Original Article

Cadre Disparities and Health Workforce Composition in Rural Primary Healthcare Centres in Benue State: Implications for Quality Maternal Care

Bitto TT[1]*, Shaahu VN[1], Bako IA[2], Rimamnunra GN[1], Bitto S[3], Ben – Ameh TJ[4], Ukpabi DE[1], Ango JT[5], Utoo PM[1]

[1]*Department of Epidemiology and Community Health, College of Health Sciences, Moses Orshio Adasu University, Makurdi, Benue State, Nigeria.*
[2]*Department of Epidemiology and Community Medicine, College of Medicine, Federal University of Lafia, Lafia, Nasarawa State, Nigeria.*
[3]*Department of Ophthalmology, Federal Medical Centre Abuja, FCT, Nigeria & College of Medicine and Health Sciences, Baze University Abuja, FCT, Nigeria.*
[4]*Department of Ophthalmology, College of Health Sciences, Moses Orshio Adasu University, Makurdi, Benue State, Nigeria.*
[5]*Taskforce for Global Health Inc, Federal Capital Territory, Nigeria*

Article History
Submitted: 19/09/2026, Accepted: 26/09/2026, Published: 29/09/2026

***Correspondence:** Terkaa Terrumun Bitto
Email:terksbee@gmail.com; tbitto@bsum.edu.ng;
Tel: +234 703 068 1852

ABSTRACT

Sub-Saharan Africa carries a disproportionate share of global maternal mortality while hosting only a small fraction of the world's health workforce. Nigeria's National Task-Shifting and Task-Sharing (TSTS) Policy delegates essential maternal care functions to mid-level cadres, notably Community Health Extension Workers (CHEWs), but cadre disparities and skill-mix imbalances may compromise service quality and provider attitudes. This study assessed health workforce composition and cadre-specific attitudinal patterns across 16 Primary Health Centres (PHCs) in Benue State, Nigeria. A complete facility-level workforce enumeration and cross-sectional comparative assessment was conducted across 16 PHCs, encompassing 326 health personnel. Workers were categorised as Skilled Birth Attendants (SBAs) or non-SBAs. Data were analysed with IBM SPSS version 20 with significance set at $p<0.05$. Majority of frontline PHC personnel were CHEWs (31.6%) and support staff (31.3%), with no significant cadre distribution difference between study and control PHCs (FET, df=6, p=0.224). Overall, less than half (48.2%) of personnel met SBA criteria. Maternal health worker density was 32.6/10,000 population in study catchments versus 23.3/10,000 in control catchments. At baseline, CHEWs accounted for 82.5% of all perceived negative client interactions in study PHCs. Non-payment of salaries was the leading negative-attitude driver in both arms. Rural primary care relying on task-shifting places disproportionate operational demands on mid-level cadres, particularly CHEWs, and the primary locus of negative client interactions. Targeted, largely non-monetary leadership training substantially reduced CHEW-attributed attitudinal deficits, underscoring leadership development as essential to optimising task-shifting policy implementation in low-resource rural settings.

Keywords: Benue State; Community Health Extension Workers; Health Workforce Composition; Human Resources for Health; Primary Healthcare; Task-Shifting

INTRODUCTION

Sub-Saharan Africa bears an estimated 66% of the global maternal mortality burden while hosting only about 3% of the world's health workforce, a mismatch that has changed little over the past decade despite substantial global investment in health systems strengthening.[1,2] This structural deficit is compounded, within countries, by profound geographical maldistribution: physicians and midwives cluster in urban tertiary centres, leaving rural Primary Health Centres (PHCs) to absorb chronic staff shortages, absenteeism, and skewed skill mixes.[3] Recent continent-wide analyses confirm that most sub-Saharan African countries, including Nigeria, remain well below the health workforce density thresholds associated with progress toward Universal Health Coverage (UHC), particularly for cadres delivering frontline maternal and reproductive health services.[3,4]

To mitigate these constraints and advance UHC, the Federal Ministry of Health of Nigeria formulated the National Task-Shifting and Task-Sharing (TSTS) Policy in 2014, aligning with the World Health Organization's global guidance on optimising health worker roles for maternal and newborn health.[5,6] The policy formally delegates essential obstetric and maternal health functions to mid-level cadres — principally Community Health Extension Workers (CHEWs) and Community Health Officers (CHOs) who have completed Life Saving Skills (LSS) training — while explicitly excluding Junior CHEWs (JCHEWs) and support staff from independent delivery management.[5] Qualitative evidence from across Nigeria indicates that, in practice, task-shifting frequently extends

Article Access
Website: www.jtmidr.com
doi: 10.5281/zenodo.22974533

How to cite this article
Bitto TT, Shaahu VN, Bako IA, Rimamnunra GN, Bitto S, Ben – Ameh TJ, Ukpabi DE, Ango JT, Utoo PM. Cadre Disparities and Health Workforce Composition in Rural Primary Healthcare Centres in Benue State: Implications for Quality Maternal Care. J Trop Med & Infect Dis Research. 2026;1(3):71-77. DOI:10.5281/zenodo.22974533

informally beyond these policy boundaries, with lower cadres absorbing clinical responsibilities under conditions of limited supervision and unclear accountability.[7] Broader qualitative syntheses of task-shifting implementation across low- and middle-income countries similarly find that policy intent and frontline practice routinely diverge, with structural and organisational barriers — rather than workforce willingness — driving much of this gap.[8,9]

Nigerian policy-level evaluations have identified persistent obstacles to effective TSTS implementation, including inadequate pre-service alignment of curricula, weak regulatory enforcement, insufficient supervisory capacity, and unresolved remuneration structures for task-shifted cadres.[9,10] At the facility level, workload indicators of staffing needs (WISN) assessments in Nigerian PHCs have repeatedly documented substantial staffing gaps relative to service demand, with mid-level cadres bearing a disproportionate share of frontline clinical duties.[11] These operational pressures — heavy caseloads, role ambiguity, inadequate supportive supervision, and delayed salary disbursement — are recognised drivers of workforce retention difficulty and attrition in remote and underserved areas of Nigeria.[12]

Operating at the front line of task-shifting subjects mid-level health workers to substantial occupational stress. Emerging Nigerian evidence links colleague absenteeism, heavy workload, and unclear role boundaries to emotional strain and burnout among frontline primary care staff, while broader reviews across sub-Saharan Africa document consistently high burnout prevalence among healthcare workers and highlight the paucity of structured, health-system-level management responses.[13 – 15] Such occupational stress can manifest as negative provider attitudes and diminished interpersonal quality of care — outcomes with direct implications for maternal and newborn health, given that respectful, competent provider interaction is a recognised determinant of women's continued engagement with facility-based obstetric services.[16] This study examined health workforce composition, cadre-specific disparities, and cadre-attributable attitudinal patterns across 16 rural PHCs in Benue State, Nigeria.

CONCEPTUAL FRAMEWORK

This evaluation draws on the World Health Organization's Human Resources for Health (HRH) Action Framework and the health workforce optimisation literature it has since informed, alongside Nigeria's Task-Shifting and Task-Sharing Policy Framework.[5,17,18] The HRH Action Framework emphasises four interconnected dimensions of a functional health workforce: workforce density, cadre composition, management support systems, and organisational climate.[17,18] When facilities rely on task-shifting without commensurate supervisory leadership, mid-level staff experience heightened role conflict and moral injury, which manifest as interpersonal communication breakdowns with clients.[12,13] Conversely, integrating participatory leadership practices — Scanning, Focusing, and Aligning frontline teams around shared operational challenges — has been shown to empower mid-level cadres to resolve workplace friction and sustain respectful maternal care, including in comparable West African health system contexts.[19,20]

MATERIALS AND METHODS

Study Area

The study was conducted in Benue State, located in the North Central geopolitical zone of Nigeria, with its capital at Makurdi. The state is bordered to the north by Nasarawa State, north-east by Taraba State, south-east by Cameroon, south by Cross River and Ebonyi States, south-west by Enugu State, and west by Kogi State. It comprises three senatorial zones and twenty-three Local Government Areas (LGAs). Subsistence farming is the predominant occupation — earning the state the sobriquet "Food Basket of the Nation" — alongside civil service and trading.

Study Design

A comparative cross-sectional evaluation was conducted between July and December 2019 across 16 rural PHCs in Benue State, North-Central Nigeria, with 8 study facilities in Senatorial Zone B and 8 control facilities in Senatorial Zone A.

Study Population

The study population comprised permanent staff of the selected PHCs who had spent at least six months at the selected health facility.

Sample Size

A complete enumeration approach was adopted: the total population of eligible PHC staff at all 16 study locations was enrolled, rather than a sampled subset, to permit a comprehensive facility-level workforce audit.

Sampling Technique

A multi-stage sampling technique was used to select the 16 PHCs across 8 LGAs.

Stage 1: Two of Benue State's three senatorial zones were selected by simple random sampling (balloting); Zone A (Benue North-East) was allocated as the control zone and Zone B (Benue North-West) as the study zone.

Stage 2: Four LGAs were selected from each zone by simple random sampling — Vandeikya, Konshisha, Kwande, and Ushongo in Zone A; and Makurdi, Gwer East, Gboko, and Tarka in Zone B.

Stage 3: Two PHCs were selected per LGA by simple random sampling.

Stage 4: All PHC staff meeting the inclusion criteria at the selected facilities were enrolled.

Workforce Audit Procedure: A total facility workforce enumeration was conducted across all 16 facilities. Facilities were assessed using a standardised Integrated Supportive Supervision (ISS) checklist. Health personnel were stratified by professional cadre and categorised as either Skilled Birth Attendants (SBAs: Doctors, Nurses/Midwives, CHOs, and CHEWs with LSS training) or non-SBAs (JCHEWs, health attendants, and administrative/support staff), in strict accordance with national guidelines. Catchment population data were gathered to compute maternal health human resource density per 10,000 population.

Data Collection and Measurement Tools

Key Informant Interviews (KIIs) were conducted with

Officers-in-Charge of the selected facilities to explore prevailing maternal health problems, availability of human resources and materials, service delivery, and facility-level challenges. Secondary data from facility Health Management Information System (HMIS) registers on facility utilisation were extracted using a standardised proforma. Cadre-specific attribution of positive and negative client interactions was assessed.

Data Analysis

Data were analysed using IBM SPSS version 20. Comparisons between the study and control groups were conducted using Pearson's chi-square test (χ^2), Fisher's Exact Test (FET) where expected cell counts were small, and paired Student's t-tests for facility-level continuous delivery-volume data. Statistical significance was set at $p<0.05$.

Ethical Considerations

Ethical approval was obtained from the Benue State University Teaching Hospital Health Research Ethics Committee (HREC No: BSUTH/CMAC/HREC/2020/012). Institutional approval was obtained from the Benue State Primary Healthcare Board and the respective PHCs. Written informed consent was obtained from all participants before enrolment. The ethical principles of confidentiality, respect for persons, beneficence, and justice were maintained throughout the study.

RESULTS

Facility Workforce Composition and Cadre Distribution:

Table 1 depicts the facility workforce composition and cadre distribution of a total of 326 health personnel across the 16 rural PHCs: 215 (66.0%) in study facilities and 111 (34.0%) in control facilities). CHEWs represented the largest single professional cadre [overall 31.6% (103); 32.1% (69) study vs 30.6% (34) control], followed closely by support staff [31.3% (102) overall; 27.9% (60) study vs 37.8% (42) control]. Junior CHEWs comprised 14.1% (46) of personnel overall [17.2% (37) study vs 8.1% (9) control], while fully certified Nurses/Midwives comprised only 14.4% (47) of the total primary care workforce [14.4% (31) study vs 14.4% (16) control]. Medical Laboratory Technicians accounted for 5.8% (19) overall [5.6% (12) study vs 6.3% (7) control], Community Health Officers for 2.1% (7) overall [1.8% (4) study vs 2.7% (3) control], and Health Records Technicians for 0.6% (2) overall [0.9% (2) study vs 0.0% (0) control). There was no statistically significant difference in cadre distribution between study and control PHC staff (Fisher's Exact Test, df=6, p=0.224).

Skilled Birth Attendant Composition

Figure 1 shows that less than half (157) 48.2% of enumerated personnel met national SBA criteria [48.4% (104) study vs 47.7% (111) control], with the remaining 51.8% (169) classified as non-SBA [51.6% (111) study vs 52.3% (58) control]. This difference between study and control PHCs was not statistically significant ($\chi^2=0.011$, df=1, p=0.915).

Human Resources for Maternal Health Density

Table 2 depicts the maternal health worker density, computed as the number of SBAs per 10,000 population of Women of Reproductive Age Group (WRAG) in the facility catchment, was 32.6 per 10,000 population in study catchment communities (104 SBAs per estimated 31,911 WRAG) compared to 23.3 per 10,000 population in control catchment communities (53 SBAs per estimated 22,793 WRAG).

Stratification of Support Staff Cadres

Figure 2 depicts the support staff, which constituted a substantial share of facility personnel and played a major role in day-to-day operations. Health Attendants/Assistants accounted for 23.3% (14) of support staff in study PHCs versus 14.3% (6) in control PHCs; Cleaners for 23.3% (14) in study versus 7.1% (3) in control; Security Personnel for 16.7% (10) in study versus 21.4% (9) in control; Voluntary Health Workers for 13.3% (8) in study versus 19.0% (8) in control; and Lay Birth Attendants for 11.7% (7) in study versus 23.9% (10) in control. Other auxiliary personnel included Accounts Clerks, 6.7% (4) in study, Laboratory Assistants [3.3% (2) in study, and 11.9% (5) control], Chaplains 1.7% (1) in study, and Health Educators 2.4% (1) in control.

Factors Positively Affecting Health Worker Attitude

Table 3 identifies the factors most frequently reported as promoting a positive attitude among health workers included regular salaries, regular training, receiving gifts, appreciation, motivation, a conducive work environment, good accommodation, adequate drugs and commodities, high patient facility attendance, payment of stipends, salary increases, availability of personal protective equipment (PPE), payment of shift-duty allowance, payment of outstanding salary shortfalls, good rapport with staff, and availability of ambulance services. There was no statistically significant difference between study and control PHCs in the factors positively affecting health worker attitude (p=1.000).

Factors Negatively Affecting Health Worker Attitude

Table 4 described non-payment of salaries was the leading factor negatively affecting health worker attitude in both study (32.0%; all PHCs – 8) and control (33.3%; all PHCs – 8) PHCs. Other contributing factors included lack of motivation, discord among staff, poor working conditions, low client attendance, poor communication, inadequate equipment and supplies, non-payment of salary shortfalls, poor infection control, harsh managers, disrespect, structural defects, inadequate staffing, insecurity, heavy workload, inadequate training, and lack of imprest for facility management. There were no statistically significant difference between study and control PHCs in the factors negatively affecting health worker attitude (p=1.000).

Cadre-Specific Attribution of Negative Client Interactions

Table 5 revealed that of the 57 health workers in the study group that expressed negative attitudes towards WRAG, in the study group 82.5% (47) and in the control group 69.6%

(39), of them were Community Health Extension Workers (CHEWs), followed by Health attendants (10.5%; 6) in study and (26.8; 15) in the control group. Nurse/Midwives accounted for (7.0%; 4) in study and (3.6%; 2) in the control group. There were no statistically significant differences between negative attitudes expressed by the various cadre of staff at the study and control PHCs.

Skilled Birth Attendance and Delivery Outcomes

Table 6 showed that during the study period, 84.3% (182/216 live births) of deliveries in the study group were conducted by an SBA, compared with 65.9% (141/214 live births) in the control group; correspondingly, 15.7% of study-group deliveries and 34.1% of control-group deliveries were conducted by non-SBA personnel. The mean number of deliveries attended to by SBAs was 43.63±32.73 at study PHCs and 25.50±23.36 at control PHCs (Table 6).

Table 1. Cadre of health workers at Primary Health Centres

Cadre	Health workers at study PHCs (N=215) Frequency (%)	Health workers at control PHCs (N=111) Frequency (%)	Test statistic / df	P-value
Community Health Extension Worker	69 (32.1)	34 (30.6)	FET, df=6	0.224
Support staff	60 (27.9)	42 (37.8)		
Junior Community Health Extension Worker	37 (17.2)	9 (8.1)		
Nurse/Midwife	31 (14.4)	16 (14.4)		
Medical Laboratory Technician	12 (5.6)	7 (6.3)		
Community Health Officer	4 (1.8)	3 (2.7)		
Health Records Technician	2 (0.9)	0 (0.0)		

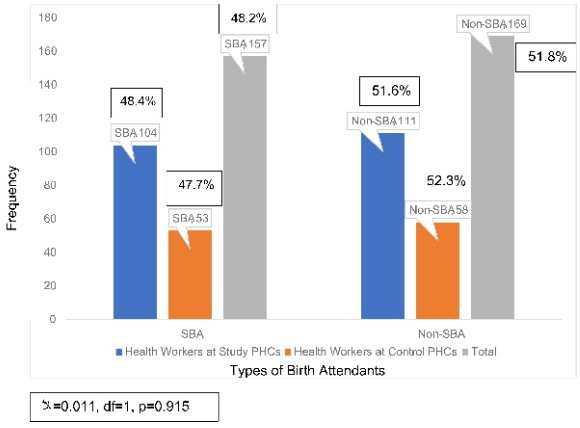

Figure 1: Bar Chart showing Categorization of health workers in PHCs

(χ^2=0.011, df=1, p=0.915)

Figure 1. Categorization of health workers in PHCs

Table 2: Human resource for maternal health per 10,000 population in study and control PHC catchment communities

Indices	Study PHCs	Control PHCs
Number of SBA	104	53
Population in the catchment communities	145,051	103,605
Estimated number of WRAG in the selected and surrounding communities	31,911	22,793
Human resource for maternal health per 10,000 population	**32.6/10,000**	**23.3/10,000**

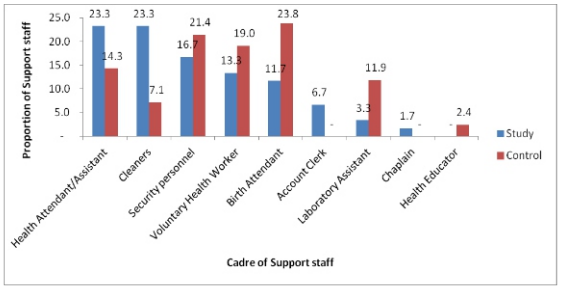

Figure 2: Cadre of support staff at Primary Health Centres

Table 3: Factors that positively affected the attitude of health workers at Primary Health Centres in the study and control populations

Factors positively affecting attitude*	Study (N=8)	Control (N=8)
Receiving gifts	3 (10.6)	5 (20.8)
Regular salaries	4 (14.3)	3 (12.5)
Appreciation	3 (10.6)	4 (16.6)
Regular training	4 (14.3)	1 (4.2)
Motivation	1 (3.6)	4 (16.6)
Salary increases	1 (3.6)	4 (16.7)
Conducive work environment	2 (7.1)	1 (4.2)
High patient facility attendance	2 (7.1)	0 (0.0)
Good accommodation	1 (3.6)	1 (4.2)
Adequate drugs and commodities	1 (3.6)	0 (0.0)
Payment of stipends	1 (3.6)	0 (0.0)
Personal Protective Equipment (PPE) availability	1 (3.6)	0 (0.0)
Payment of shift duty allowance	1 (3.6)	0 (0.0)
Payment of salary shortfalls	1 (3.6)	0 (0.0)
Good rapport with staff	1 (3.6)	0 (0.0)
Ambulance services	0 (0.0)	1 (4.2)

**Multiple responses*

Table 4: Factors that negatively affected the attitude of health workers at Primary Health Centres in the study and control populations

Factors negatively affecting attitude*	Study N (%)	Control N (%)
Non-payment of salaries	8 (32.0)	8 (33.3)
Lack of motivation	1 (4.0)	3 (12.5)
Discord among staff	3 (12.0)	0 (0.0)
Poor working conditions	2 (8.0)	1 (4.2)
Low client attendance	2 (8.0)	1 (4.2)
Poor communication	0 (0.0)	3 (12.5)
Inadequate equipment and supplies	1 (4.0)	2 (8.3)
Non-payment of salary shortfalls	2 (8.0)	0 (0.0)
Poor infection control	2 (8.0)	0 (0.0)
Harsh managers	0 (0.0)	2 (8.3)
Disrespect	1 (4.0)	0 (0.0)
Payment of proportion of salaries	1 (4.0)	0 (0.0)
Structural defects	1 (4.0)	0 (0.0)
Inadequate staff	1 (4.0)	0 (0.0)
Insecurity	0 (0.0)	1 (4.2)
Heavy workload	0 (0.0)	1 (4.2)
Inadequate trainings	0 (0.0)	1 (4.2)
No imprest for facility management	0 (0.0)	1 (4.2)

**Multiple responses*

Table 5: Cadre of health workers with negative attitudes towards women attending Antenatal Care

Cadre with negative attitudes towards women attending ANC	Study group (N = 57)	Control group (N = 56)
	Frequency (%)	Frequency (%)
Nurse/Midwife	4 (7.0)	2 (3.6)
Health Attendant	6 (10.5)	15 (26.8)
Community Health Extension Workers	47 (82.5)	39 (69.6)
	χ^2 = 5.260; df = 2; p = 0.072	

Table 6. Proportion of deliveries conducted by Skilled Birth Attendants

Variable	Study group	Control group
Deliveries by SBA	182	141
Total number of live births	216	214
Proportion of deliveries by SBA	84.3%	65.9%
Proportion of deliveries by non-SBA	15.7%	34.1%
Deliveries by SBA (Mean ± SD)	43.63±32.73	25.50±23.36

DISCUSSION

This facility-level workforce audit demonstrates that rural primary care delivery in Benue State, Nigeria, relies heavily on mid-level cadres (CHEWs, 31.6%; JCHEWs, 14.1%) and auxiliary support personnel (31.3%) to sustain daily clinical operations, while professional Nurses/Midwives constitute fewer than one in six frontline staff. This configuration is the direct, observable expression of Nigeria's National Task-Shifting and Task-Sharing Policy in routine PHC staffing, and it mirrors continent-wide patterns in which health workforce density and cadre composition in sub-Saharan Africa remain substantially below the thresholds associated with progress toward Universal Health Coverage.[3–5] The higher maternal health worker density observed in study catchments (32.6/10,000 population) relative to control catchments (23.3/10,000 population) further illustrates how, even within a single state, catchment-level HRH availability for maternal services can vary considerably, with direct implications for the workload absorbed by any single cadre.

The study's most striking finding is the disproportionate concentration of perceived negative client interactions among CHEWs, who accounted for 82.5% of all baseline attitudinal complaints despite representing under a third of the workforce. This is consistent with a growing body of Nigerian and regional evidence that mid-level and community-based cadres — who bear the primary burden of direct, sustained patient contact under task-shifting arrangements — are disproportionately exposed to the occupational stressors that erode interpersonal care quality.[7,12,13] Nigerian facility-based evidence links heavy caseloads, unclear role boundaries, and colleague absenteeism to emotional strain among frontline primary care workers, while regional reviews document persistently high burnout prevalence among African healthcare workers and a corresponding scarcity of structured, health-system-level management responses to it.[13–15] In the present study, non-payment of salaries was the single most frequently cited driver of negative attitude in both study and control PHCs (32.0% and 33.3%, respectively), a finding that aligns closely with motivation research from Nigeria and Ethiopia identifying remuneration delays and irregularity as among the most consistent predictors of poor health worker motivation and morale in low-resource public health systems.[21–24]

Comparable leadership capacity-building interventions targeting frontline maternal health staff in Ghana and Kenya have similarly demonstrated measurable improvements in team functioning and service-delivery indicators following relatively brief, participatory training inputs grounded in emotional intelligence, team alignment, and constructive feedback.[27 – 29] Evidence from Zambia further indicates that leadership and management training can act as a catalyst for broader health system strengthening in comparable low-income settings, reinforcing that the CHEW-level improvement observed here is unlikely to be an isolated or setting-specific effect.[30] Complementary evidence from structured clinical skills training of CHEWs in Nigeria — including neonatal resuscitation and emergency obstetric life-saving skills programmes — indicates that this cadre, given appropriate structured capacity-building, can achieve meaningful and sustained practice change, supporting the broader argument that CHEWs are a responsive rather than an inherently deficient workforce segment.[31–33]

Programmatically, these findings suggest that task-shifting policies cannot be considered self-sufficient: delegating clinical responsibility to mid-level cadres without commensurate investment in supervisory leadership and workplace climate predictably concentrates both operational strain and interpersonal-quality risk at the point of task-shifted care.[8 – 10] Structured leadership development appears to be an effective, comparatively low-cost lever for mitigating this risk, though it does not substitute for addressing the underlying structural drivers of workforce stress — most prominently, salary irregularity — that remained unresolved across both study arms.

Strengths and Limitations. This study's major strength is its complete facility-level workforce enumeration, which avoids the sampling biases inherent in facility surveys restricted to a subset of staff, combined with cadre-specific attribution of attitudinal outcomes rarely reported at this level of granularity in the Nigerian literature. Limitations include the the cross-sectional nature of the workforce audit, which cannot establish causal workforce-to-outcome pathways; and reliance on client-reported attribution of negative interactions to specific cadres, which may be subject to recall and identification error, particularly where cadre roles overlap in practice.

CONCLUSION

Task-shifting policy places Community Health Extension Workers at the operational core of rural Nigerian primary healthcare, and this study demonstrates that CHEWs correspondingly bear a disproportionate share of both frontline clinical workload and client-perceived attitudinal friction. Equipping mid-level cadres with participatory leadership skills will enhance this cadre-specific attitudinal deficit, supporting respectful, higher-quality maternal care without requiring structural remuneration reform to achieve a measurable short-term effect.

RECOMMENDATIONS

The Benue State Primary Health Care Board should establish structured career pathways and regular supervisory visits for CHEWs who have completed Life Saving Skills training, to support their expanded clinical role; institutionalise leadership and soft-skills development as a routine, budgeted component of PHC workforce management rather than a one-off intervention; and actively pursue recruitment of additional qualified Nurses/Midwives and all needed staff mix to achieve a more balanced skill mix across rural PHCs, consistent with Ward Health System staffing standards. Future research should evaluate the long-term durability of leadership-training effects on cadre-specific attitude, and examine whether combining leadership development with incremental progress on salary regularity yields additive improvements in workforce wellbeing and care quality.

ACKNOWLEDGEMENTS

The authors sincerely appreciate the Management of the Benue State Primary Healthcare Board, the staff of the respective Primary Health Centres, and the Women of Reproductive Age who participated in the study.

CONFLICT OF INTEREST

The authors have no conflicts of interest to declare.

REFERENCES

1. Haakenstad A, Irvine CMS, Knight M, Bintz C, Aravkin AY, et al. Measuring the availability of human resources for health and its relationship to universal health coverage for 204 countries and territories from 1990 to 2019: a systematic analysis for the Global Burden of Disease Study 2019. Lancet. 2022;399(10341):2129–2154.
2. Alkema L, Chou D, Hogan D, Zhang S, Moller AB, Gemmill A, et al. Global, regional, and national levels and trends in maternal mortality between 1990 and 2015. Lancet. 2016;387(10017):462–474.
3. Ahmat A, Asamani JA, Abdou Illou MM, Millogo JJS, Okoroafor SC, Nabyonga-Orem J, et al. Estimating the threshold of health workforce densities towards universal health coverage in Africa. BMJ Glob Health. 2022;7(Suppl 1):e008310.
4. Alawode GB, Ajibola AA, Sanusi MS, Adewoyin AB, Alawode KA. Optimizing the health workforce for Universal Health Coverage: a framework for analysis and action. Hum Resour Health. 2025;23:27.
5. Federal Ministry of Health. Task Shifting and Task Sharing Policy for Essential Health care services in Nigeria. 2014:1-56.
6. World Health Organization. WHO recommendations: optimizing health worker roles to improve access to key maternal and newborn health interventions through task shifting. Geneva: World Health Organization; 2012. ISBN 978-92-4-150484-3. https://www.who.int/publications/i/item/9789241504843 Accessed on 30/6/2026.
7. Ajisegiri WS, Abimbola S, Tesema AG, Odusanya OO, Peiris D, Joshi R. "We just have to help": community health workers' informal task-shifting and task-sharing practices for hypertension and diabetes care in Nigeria. Front Public Health. 2023;11:1038062.
8. Coales K, Jennings H, Afaq S, Arsh A, Bhatti M, Siddiqui F, et al. Perspectives of health workers engaging in task shifting to deliver health care in low-and-middle-income countries: a qualitative evidence synthesis. Glob Health Action. 2023;16(1):2228112.
9. Okoroafor SC, Christmals CD. Optimizing the roles of health workers to improve access to health services in Africa: an implementation framework for task shifting and sharing for policy and practice. BMC Health Serv Res. 2023;23:843.
10. Okoroafor SC, Christmals CD. Barriers, promoters, and strategies for improving task shifting and task sharing implementation in Nigeria: qualitative perspectives of policymakers. J Glob Health Rep. 2023;7:e2023069.
11. Okoroafor SC, Ahmat A, Osubor M, Nyoni J, Bassey J, Alemu W. Assessing the staffing needs for primary health care centers in Cross River State, Nigeria: a workload indicators of staffing needs study. Hum Resour Health. 2022;19:108.
12. Okoroafor SC, Osubor MK, Nwachukwu C. Factors influencing attraction and retention of frontline health workers in remote and rural areas in Nigeria: a discrete choice experiment. J Public Health Policy. 2022;43(3):347–359.
13. Eze OC, Ojiakor I, Odii A, Ogbozor PA, Ndukaihe I, McKee M, et al. The hidden toll of colleague absenteeism: exploring its impact on emotional strain and burnout among frontline health workers in Nigeria. Front Psychol. 2026;17:1768286.
14. Nwobodo EP, Strukcinskiene B, Razbadauskas A, Grigoliene R, Agostinis-Sobrinho C. Stress management in healthcare organizations: the Nigerian context. Healthcare (Basel). 2023;11(21):2815.
15. Khangamwa-Singano F, Singano VH, Kaunda P, Machongo RB, Nkhoma-Mussa YB. Management strategies for healthcare worker burnout in Sub-Saharan Africa: an integrative review. Front Public Health. 2026;14:1779807.
16. Zúñiga JA, García A, Kyololo OM, Hamilton-Solum P, Kabimba A, Milimo B, et al. Increasing utilisation of skilled attendants at birth in sub-Saharan Africa: a systematic review of interventions. Int J Nurs Stud. 2021;120:103977.
17. World Health Organization. Global strategy on human resources for health: workforce 2030. Geneva: World Health Organization; 2016. **ISBN:** 9789241511131. https://www.who.int/publications/i/item/9789241511131 Accessed on 30/6/2026.
18. Hobbs AJ, Moller AB, Kachikis A, Carvajal-Aguirre L, Say L, Chou D. Scoping review to identify and map the health personnel considered skilled birth attendants in low-and-middle income countries from 2000–2015. PLoS One. 2019;14(2):e0211576.
19. Pfeiffer E, Owen M, Pettitt-Schieber C, Van Zeijl R, Srofenyoh E, Olufolabi A, et al. Building health system capacity to improve maternal and newborn care: a pilot leadership program for frontline staff at a tertiary hospital in Ghana. BMC Med Educ. 2019;19:52.
20. Sherk KE, Nauseda F, Johnson S, Liston D. An experience of virtual leadership development for human resource managers. Hum Resour Health. 2009;7:1.
21. Abate M, Mulissa Z, Magge H, Bitewulign B, Kiflie A, Biadgo A, et al. Key factors influencing motivation among health extension workers and health care professionals in four regions of Ethiopia: a cross-sectional study. PLoS One. 2022;17(8):e0272551.
22. Milkano TM, Daka K, Bolado GN, Lukas M, Oshine W, Balcha B. Job motivation and associated factors among health workers providing maternal and child health services in Wolaita Zone public hospitals, Southern Ethiopia: a mixed-method study. PLoS One. 2025;20:e0320672.
23. Okafor IP, Dada AA, Olubodun T, Olufunlayo TF. Health worker motivation to deliver quality care in western Nigeria. IJQHC Commun.

2022;2(2):lyac012.
24. Salihu HB, Yakubu IM, Sa'ad BU, Rufai MA, Salami TR. Socio-demographic and occupational correlates of job satisfaction among healthcare workers at tertiary hospitals in Kaduna State, Nigeria: a cross-sectional study. Niger Med J. 2026;67(4):1563–1572.
25. Muhula S, Opanga Y, Kassim S, Odeny L, Mbewe RZ, Akoth B, et al. Predictors of health-workforce job satisfaction in primary care settings: insights from a cross-sectional multi-country study in eight African countries. Int J Environ Res Public Health. 2025;22(7):1108.
26. Mbachu C, Etiaba E, Ebenso B, Ogu U, Onwujekwe O, Uzochukwu B, et al. Village health worker motivation for better performance in a maternal and child health programme in Nigeria: a realist evaluation. J Health Serv Res Policy. 2022;27(3):222–231.
27. Babalola O, Levin J, Goudge J, Griffiths F. Community health workers' quality of comprehensive care: a cross-sectional observational study across three districts in South Africa. Front Public Health. 2023;11:1180663.
28. Okoroafor SC, Asamani JA, Bediakon SB, Ahmat A, Rwamatwara E, Chukwujekwu O, et al. Addressing health worker migration in Africa. J Health Serv Res Policy. 2025.
29. Johnson O, Begg K, Kelly AH, Sevdalis N. Interventions to strengthen the leadership capabilities of health professionals in sub-Saharan Africa: a scoping review. Health Policy Plan. 2021;36(1):117–133.
30. Chelagat T, Kokwaro G, Onyango J, Rice J. Effect of project-based experiential learning on the health service delivery indicators: a quasi-experiment study. BMC Health Serv Res. 2020;20:144.
31. Mutale W, Vardoy-Mutale AT, Kachemba A, Mukendi R, Clarke K, Mulenga D. Leadership and management training as a catalyst to health system strengthening in low-income settings: evidence from implementation of the Zambia Management and Leadership course for district health managers. PLoS One. 2017;12(7):e0174536.
32. Olaniyi AAO, Ncama BP. Influence of neonatal resuscitation training on practice of Community Health Extension Workers in managing asphyxiated newborns in rural Nigeria: a qualitative study. Glob Pediatr Health. 2020;7:2333794X20938944.
33. Ugwu SN, Adewusi OJ. Pattern of implementation of Emergency Obstetric Life-Saving Skills in public health facilities in Nsukka Local Government Area of Enugu State, Nigeria. J Obstet Gynaecol. 2022;42(5):1065–1071.
34. Baldridge AS, Orji IA, Shedul GL, Iyer G, Jamro EL, Ye J, et al. Enhancing hypertension education of community health extension workers in Nigeria's federal capital territory: the impact of the extension for community healthcare outcomes model on primary care, a quasi-experimental study. BMC Prim Care. 2024;25:334.