** There is no significant relationship between healthcare delivery continuity and sustainable healthcare delivery under the NHIS at the Nigeria Military Hospital, Port Harcourt.

THEORETICAL FRAMEWORK

Systems Theory

Von Bertalanffy's (1968) general system theory, as operationalised for institutional analysis by Easton (1965), provides the principal theoretical lens for this study. Within a systems framework, the NHIS healthcare delivery system at the Nigeria Military Hospital is conceptualised as an open system receiving inputs (enrolment, funding, personnel, consumables) from its environment, processing these inputs through operational mechanisms (provider conduct, personnel deployment, service coordination), and producing outputs (sustainable healthcare delivery) that feed back into the environment through patient outcomes and scheme viability. Healthcare providers and personnel are, within this framework, the central conversion mechanisms of the system: they are the human agents through which all other inputs are transformed into actual healthcare delivery outcomes. A failure in provider competence, personnel adequacy, or service continuity cascades through the entire system regardless of the adequacy of other inputs, making these dimensions systemically critical rather than merely operationally important. Healthcare delivery continuity, similarly, is understood as the uninterrupted operation of the system's input-processing-output cycle, a condition Systems Theory identifies as essential to system sustainability and viability over time.

Donabedian's Quality of Care Theory

Donabedian's (1988) quality of care framework, which conceptualises healthcare quality through the triad of structure, process, and outcomes, provides a complementary and particularly applicable theoretical lens for the three dimensions examined in this study. Structure refers to the attributes of the settings in which care is delivered, including provider qualifications, personnel adequacy, and facility organisation. Process refers to what is actually done in delivering and receiving care, including clinical conduct, adherence to standards, and service coordination. Outcomes refer to the effects of care on the health status of patients and populations. Applied to the present study, the role of healthcare providers (process), the adequacy of medical personnel (structure), and healthcare delivery continuity (a determinant of both process and outcomes) map directly onto Donabedian's quality triad. The theory predicts that structural adequacy and sound process together determine whether healthcare delivery outcomes, specifically sustainability under the NHIS, are achieved. This framework therefore provides a theoretically grounded basis for expecting significant relationships between each of the three independent variables and sustainable healthcare delivery as the outcome variable.

Conceptual Review

National Health Insurance Scheme

The National Health Insurance Scheme (NHIS) is a state-sponsored health financing mechanism that pools individual healthcare financial risks across a defined enrolled population, replacing unpredictable out-of-pocket expenditure with pre-paid, contributory financing. Operationally, the NHIS functions as a contractual arrangement among the state, enrolled beneficiaries, Health Maintenance Organisations (HMOs), and accredited healthcare providers, within which each party bears defined rights, obligations, and accountability relationships. For the scheme to achieve its social protection mandate, this contractual architecture must be adequately supported at the facility level by provider competence, personnel sufficiency, and service continuity, the three institutional dimensions this study examines.

A critical limitation of the existing NHIS conceptual literature is its almost exclusive preoccupation with the demand side of scheme implementation, specifically enrolment determinants, financing flows, and beneficiary utilisation patterns, to the neglect of the supply-side institutional capacity through which enrolment and funding are converted into actual healthcare outcomes. As Donabedian (1988) argues, the structural and process dimensions of healthcare quality, which directly map onto provider competence, personnel adequacy, and service coordination, are the proximate determinants of healthcare outcomes, not the financial architecture that funds them. A conceptual framework for NHIS implementation sustainability that does not adequately theorise the supply-side institutional capacity dimensions is therefore fundamentally incomplete, and this gap

is most consequential in institutional settings such as military hospitals, where the structural and process conditions of care delivery are shaped by an institutional culture with no civilian equivalent.

Healthcare Delivery Effectiveness

Healthcare delivery effectiveness refers to the degree to which a healthcare facility successfully converts its available resources, including provider competence, personnel adequacy, and operational systems, into healthcare outcomes that meet enrolled beneficiaries' needs in a timely, consistent, and equitable manner. The concept is operationalised in this study through three analytically interrelated dimensions: the role of healthcare providers, as the primary human agents of clinical care and NHIS administrative compliance; the adequacy of medical personnel, as the structural condition determining whether the volume of beneficiary needs can be met without compromising quality; and healthcare delivery continuity, as the systemic outcome of adequate provider performance and sufficient personnel working within effective organisational arrangements.

The existing conceptual treatment of healthcare delivery effectiveness in the NHIS literature is descriptively rich but analytically shallow. Studies consistently affirm that provider competence, staffing, and continuity matter for implementation outcomes, but they do so without examining how the military institutional context, specifically its hierarchical accountability structures, posting cycles, 24-hour readiness mandate, and dual-beneficiary population, modifies the relationships between these dimensions and healthcare delivery effectiveness. The military healthcare context introduces structural conditions, both advantages and vulnerabilities, that civilian-derived conceptual frameworks do not capture. This study contributes to filling that conceptual gap by empirically examining healthcare delivery effectiveness as an institutionally mediated construct rather than a generic healthcare quality variable, generating evidence directly relevant to policy and management decisions at dual-mandate military health facilities operating under the NHIS framework.

Empirical Review

The empirical literature on NHIS implementation and healthcare delivery effectiveness in Nigeria reveals a pattern of converging findings alongside a critical and persistent blind spot. Studies consistently identify provider competence, personnel adequacy, and service continuity as significant determinants of NHIS sustainability outcomes, yet they do so through methodological approaches that systematically exclude the institutional context most relevant to this investigation. Yeshiwas *et al.* (2021), in a systematic review and meta-analysis of 47 studies from low- and middle-income countries, found that provider competence (OR = 2.8), staff-to-patient ratios (OR = 2.3), and service continuity (OR = 1.9) were the most statistically significant predictors of scheme beneficiary utilisation and satisfaction. While the magnitude and consistency of these findings across diverse settings is compelling, the review drew no study from a military healthcare facility, and its meta-analytic pooling of findings from structurally heterogeneous institutional contexts masks precisely the between-context variation in implementation dynamics that this study investigates.

Daramola *et al.* (2019) provided granular evidence from a single Nigerian tertiary facility in Jos, demonstrating that waiting time and drug access explained 63 percent of the variance in NHIS beneficiary satisfaction, with provider attitude and consultation quality accounting for a further 24 percent. While this study's facility-specific depth is methodologically superior to the aggregated approach of Yeshiwas *et al.* (2021), it was cross-sectional in design, civilian in context, and conducted at a single point in time, producing findings that cannot be generalised to military healthcare facilities or used to trace implementation trends across a decade of policy change. Similarly, Abubakar *et al.* (2023), whose structural equation modelling demonstrated that organisational capacity exerts both direct and indirect effects on NHIS utilisation outcomes in Bauchi State, produced valuable evidence on the mechanisms through which capacity shapes sustainability, but their civilian, cross-sectional design renders their findings directly inapplicable to the military healthcare context without empirical replication.

The only study to examine NHIS implementation specifically within a Nigerian military healthcare facility is Mgbe and Kevin (2019), whose cross-sectional, three-state survey documented strong enrolment rates for uniformed personnel alongside provider capacity constraints and pharmaceutical gaps. Their study identified a

disconnect between positive provider conduct perceptions and material service delivery limitations, a finding of considerable significance that points directly toward the kind of institutional mediation effect this study investigates. However, the cross-sectional and geographically aggregated nature of Mgbe and Kevin's (2019) methodology precludes any examination of how these dynamics evolved across time, how they operated at the level of a specific facility, or how the decade of policy change spanning the 2022 National Health Insurance Authority Act affected them. Ambali *et al.* (2025) and Eze *et al.* (2025) have more recently documented chronic disease management continuity and specialist retention as the dominant national NHIS sustainability challenges, but again exclusively within civilian facility contexts and without longitudinal facility-level depth.

The cumulative weight of this evidence points to an inescapable conclusion: the existing empirical literature has established what matters for NHIS healthcare delivery effectiveness in civilian settings, but has left the military healthcare context empirically unexplored beyond a single cross-sectional study. The consequence is not merely a gap in knowledge but a gap in the evidence base available to policymakers at the Federal Ministry of Defence, the Nigerian Army Medical Corps, and the National Health Insurance Authority, who are responsible for ensuring that the NHIS delivers sustainable, effective healthcare to a military beneficiary population whose institutional context the literature has consistently overlooked. A rigorous, longitudinal, facility-specific mixed-methods investigation of the three dimensions of healthcare delivery effectiveness at the Nigeria Military Hospital, Port Harcourt, is therefore not a contribution to the margins of an already well-documented field but a necessary response to a substantive and consequential empirical void.

RESEARCH METHODOLOGY

This study adopted a mixed-method correlational survey research design, combining structured quantitative surveys with qualitative semi-structured interviews. The study population comprised 15,035 persons at the Nigeria Military Hospital, Port Harcourt: 12,000 registered NHIS beneficiaries, 2,108 healthcare providers (comprising medical officers, nursing officers, laboratory scientists, pharmacists, and other clinical staff), and 927 administrative staff. Using Taro Yamane's (1967) formula at a 5 percent margin of error, a sample of 390 respondents was determined and distributed proportionally across the three strata: 310 beneficiaries, 55 healthcare providers, and 25 administrative staff. The primary instrument was a structured questionnaire comprising 30 items across three construct clusters, each measured on a 4-point Likert scale (Strongly Agreed = 4, Agreed = 3, Disagreed = 2, Strongly Disagreed = 1): Role of Healthcare Providers, Adequacy of Medical Personnel, and Healthcare Delivery Continuity.

Content validity was established through expert review by three senior academics in the Department of Political Science, Rivers State University. Cronbach's Alpha reliability coefficients were 0.839, 0.796, and 0.812 respectively (Nunnally, 1978). Out of 390 questionnaires distributed, 366 were retrieved and found usable (93.8% response rate), satisfying the 70 percent threshold of Mugenda and Mugenda (2003). Fifteen key informants were purposively selected for semi-structured interviews including the Hospital Commandant, Chief Medical Director, Senior Medical Officers, Chief Nursing Officer, NHIS Coordinator, Hospital Administrator, Head of Internal Medicine, Head of Pharmacy, HMO Liaison Officer, and Chief Medical Records Officer. A criterion mean of 2.50 was adopted as the decision benchmark: item mean scores above 2.50 were regarded as agreed upon, while those below were regarded as disagreed upon. Hypothesis testing utilised PPMC at the 0.05 significance level (two-tailed) using SPSS version 25.0, with r-values converted to t-values using the formula $T = r \times \sqrt{(n-2)} / \sqrt{(1-r^2)}$. Interview data were analysed using Braun and Clarke's (2006) six-phase thematic content analysis framework.

Data Analysis

Role of Healthcare Providers in Ensuring Sustainable Healthcare Delivery

Table 1: Mean Ratings on the Role of Healthcare Providers and Sustainable Healthcare Delivery (n = 366)

S/N	Item	Mean	Decision
1	Healthcare providers demonstrate adequate clinical competence in managing NHIS	3.13	Agreed

	patients.		
2	Medical personnel are committed to delivering quality care to NHIS beneficiaries at this facility.	3.15	Agreed
3	Nurses deliver compassionate and professional care to all NHIS patients without discrimination.	3.17	Agreed
4	Healthcare providers adhere to professional ethics in their conduct towards NHIS patients.	3.21	Agreed
5	Healthcare providers receive regular and adequate training on NHIS administrative requirements.	2.83	Agreed
6	The role of healthcare providers significantly influences sustainable healthcare delivery under NHIS.	3.30	Agreed
7	Providers effectively manage referral and pre-authorisation processes for NHIS beneficiaries.	2.91	Agreed
8	Healthcare providers treat military and civilian NHIS beneficiaries with equal care standards.	3.24	Agreed
9	Provider conduct under NHIS has improved significantly between 2015 and 2025.	3.08	Agreed
10	The military culture of professional discipline positively shapes provider conduct towards NHIS patients.	3.29	Agreed

Source: Field Survey, 2026. Criterion Mean = 2.50

All ten items recorded mean scores above the criterion mean of 2.50, confirming strong respondent agreement that healthcare providers play a significant positive role in sustainable healthcare delivery under the NHIS. Item 6 recorded the highest mean across the construct (3.30), affirming that the role of providers significantly influences sustainable delivery, while item 5 on NHIS administrative training recorded the lowest mean (2.83), identifying structured NHIS-specific training as the most underdeveloped sub-dimension of provider capacity. The grand mean for this construct was 3.13, the highest of the three constructs and the highest of any variable examined across the entire study. Item 10 (3.29) confirms that respondents strongly perceived the military culture of professional discipline as a positive mediating factor in provider conduct towards NHIS patients. The Chief Medical Director stated in interview that provider competence had improved measurably over the decade through specialist training partnerships, though NHIS administrative documentation skills remained a gap: “The clinical quality is there, but the pre-authorisation protocols, the claims coding these are administrative skills many of our providers have acquired informally rather than through structured training, and that creates errors and delays that affect reimbursement and therefore sustainability” (Chief Medical Director, personal communication, 2026). A Senior Nursing Officer confirmed non-discriminatory care as institutionally enforced, noting that “regardless of the patient military or civilian, NHIS or private pay the standard of care expected is the same, and there are accountability mechanisms that do not exist in many civilian facilities” (Senior Nursing Officer, personal communication, 2026).

Test of Hypothesis One

H₀₁: There is no significant relationship between the role of healthcare providers and sustainable healthcare delivery under the NHIS at the Nigeria Military Hospital, Port Harcourt.

Table 2: Pearson Correlation Analysis on the Role of Healthcare Providers and Sustainable Healthcare Delivery

		Sustainable Healthcare Delivery
Role of Healthcare Providers Pearson Correlation	1.000	.643
Sig. (2-tailed)		.000
N	366	366

Correlation is significant at the 0.01 level (2-tailed). Source: SPSS Statistics Output, 2026

Table 2 shows a correlation coefficient of $r = 0.643$, with $p = 0.000$, indicating a positive moderately strong relationship the strongest of any variable in this study. Since $p = 0.000 < 0.05$, H_{01} is rejected. Converting r to t : $T = r \times \sqrt{(n-2)} / \sqrt{(1-r^2)} = 0.643 \times \sqrt{364} / \sqrt{(1-0.413)} = 0.643 \times 19.079 / \sqrt{0.587} = 12.268 / 0.766 = 16.02$. At $df = 364$ and $\alpha = 0.05$ (two-tailed), the critical t -value is 1.966. Since t -calculated (16.02) $>$ t -critical (1.966), H_{01} is rejected. There is a statistically significant positive relationship between the role of healthcare providers and sustainable healthcare delivery under the NHIS at the Nigeria Military Hospital, Port Harcourt.

Adequacy of Medical Personnel and Sustainable Healthcare Delivery

Table 3: Mean Ratings on Adequacy of Medical Personnel and Sustainable Healthcare Delivery (n = 366)

S/N	Item	Mean	Decision
1	The number of medical doctors at this facility is adequate for the volume of NHIS patients.	2.61	Agreed
2	Staff-to-patient ratio at this facility allows adequate consultation time with NHIS beneficiaries.	2.57	Agreed
3	Healthcare provider workload under the current NHIS patient volume is manageable.	2.51	Agreed
4	Staff shortages at this facility negatively affect the quality of care provided to NHIS patients.	3.23	Agreed
5	The hospital experiences significant challenges in retaining qualified medical personnel.	3.19	Agreed
6	The adequacy of nursing personnel is sufficient for the NHIS beneficiary population served.	2.69	Agreed
7	The hospital has adequate specialist doctors to meet the referral needs of NHIS patients.	2.64	Agreed
8	The number of laboratory scientists and pharmacists is sufficient for NHIS diagnostic needs.	2.74	Agreed
9	Personnel postings disrupt continuity of care for NHIS patients at this facility.	3.11	Agreed
10	Medical personnel adequacy has improved significantly between 2015 and 2025.	2.86	Agreed

Source: Field Survey, 2026. Criterion Mean = 2.50

All ten items recorded means above the criterion mean, confirming overall agreement that personnel adequacy is positively associated with sustainable healthcare delivery. The three items recording the lowest means workload manageability (2.51), staff-to-patient ratios (2.57), and doctor adequacy (2.61) reveal personnel adequacy as the most severely stressed institutional capacity dimension across the entire study. Items on staff shortage effects on care quality (3.23) and personnel retention challenges (3.19) recorded the highest means within this construct. The grand mean was 2.82. The Hospital Administrator confirmed that consultation volume had outpaced staffing growth over the decade: “our consultations have become faster of necessity the volume of patients has grown faster than our staffing establishment has been reviewed” (Hospital Administrator, personal communication, 2026). A Senior Medical Officer linked specialist attrition to remuneration disparities with the private sector and overseas positions (Senior Medical Officer, personal communication, 2026), while the NHIS Coordinator noted that posting cycles created specific continuity problems for patients with chronic conditions whose managing consultants were suddenly transferred (NHIS Coordinator, personal communication, 2026).

Test of Hypothesis Two

H_{02} : There is no significant relationship between the adequacy of medical personnel and sustainable healthcare delivery under the NHIS at the Nigeria Military Hospital, Port Harcourt.

Table 4: Pearson Correlation Analysis on Adequacy of Medical Personnel and Sustainable Healthcare Delivery

		Sustainable Healthcare Delivery
Adequacy of Medical Personnel Pearson Correlation	1.000	.602
Sig. (2-tailed)		.000
N	366	366

Correlation is significant at the 0.01 level (2-tailed). Source: SPSS Statistics Output, 2026

Table 4 shows a correlation coefficient of $r = 0.602$, with $p = 0.000$, indicating a positive moderately strong relationship. Since $p = 0.000 < 0.05$, H_{02} is rejected. Converting r to t : $T = 0.602 \times \sqrt{364} / \sqrt{(1-0.362)} = 0.602 \times 19.079 / \sqrt{0.638} = 11.486 / 0.798 = 14.39$. At $df = 364$ and $\alpha = 0.05$ (two-tailed), t -critical = 1.966. Since t -calculated (14.39) $>$ t -critical (1.966), H_{02} is rejected. There is a statistically significant positive relationship between the adequacy of medical personnel and sustainable healthcare delivery under the NHIS at the Nigeria Military Hospital, Port Harcourt.

Healthcare Delivery Continuity and Sustainable Healthcare Delivery

Table 5: Mean Ratings on Healthcare Delivery Continuity and Sustainable Healthcare Delivery (n = 366)

S/N	Item	Mean	Decision
1	Medical records are properly maintained, ensuring continuity of care across visits and departments.	3.12	Agreed
2	Emergency services are accessible 24 hours, seven days a week, to NHIS enrollees.	3.33	Agreed
3	Chronic disease management programmes are consistently sustained for NHIS patients.	2.89	Agreed
4	There are no significant interruptions in healthcare service delivery to NHIS beneficiaries.	2.82	Agreed
5	Healthcare delivery continuity has improved significantly between 2015 and 2025.	3.16	Agreed
6	The hospital ensures coordinated handover of patient care when providers are transferred.	2.77	Agreed
7	Electronic health records at this facility support continuity of NHIS patient care.	3.04	Agreed
8	NHIS beneficiaries can reliably access specialist referral services without interruption.	2.93	Agreed
9	Continuity of NHIS-covered services is maintained during public holidays and off-peak periods.	3.19	Agreed
10	The military operational culture of this facility supports uninterrupted healthcare delivery.	3.28	Agreed

Source: Field Survey, 2026. Criterion Mean = 2.50

All ten items recorded mean scores above the criterion mean. Twenty-four-hour emergency service accessibility (3.33) and military operational culture (3.28) recorded the highest means, while coordinated handover during provider transfers (2.77) and absence of service interruptions (2.82) recorded the lowest, identifying these as the most critical sub-dimensional gaps. The grand mean was 3.05. The NHIS Coordinator attributed the facility's strong continuity performance to its inherent military operational culture: "the emergency department is always staffed, and we operate at the same standard on Christmas Day as on any other day" (NHIS Coordinator, personal communication, 2026). The Chief Medical Records Officer credited partial introduction of electronic health records (2019–2022) with materially improving informational continuity across visits (Chief Medical Records Officer, personal communication, 2026), while the Head of

Internal Medicine identified chronic disease management as the most critical unmet continuity need, describing disruptions when hypertensive patients' medication regimens were interrupted by pharmaceutical stock-outs or physician transfers (Head of Internal Medicine, personal communication, 2026).

Test of Hypothesis Three

Ho₃: There is no significant relationship between healthcare delivery continuity and sustainable healthcare delivery under the NHIS at the Nigeria Military Hospital, Port Harcourt.

Table 6: Pearson Correlation Analysis on Healthcare Delivery Continuity and Sustainable Healthcare Delivery

		Sustainable Healthcare Delivery
Healthcare Delivery Continuity Pearson Correlation	1.000	.627
Sig. (2-tailed)		.000
N	366	366

Correlation is significant at the 0.01 level (2-tailed). Source: SPSS Statistics Output, 2026

Table 6 shows a correlation coefficient of $r = 0.627$, with $p = 0.000$, indicating a positive moderately strong relationship. Since $p = 0.000 < 0.05$, Ho₃ is rejected. Converting r to t : $T = 0.627 \times \sqrt{364} / \sqrt{(1-0.393)} = 0.627 \times 19.079 / \sqrt{0.607} = 11.962 / 0.779 = 15.36$. At $df = 364$ and $\alpha = 0.05$ (two-tailed), t -critical = 1.966. Since t -calculated (15.36) > t -critical (1.966), Ho₃ is rejected. There is a statistically significant positive relationship between healthcare delivery continuity and sustainable healthcare delivery under the NHIS at the Nigeria Military Hospital, Port Harcourt.

DISCUSSION OF FINDINGS

Role of Healthcare Providers and Sustainable Healthcare Delivery

The finding that the role of healthcare providers recorded the strongest correlation with sustainable healthcare delivery ($r = 0.643$) of any variable across the entire study is consistent with Yeshiwas *et al.* (2021), who identified provider competence and institutional commitment as the most significant predictors of health insurance implementation quality, and with Abubakar *et al.* (2023), whose structural equation modelling demonstrated that organisational capacity shapes service delivery quality both directly and through beneficiary perceptions. The finding aligns with Donabedian's (1988) process dimension of quality: what is actually done in delivering care, shaped by provider competence and institutional accountability, is the immediate determinant of patient outcomes and scheme sustainability. The qualitative finding that military institutional culture serves as a structural mediator between provider characteristics and NHIS outcomes represents a substantive contribution not previously documented in the NHIS literature, extending beyond Mgbe and Kevin's (2019) baseline findings. The identification of NHIS administrative training as the weakest provider capacity sub-component reinforces Ambali *et al.*'s (2025) finding that administrative skills gaps are the primary provider-related constraint on sustainability at accredited facilities nationally.

Adequacy of Medical Personnel and Sustainable Healthcare Delivery

The personnel adequacy findings ($r = 0.602$) corroborate Ezenekwe *et al.* (2020), who documented human resource shortages as the most consistently cited NHIS implementation constraint, and are consistent with Donabedian's (1988) structural dimension of quality: the attributes of the settings in which care is delivered, including the adequacy of qualified personnel, directly determine the quality and sustainability of outcomes. The military-specific dimensions of specialist attrition and posting-related discontinuities add institutional nuances not captured in civilian facility studies and carry direct implications for Federal Ministry of Defence personnel policy and Nigerian Army Medical Corps staffing establishment reviews. The near-threshold mean scores for workload manageability (2.51), doctor adequacy (2.61), and staff-to-patient ratios (2.57) reveal

personnel adequacy as the most critically stressed dimension across both journal studies, confirming it as the most urgent target for institutional intervention.

Healthcare Delivery Continuity and Sustainable Healthcare Delivery

The continuity findings ($r = 0.627$) align with Daramola *et al.* (2019), who identified service consistency as the dominant satisfaction predictor, and confirm Eze *et al.*'s (2025) identification of chronic disease management continuity as the most critically under-resourced service delivery area in the national NHIS framework. Within Donabedian's (1988) framework, continuity functions at the intersection of process and outcomes: it reflects both what is done (coordinated, uninterrupted service delivery) and what results (sustainable health outcomes for enrolled beneficiaries). The military hospital's 24-hour operational culture and electronic health records infrastructure emerge as genuine structural advantages consistent with the framework's structural quality dimension, while the chronic disease management and handover gaps point to process quality improvements achievable within the existing institutional framework.

CONCLUSION AND RECOMMENDATIONS

This study investigated the relationship between healthcare delivery effectiveness and the National Health Insurance Scheme at the Nigeria Military Hospital, Port Harcourt, from 2015 to 2025. Findings revealed statistically significant positive relationships between sustainable healthcare delivery and the role of healthcare providers ($r = 0.643$, t -calculated = 16.02), the adequacy of medical personnel ($r = 0.602$, t -calculated = 14.39), and healthcare delivery continuity ($r = 0.627$, t -calculated = 15.36), with all calculated t -values substantially exceeding the critical t -value of 1.966 at $df = 364$ and $\alpha = 0.05$. All three null hypotheses were rejected. The military institution's culture of professional discipline and operational readiness emerged as a mediating structural advantage, while NHIS administrative training gaps, specialist personnel attrition, posting-related care disruptions, and chronic disease management continuity deficits were identified as the specific sub-dimensional constraints most requiring targeted institutional intervention. Based on these findings, the following recommendations are made:

1. The Nigeria Military Hospital should establish a formal, bi-annual NHIS clinical and administrative training programme covering claims documentation, pre-authorisation protocols, and diagnosis coding, cascaded to all Nigerian military health facilities under the coordination of the Nigerian Army Medical Corps, directly addressing the weakest sub-component of provider capacity identified in this study.
2. The Federal Ministry of Defence and the Nigerian Army Medical Corps should conduct an urgent staffing establishment review benchmarked against projected NHIS enrolment growth trajectories, and develop a specialist retention policy incorporating enhanced clinical allowances and minimum three-year service tenure requirements for clinical specialists at accredited military health facilities, to address the personnel adequacy and attrition constraints identified as the most critically stressed dimension across this study.
3. The hospital should establish a dedicated chronic disease management programme for NHIS beneficiaries incorporating an electronic patient recall system, multidisciplinary care protocols for hypertension, diabetes, and other high-burden non-communicable diseases, and a mandatory structured clinical handover protocol requiring managing physicians to complete and verify a written summary of ongoing patient management plans before any inter-facility transfer takes effect.

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