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BARRIERS TO QUALITY HEALTH INFORMATION SERVICE DELIVERY IN UNIVERSITY TEACHING HOSPITALS: A COMPARATIVE STUDY OF NORTH-WEST AND NORTH-CENTRAL NIGERIA

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Abstract

Health information professionals in Nigerian teaching hospitals work under constraints that limit the quality of services they deliver to patients and clinicians. This study compared the barriers to quality health information service delivery reported by health information professionals in university teaching hospitals in North-West (NW) and North-Central (NC) Nigeria, using the geopolitical zone as the unit of analysis. A comparative design based on secondary analysis of two matched doctoral surveys conducted in 2022 was adopted, covering 234 health information managers in six NW teaching hospitals and 135 health information professionals in four NC teaching hospitals. Both surveys used yes/no checklists of barriers. Barriers common to both zones were compared using two-proportion z-tests, and zone-specific barriers were compared thematically. Three human-resource barriers were common to both zones and were reported by most respondents: inadequate motivation (NW 74.7%; NC 82.2%), deployment of untrained or non-specialist staff (70.5%; 77.0%) and shortage of qualified or skilled manpower (70.1%; 77.8%). Although these barriers were reported more often in the NC zone, the differences were not statistically significant (p = .095 to .174), indicating a shared, system-wide workforce problem. The zone-specific barriers differed in kind: NW barriers centred on digitisation and capacity development (lack of computerised records, 69.2%; poor system maintenance, 68.4%; lack of training, 68.4%; lack of sponsorship, 67.1%; epileptic power supply, 63.2%), while NC barriers centred on physical space and paper-based logistics (lack of filing space, 84.5%; poor working environment, 70.4%; distance of the records library from clinics, 67.4%; delayed supply of forms and registers, 66.7%). The study concludes that workforce motivation and professional staffing are the most urgent shared priorities, while the zones differ in their stage of transition from paper to digital records. It recommends national action on health information workforce motivation and staffing, and zone-tailored investment in electronic records (NW) and records storage and logistics (NC).

Keywords: Barriers; quality service delivery; health information management; workforce; electronic health records; teaching hospitals; comparative study; Nigeria

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Introduction

The World Health Organization's Global Strategy on Human Resources for Health: Workforce 2030 calls on countries to ensure that health workers of all cadres are available, accessible, acceptable and of good quality, and notes that shortages, poor distribution, inadequate working conditions and weak motivation undermine health service delivery in many low- and middle-income countries (World Health Organization, 2016). Health information professionals are an essential but often overlooked cadre of this workforce. Without them, clinical encounters cannot be documented, patients' histories cannot be retrieved, and the data needed for planning and research cannot be produced.

Health information professionals in teaching hospitals are responsible for creating, maintaining, retrieving and protecting the records on which patient care, billing, research and planning depend. The quality of their service is shaped not only by their own competence and commitment, but by the conditions in which they work: staffing levels, motivation, training, physical space, equipment, power supply and the degree to which records have been computerised. When these conditions are poor, even dedicated staff cannot deliver prompt and reliable service.

Identifying the barriers that health information professionals face, and whether they differ between regions, is essential for setting priorities. Barriers that are common across regions point to system-wide problems that need national policy responses, while barriers specific to a region point to local investment needs. Two doctoral studies conducted in 2022 asked health information professionals in university teaching hospitals in North-West (Umar, 2022) and North-Central (Salihu, 2022) Nigeria to identify barriers to quality service delivery. This paper compares their findings, using the geopolitical zone as the unit of analysis.

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Objectives

The study sought to:

1. identify the barriers to quality health information service delivery common to teaching hospitals in both zones;
2. compare the prevalence of the common barriers between the zones; and
3. identify and compare the barriers specific to each zone.

Hypothesis

H_0: There is no significant difference in the proportion of health information professionals reporting common barriers to quality service delivery between teaching hospitals in North-West and North-Central Nigeria.

Literature Review and Theoretical Framework

Structure, Process and Outcome

Donabedian's (1988) structure–process–outcome model provides the framework for this study. Structure refers to the settings in which care is delivered, including human resources, facilities, equipment and organisational arrangements; process refers to the activities of care; and outcome refers to the results. Barriers to quality service delivery are largely structural deficiencies: shortages of staff, poor motivation, inadequate space and equipment, and lack of information systems. These weaken processes such as timely record retrieval and accurate documentation, and ultimately the quality of service experienced by patients.

Motivation and the Health Information Workforce

Herzberg et al.'s (1959) two-factor theory also helps to explain the role of motivation. Hygiene factors such as working conditions, pay, policies and supervision do not by themselves motivate staff, but their absence causes dissatisfaction and reduced effort. Many of the barriers

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reported by health information professionals, including poor working environment, unfavourable policies and inadequate motivation, are hygiene factors whose absence undermines service quality.

Workforce problems in health information management are part of a wider human resources for health challenge. Shortages of qualified staff lead hospitals to fill posts with untrained personnel, which in turn weakens the quality of records and the professional standing of the cadre, and can further reduce motivation among qualified staff (World Health Organization, 2016). Such cycles are difficult to break without deliberate policy on recruitment, deployment and conditions of service.

From Paper to Electronic Records

The transition from paper to electronic records is a major structural issue in Nigerian hospitals. A multi-state study found that electronic medical records were uncommon in the Nigerian health system and that clinicians relied largely on manual records, with perceived risk and data security among the barriers to adoption (Akwaowo et al., 2022). Where records remain on paper, space, filing systems and physical logistics become critical constraints; where computerisation has begun, maintenance, power supply and skills become the main concerns.

Gap in the Literature

Studies of health information management in Nigeria have documented barriers such as staff shortages, poor motivation, inadequate facilities and slow computerisation, but almost always within a single hospital or zone. As a result, it is not known which barriers are shared nationally and which are specific to particular regions. This distinction matters for policy: shared barriers call for national action by ministries, regulators and professional bodies, while region-specific barriers call for targeted investment by individual hospitals and state governments. This study addresses the gap by comparing barriers across two geopolitical zones, using the zone as the unit of analysis.

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Two questions guided the comparison. First, are the barriers that health information professionals consider most serious the same in both zones, and are they reported with similar frequency? Second, where the zones report different barriers, do these differences follow a meaningful pattern that can guide intervention? Answering these questions provides an evidence base for prioritising the limited resources available for strengthening health information services in teaching hospitals.

Methodology

Design and Unit of Analysis

The study adopted a comparative research design based on secondary analysis of data from two doctoral studies conducted in the same year, in the same department (Information Resources Management, Babcock University), with closely matched designs: a study of teaching hospitals in North-West Nigeria (Umar, 2022) and a study of university teaching hospitals in North-Central Nigeria (Salihu, 2022). The unit of analysis is the geopolitical zone, represented by its cluster of university teaching hospitals: North-West (NW) and North-Central (NC). The units of observation are individual patients and health information professionals within each zone, whose responses were aggregated to zonal estimates.

This comparison is appropriate because the two studies share the same outcome construct, measured from the same source (patients) with the same model (SERVQUAL), used the same response format (a four-point scale), studied the same professional group (health information management staff of teaching hospitals) and collected data in the same year. Table 1 summarises their comparability.

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Table 1

Comparability of the Two Zonal Studies

Feature	North-West (NW)	North-Central (NC)
Source study	Umar (2022), PhD thesis, Babcock University	Salihu (2022), PhD thesis, Babcock University
Teaching hospitals	6 (ABUTH Zaria, UDUTH Sokoto, AKTH Kano, FUTH Dutse, Barau Dikko TH Kaduna, Abdullahi Wase TH Kano)	4 (UATH Gwagwalada, UITH Ilorin, JUTH Jos, Benue State TH Makurdi)
Health information professionals: population / sample / analysed	487 / 243 / 234	251 / 154 / 135
Patients: population / sample / analysed	112,737 / 443 / 407	81,361 / 399 / 350
Sampling	Proportionate stratified	Purposive (staff); convenience (patients)
Quality service delivery measure	Patients' SERVQUAL scale, 25 items, 4-point ($\alpha = 0.79$)	Patients' SERVQUAL scale, 27 items, 4-point ($\alpha = 0.87$)
Predictors studied	Organisational culture; ethical standard compliance	Leadership style; cultural competence
Data collection	2022	2022

Note. Data from Umar (2022); Salihu (2022).

Data and Analysis

Summary statistics on the proportion of health information professionals reporting each barrier were extracted from the published results of both studies. Because individual-level data were not available, between-zone comparisons were made using tests computed from summary statistics: two-proportion z-tests for barriers that were measured with similar wording in both zones. Barriers measured in only one zone were compared descriptively and grouped thematically. Statistical significance was set at $p < 0.05$. The direction and size of differences, rather than significance alone, were used in interpretation.

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Results

Profile of Health Information Professionals

Table 2

Characteristics of Health Information Professionals by Zone

Characteristic	North-West (n = 234)	North-Central (n = 135)	χ^2 (df = 1)	p
Male	134 (57.3%)	59 (43.7%)	6.31	.012
Female	100 (42.7%)	76 (56.3%)		
Up to 10 years' experience	82 (35.0%)	63 (46.7%)	4.85	.028
Bachelor's degree or higher	27 (11.5%)	26 (19.3%)	4.15	.042
Technician cadre	133 (56.8%)	65 (48.1%)	–	–
ND or HND as highest qualification	172 (73.5%)	89 (65.9%)	–	–

Note. Data from Umar (2022) and Salihu (2022); chi-square tests computed by the authors.

Table 2 shows that the workforce profiles of the two zones differed. Health information managers in the North-West were predominantly male (57.3%) and more experienced, with nearly two-thirds having worked for more than 10 years. In the North-Central zone, most respondents were women (56.3%), almost half had 10 years' experience or less, and a higher proportion held a bachelor's degree or higher (19.3% vs 11.5%). In both zones, however, the workforce was dominated by diploma holders and by the technician cadre, reflecting the structure of health information training in Nigeria.

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Common Barriers

Table 3

Comparison of Barriers Common to Both Zones

Barrier (similar items)	NW % (n/N)	NC % (n/N)	Difference (NC – NW)	z	p
Inadequate motivation of health information staff	74.7 (174/233)	82.2 (111/135)	+7.5	–1.67	.095
Shortage of qualified / skilled health information manpower	70.1 (164/234)	77.8 (105/135)	+7.7	–1.60	.109
Use of untrained / non-health-information personnel	70.5 (165/234)	77.0 (104/135)	+6.5	–1.36	.174

Note. Data from computed from Umar (2022) and Salihu (2022). Items were matched by content; wording was not identical.

Table 3 shows that three human-resource barriers were reported by a large majority of health information professionals in both zones: inadequate motivation, shortage of qualified or skilled staff, and the use of untrained or non-specialist personnel in health information roles. Each was reported by 70 to 82 per cent of respondents. These barriers were reported 6.5 to 7.7 percentage points more often in the North-Central zone, but none of the differences was statistically significant. The null hypothesis was therefore retained: the prevalence of the common barriers did not differ significantly between the zones.

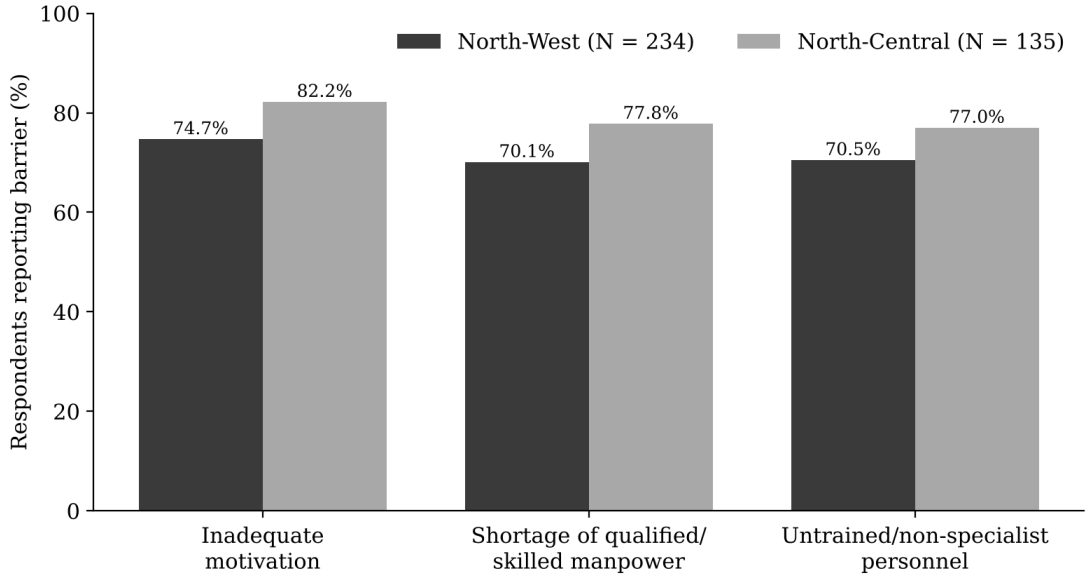
A related barrier concerned hospital policy. In the North-West, 68.8 per cent of respondents cited unfavourable management policy on human capital development and 64.1 per cent unfriendly management policy on health records; in the North-Central zone, 72.6 per cent cited lack of consistency with standard service delivery policies. Because these items differed in focus, they

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were not tested statistically, but they indicate that policy weaknesses were widely perceived in both zones.

Figure 1

Percentage of Health Information Professionals Reporting the Common Barriers, by Zone



Note. No difference between zones was statistically significant (two-proportion z-tests, p = .095 to .174). Data from Umar (2022) and Salihu (2022).

Zone-Specific Barriers

Table 4

Zone-Specific Barriers Grouped by Theme

Theme	North-West (% reporting)	North-Central (% reporting)
Digitisation and technology	Lack of computerised health records (69.2); poor system maintenance culture (68.4); epileptic power supply (63.2)	–

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Theme	North-West (% reporting)	North-Central (% reporting)
Capacity development	Lack of training for health information managers (68.4); lack of management sponsorship for further learning (67.1)	–
Physical space and environment	–	Lack of space for filing patients' records (84.5); lack of conducive working environment (70.4)
Paper-based logistics	–	Distance of central records library from clinics (67.4); delayed distribution of working tools such as forms and registers (66.7)
Service culture	–	Lack of a patient-first service culture (71.1)

Note. Data from Umar (2022); Salihu (2022).

Table 4 shows that the barriers specific to each zone differed in kind. In the North-West, they related to digitisation and capacity development: the lack of computerised records, poor maintenance of systems, unstable power supply, and limited training and sponsorship. In the North-Central zone, they related to physical space and the logistics of paper records: lack of filing space (the most frequently reported barrier in either zone, at 84.5 per cent), poor working environment, the distance of the central records library from clinics and delays in the supply of forms and registers, together with the absence of a patient-first service culture.

Ranking of All Reported Barriers

Table 5

Rank Order of All Barriers Reported in Each Zone

Rank	North-West barrier	%	North-Central barrier	%
1	Inadequate motivation	74.7	Lack of filing space	84.5
2	Use of untrained health information managers	70.5	Lack of motivation	82.2

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Rank	North-West barrier	%	North-Central barrier	%
3	Shortage of qualified professionals	70.1	Lack of skilled manpower	77.8
4	Lack of computerised health records	69.2	Deployment of non-health-information personnel	77.0
5	Unfavourable policy on human capital development	68.8	Inconsistency with service delivery policies	72.6
6	Poor system maintenance culture	68.4	Lack of patient-first service culture	71.1
7	Lack of training	68.4	Lack of conducive working environment	70.4
8	Lack of management sponsorship	67.1	Distance of records library from clinics	67.4
9	Unfriendly policy on health records	64.1	Delayed distribution of forms and registers	66.7
10	Epileptic power supply	63.2	–	–

Note. Data from Umar (2022; N = 234) and Salihu (2022; N = 135).

Table 5 shows that every barrier listed was reported by a clear majority (63 to 85 per cent) of respondents in each zone, indicating that health information professionals face many simultaneous constraints rather than a single dominant one. In the North-West, the top three barriers were all workforce-related, followed closely by lack of computerised records. In the North-Central zone, lack of filing space ranked first, ahead of the workforce barriers. The narrow range of percentages in the North-West (63.2 to 74.7) suggests a broad pattern of moderate constraint across many areas, while the North-Central zone shows a more pronounced peak around space and staffing.

Discussion

The first finding is that the most widely reported barriers are shared by both zones and concern the health information workforce: inadequate motivation, shortage of qualified staff and the deployment of untrained or non-specialist personnel. The absence of significant differences

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between the zones suggests that these are system-wide problems rather than local ones. In Herzberg et al.'s (1959) terms, inadequate motivation reflects deficiencies in hygiene factors such as pay, recognition and conditions of service, which reduce effort even among capable staff. The deployment of non-specialists to health information roles is particularly concerning because it undermines professional standards of documentation, coding and confidentiality, which require trained and registered personnel.

The second finding is that the zone-specific barriers reflect different stages in the transition from paper to electronic records. North-West respondents emphasised the lack of computerised records, poor maintenance of systems and unstable power supply, alongside the need for training and sponsorship. These are the problems of institutions that recognise the need for, or have begun, computerisation but lack the infrastructure and skills to sustain it. North-Central respondents, by contrast, emphasised filing space, the distance of the records library from clinics and the supply of paper forms and registers, which are the problems of institutions still heavily dependent on paper records. This pattern is consistent with evidence that electronic medical records remain uncommon in Nigerian health facilities (Akwaowo et al., 2022).

Read through Donabedian's (1988) model, these structural deficiencies help to explain differences in service quality. In a companion comparison, patients in North-Central teaching hospitals rated empathy, responsiveness and reliability lower than those in the North-West; the severe lack of filing space and staffing reported in the North-Central zone is a plausible structural cause of slower retrieval and more rushed interactions. The findings also suggest that the solutions differ: computerisation would address many North-Central barriers related to filing space and records logistics, but, as North-West experience shows, computerisation brings its own requirements for power, maintenance and skills.

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The workforce profile of the two zones adds a further dimension. North-Central respondents were younger in service and more often women, while North-West respondents were more experienced and predominantly male. That newer staff in the North-Central zone reported motivation and staffing problems slightly more often may indicate early-career frustration with conditions of service, which, if not addressed, could lead to attrition. In the North-West, where many staff have long service, the emphasis on training and sponsorship suggests a desire to update skills for an increasingly digital environment.

Finally, the high prevalence of policy-related barriers in both zones, including unfavourable policies on human capital development, unfriendly records policies and inconsistent service standards, shows that many barriers lie within the control of hospital management. Unlike national problems such as power supply, these can be addressed through internal decisions on staffing, training budgets, space allocation and service standards.

Taken together, the results suggest a sequence of priorities. The first is to stabilise the workforce, because no technology or facility will improve service if records are handled by too few, unmotivated or untrained staff. The second is to match infrastructure investment to each zone's stage of records development: storage and logistics where paper still dominates, and power, maintenance and skills where computerisation has begun. The third is to embed patient-centred service standards and supportive policies, so that improvements in staffing and infrastructure translate into better experiences for patients.

Conclusion

Health information professionals in teaching hospitals in both North-West and North-Central Nigeria face the same core workforce barriers, namely inadequate motivation, shortage of qualified staff and deployment of untrained personnel, at similar and high levels. Beyond these,

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the zones differ: North-West barriers concern digitisation, maintenance, power and training, while North-Central barriers concern filing space, working environment and the logistics of paper records. Improving the quality of health information services therefore requires both a national response to workforce problems and zone-tailored investment in records infrastructure.

Recommendations

1. The Federal Ministry of Health and Social Welfare, hospital managements and the Health Records Officers Registration Board of Nigeria should jointly address health information workforce motivation through improved conditions of service, recognition and career progression.
2. Teaching hospitals should recruit adequate numbers of qualified and registered health information professionals and stop deploying untrained or non-specialist staff to health information roles.
3. North-West teaching hospitals should accelerate computerisation of health records, supported by reliable power (including solar back-up), maintenance contracts and structured training and sponsorship for health information managers.
4. North-Central teaching hospitals should urgently expand and reorganise records storage, decentralise records units closer to clinics and ensure timely supply of forms and registers, while planning a phased transition to electronic records.
5. Both zones should institutionalise a patient-first service culture in health information departments, supported by clear service standards and policies.

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