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# PATIENTS' PERCEIVED QUALITY OF HEALTH INFORMATION SERVICE DELIVERY IN UNIVERSITY TEACHING HOSPITALS: A COMPARATIVE ANALYSIS OF NORTH-WEST AND NORTH-CENTRAL NIGERIA

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**Abstract**

The health information management department is often the first and last point of contact between patients and a teaching hospital, and the quality of its services shapes patients' experience of care. This study compared patients' perceived quality of health information service delivery 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. Both surveys used patients' ratings on the five SERVQUAL dimensions (assurance, empathy, tangibles, responsiveness and reliability) on four-point scales, with 407 patients in six NW teaching hospitals and 350 patients in four NC teaching hospitals. Between-zone differences were tested with Welch's t-test computed from summary statistics, with Cohen's d as effect size. Patients in both zones rated service quality at a high level (NW overall mean = 3.30; NC = 3.16), and assurance was the strongest dimension in both. However, NW ratings were significantly higher on empathy (3.31 vs 3.08; $t = 4.91$, $p < .001$, $d = 0.36$), reliability (3.26 vs 3.13; $p = .003$), responsiveness (3.29 vs 3.17; $p = .007$) and tangibles (3.30 vs 3.20; $p = .021$), but not on assurance (3.32 vs 3.25; $p = .110$). The weakest dimension differed: reliability in NW and empathy in NC. Item-level comparison showed the largest gaps in staff availability, attention to patients and understanding of patients' anxiety. The study concludes that the security of records is a shared strength, while the interpersonal and timeliness aspects of service vary between zones. It recommends customer-care training focused on empathy for health Information professionals, especially in NC, and process improvements in record retrieval and turnaround in both zones.

**Keywords:** Service quality; SERVQUAL; health information management; patients' perception; teaching hospitals; comparative study; North-West; North-Central; Nigeria

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## Introduction

Quality of care has moved to the centre of the global health agenda. The World Health Organization, the Organisation for Economic Co-operation and Development and the World Bank (2018) have argued that universal health coverage cannot be achieved by expanding access alone, because services that are unsafe, slow or disrespectful discourage people from using them. The Lancet Global Health Commission on High Quality Health Systems similarly concluded that poor-quality care is now a bigger barrier to reducing deaths in low- and middle-income countries than lack of access, and that people's experience of care, including respect, communication and waiting time, is a core dimension of quality (Kruk et al., 2018).

In Nigerian teaching hospitals, the health information management (health records) department registers patients, opens and maintains their case notes, retrieves folders for consultations, manages appointments and referrals, and safeguards the confidentiality of patient information. Because almost every patient passes through this department, its performance has a direct effect on waiting times, continuity of care and patients' overall satisfaction with the hospital. Poor service, such as missing folders, long queues and unhelpful attitudes, is a common complaint in public hospitals.

Service quality is widely assessed with the SERVQUAL model, which measures customers' perceptions on five dimensions: tangibles (physical facilities, equipment and appearance of staff), reliability (performing the promised service dependably and accurately), responsiveness (willingness to help and provide prompt service), assurance (knowledge, courtesy and the ability to inspire trust and confidence) and empathy (caring, individualised attention) (Parasuraman et al., 1988). In health care, quality is also understood through Donabedian's (1988) framework of structure, process and outcome, in which patients' experience is a key outcome.

Two recent doctoral studies measured patients' perceptions of the service quality of health information professionals in university teaching hospitals, one in North-West Nigeria (Umar, 2022) and one in North-Central Nigeria (Salihu, 2022), using comparable SERVQUAL instruments. Each study reported its zone separately, but no study has compared the two zones. A comparison can show which aspects of service are consistently strong or weak across regions, and which vary, helping hospital managers and regulators target improvements. This paper therefore compares patients' perceived quality of health information service delivery in teaching hospitals in the two zones, using the geopolitical zone as the unit of analysis.

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**Objectives**

The study sought to:

1. compare the level of patients' perceived quality of health information service delivery in teaching hospitals in NW and NC Nigeria;
2. compare the five SERVQUAL dimensions between the two zones; and
3. identify the specific aspects of service in which the two zones differ most.

**Hypothesis**

$H_0$: There is no significant difference in patients' perceived quality of health information service delivery, on any SERVQUAL dimension, between teaching hospitals in North-West and North-Central Nigeria.

**Literature Review**

**Service Quality and the SERVQUAL Model**

Parasuraman et al. (1985, 1988) defined service quality as the gap between customers' expectations and perceptions, and developed the SERVQUAL instrument to measure it across five dimensions. Although the model was developed in commercial services, it has been widely adapted to hospitals, where patients judge quality not only by clinical outcomes but by how they are received, informed and treated. Donabedian (1988) argued that quality of care should be assessed through structure (resources and settings), process (what is done) and outcome (the results, including patient satisfaction); SERVQUAL dimensions capture aspects of structure (tangibles) and process (reliability, responsiveness, assurance and empathy) from the patient's viewpoint.

**Service Quality in Hospital and Health Information Settings**

Babakus and Mangold (1992) were among the first to test SERVQUAL in hospitals, and found that the instrument could be adapted to hospital services with acceptable reliability and validity, although some dimensions overlapped. Cronin and Taylor (1992) argued that measuring perceptions alone (the SERVPERF approach) predicts overall service quality as well as or better than the expectation–perception gap; both source studies compared here followed this perception-only approach. In hospital settings, patients often find it hard to judge technical clinical quality and therefore rely heavily on the "functional" aspects of service, such as courtesy, promptness, information and the physical environment (Babakus & Mangold, 1992). The health information department is especially exposed to such judgements because its work is visible to every patient:

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the speed with which a folder is found, the courtesy of the registration clerk and the protection of personal information are all experienced directly.

Quality in health information services also has a technical side, the accuracy, completeness and security of records, which patients cannot observe directly. Patients' perceptions therefore capture mainly the interpersonal and process aspects of service, and should be read together with measures of record quality. Nevertheless, because patients' trust and satisfaction influence whether they return and follow treatment, their perceptions are an important outcome in their own right (Donabedian, 1988; Kruk et al., 2018).

**Previous Findings in the Two Zones**

In the North-West study, patients rated service quality highly overall (mean = 3.30 on a four-point scale), with assurance highest and reliability lowest (Umar, 2022). In the North-Central study, patients also perceived service quality positively (mean = 3.16), with assurance highest and empathy lowest (Salihu, 2022). Both studies reported challenges such as shortage of skilled staff, poor motivation and inadequate facilities that may limit service quality. However, the two sets of results have not been compared statistically, so it is unclear whether the apparent differences are meaningful.

**Gap in the Literature**

Most Nigerian studies of service quality in health information departments have been conducted in single hospitals or single zones, and their results are rarely compared. Without comparison, it is impossible to tell whether a weakness found in one region is a national problem or a local one, and which regional practices might be worth sharing. This study addresses this gap by comparing, statistically, patients' perceptions of the quality of health information services in two geopolitical zones, using the zone as the unit of analysis.

**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

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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.

**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 patients' perceived quality of service delivery (dimension means, item means and standard deviations) were extracted from the published results of both studies. Because individual-level data were not available, between-zone comparisons were made using

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tests computed from summary statistics: Welch's t-test for independent means, which does not assume equal variances, with degrees of freedom estimated by the Welch–Satterthwaite formula, and Cohen's d as a measure of effect size (Cohen, 1988), where 0.2, 0.5 and 0.8 indicate small, medium and large effects. To reduce the risk of chance findings across the five dimensions, results were also checked against a Bonferroni-adjusted threshold of $p < .01$. Nine items that were worded similarly in both instruments were also compared. Statistical significance was set at $p < 0.05$. The direction and size of differences, rather than significance alone, were used in interpretation.

## Results

### Profile of Patient Respondents

**Table 2**

*Characteristics of Patient Respondents by Zone*

| Characteristic | North-West (n = 407) | North-Central (n = 350) | $\chi^2$ (df = 1) | p |
|---|---|---|---|---|
| Male | 210 (51.6%) | 140 (40.0%) | 10.18 | .001 |
| Female | 197 (48.4%) | 210 (60.0%) | | |
| Modal age group | 30–44 years (48.2%) | 31–40 years (34.3%) | – | – |
| HND/BSc or higher qualification | 106 (26.0%) | 183 (52.3%) | 54.90 | < .001 |
| Outpatients | 269 (66.1%)[a] | 235 (67.1%) | – | – |

*Note.* Data from Umar (2022) and Salihu (2022); chi-square tests computed by the authors. [a] Planned sample allocation; the achieved split was not reported.

Table 2 shows that the patient samples differed in two important respects. The North-Central sample had significantly more women (60.0% vs 48.4%) and twice the proportion of respondents with a Higher National Diploma, bachelor's degree or higher qualification (52.3% vs 26.0%). Both samples were dominated by adults of working age and by outpatients. These differences are considered in interpreting the comparison of service quality ratings.

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**Overall and Dimension-Level Comparison**

**Table 3**

*Patients' Perceived Quality of Service Delivery by Dimension, North-West vs North-Central*

| SERVQUAL dimension | NW mean (SD) n = 407 | NC mean (SD) n = 350 | Difference | t (df) | p | d |
|---|---|---|---|---|---|---|
| Assurance | 3.32 (0.59) | 3.25 (0.61) | 0.07 | 1.60 (730) | .110 | 0.12 |
| Empathy | 3.31 (0.61) | 3.08 (0.67) | 0.23 | 4.91 (713) | < .001 | 0.36 |
| Tangibles | 3.30 (0.50) | 3.20 (0.66) | 0.10 | 2.32 (644) | .021 | 0.17 |
| Responsiveness | 3.29 (0.58) | 3.17 (0.63) | 0.12 | 2.71 (716) | .007 | 0.20 |
| Reliability | 3.26 (0.56) | 3.13 (0.64) | 0.13 | 2.95 (699) | .003 | 0.22 |
| Overall | 3.30 | 3.16 (0.64) | 0.14 | – | – | – |

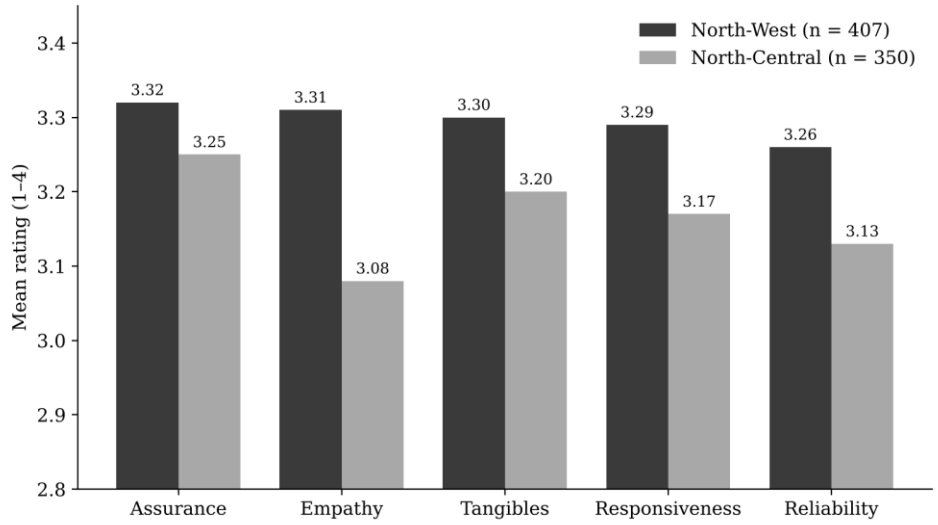
*Note.* Data from computed from Umar (2022) and Salihu (2022). Welch's t-test; d = Cohen's d. The NW study did not report an overall standard deviation, so the overall difference was not tested.

Table 3 shows that patients in both zones rated the quality of health information services at a high level, above the 2.50 benchmark on every dimension. North-West ratings were higher on all five dimensions. The differences were statistically significant for empathy, reliability, responsiveness and tangibles, but not for assurance. Empathy showed the largest difference (0.23 points; d = 0.36, a small-to-medium effect) and remained significant after Bonferroni adjustment, as did reliability and responsiveness; the difference in tangibles was significant at $p < .05$ but not at the adjusted threshold. The null hypothesis was therefore rejected for empathy, reliability and responsiveness, and retained for assurance.

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**Figure 1**

*Mean Patient Ratings of Health Information Service Quality by SERVQUAL Dimension and Zone*




*Note.* Ratings on four-point scales (1 = lowest, 4 = highest). The vertical axis begins at 2.8 to show differences more clearly. Data from Umar (2022) and Salihu (2022).

**Table 4**

*Rank Order of SERVQUAL Dimensions in the Two Zones*

| Rank | North-West | North-Central |
|---|---|---|
| 1 | Assurance (3.32) | Assurance (3.25) |
| 2 | Empathy (3.31) | Tangibles (3.20) |
| 3 | Tangibles (3.30) | Responsiveness (3.17) |
| 4 | Responsiveness (3.29) | Reliability (3.13) |
| 5 | Reliability (3.26) | Empathy (3.08) |

Table 4 shows that assurance ranked first in both zones, indicating that patients in both regions trust health information professionals to keep their records secure and confidential. The weakest dimensions differed: reliability (dependable retrieval of records and forms) was lowest in the North-West, while empathy (individual attention and concern for patients) was lowest in the North-Central zone, where it ranked second in the North-West.

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**Item-Level Comparison**

**Table 5**

*Comparison of Similarly Worded Items, North-West vs North-Central*

| Service aspect (similar items) | NW mean (SD) | NC mean (SD) | t | p | d |
|---|---|---|---|---|---|
| Staff available to attend to patients at all times | 3.43 (0.69) | 3.15 (0.71) | 5.47 | < .001 | 0.40 |
| Attention given to patients | 3.33 (0.79) | 3.08 (0.67) | 4.72 | < .001 | 0.34 |
| Understanding of patients' anxiety | 3.22 (0.82) | 3.01 (0.66) | 3.90 | < .001 | 0.28 |
| Records easily retrieved for patient care | 3.35 (0.77) | 3.19 (0.61) | 3.19 | .002 | 0.23 |
| Records retrieved promptly / without delay | 3.33 (0.77) | 3.22 (0.61) | 2.20 | .028 | 0.16 |
| Concern about patients' health challenges | 3.30 (0.80) | 3.19 (0.64) | 2.10 | .036 | 0.15 |
| Physical infrastructure available | 3.36 (0.72) | 3.26 (0.64) | 2.03 | .043 | 0.15 |
| Patients' records/files secured | 3.36 (0.82) | 3.35 (0.62) | 0.19 | .848 | 0.01 |
| Referrals managed with patients' consent | 3.19 (0.82) | 3.26 (0.58) | –1.37 | .172 | –0.10 |

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

Table 5 shows that the largest differences between the zones were in the availability of staff to attend to patients (d = 0.40), attention given to patients (d = 0.34) and understanding of patients' anxiety (d = 0.28), all favouring the North-West. There was no difference in the security of patients' records, which was rated highly in both zones, and referral management with consent was slightly, but not significantly, higher in the North-Central zone.

**Discussion**

The first finding is that patients in teaching hospitals in both zones perceive the quality of health information services positively. This is encouraging, given frequent complaints about health records services in Nigerian public hospitals, and suggests that the basic functions of registration, record keeping and retrieval are generally being performed. In Donabedian's (1988) terms, the process of health information service delivery is, on the whole, acceptable to patients.

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The second finding is that assurance, especially the security and confidentiality of records, is a shared strength and does not differ between the zones. This consistency suggests that the professional emphasis on confidentiality, reinforced by the code of ethics of the Health Records Officers Registration Board of Nigeria, is well established across regions. Trust in the custody of records is a foundation for patients' willingness to disclose information and use services.

The third and most important finding is that the interpersonal and timeliness aspects of service differ between the zones. North-Central patients gave significantly lower ratings for empathy, responsiveness and reliability, and the largest item-level gaps concerned staff availability, attention to patients and understanding of their anxiety. In SERVQUAL terms, these are the "human" dimensions of service (Parasuraman et al., 1988). The difference may reflect the higher patient loads and lower staffing reported in the North-Central hospitals, where 77.8 per cent of health information professionals cited shortage of skilled manpower and 84.5 per cent cited lack of filing space (Salihu, 2022). When staff are few and folders are hard to find, interactions become rushed and impersonal.

In the North-West, reliability was the weakest dimension, with lower ratings for the retrieval of prescription and request forms and the management of referrals. This points to process weaknesses in record retrieval rather than in interpersonal care, consistent with the North-West study's finding that lack of computerised records was cited by 69.2 per cent of health information managers as a barrier (Umar, 2022). The two zones thus face different, though related, priorities: improving the interpersonal side of service in the North-Central zone, and the dependability of record processes in the North-West.

Differences in the patient samples may also contribute to the gap. North-Central respondents were twice as likely to hold a degree-level qualification and more likely to be women. Service quality research has long noted that more educated customers tend to hold higher expectations and to judge services more critically (Parasuraman et al., 1988). It is therefore possible that part of the lower North-Central rating on empathy and responsiveness reflects more demanding patients rather than poorer service alone. This does not remove the need for improvement, but it suggests that health information departments serving more educated urban populations, such as the Federal Capital Territory, must meet higher expectations of individual attention and prompt information.

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The differences, although statistically significant, are small to moderate in size (d = 0.15 to 0.40). They should therefore be understood as differences in degree rather than in kind: both zones deliver acceptable service, but the North-Central zone has more room for improvement in empathy and responsiveness.

**Conclusion**

Patients in university teaching hospitals in both North-West and North-Central Nigeria perceive the quality of health information service delivery as high, with the security and confidentiality of records a shared strength. However, North-West patients rate empathy, reliability, responsiveness and tangibles significantly higher. The interpersonal and timeliness aspects of service, especially staff availability and attention to patients, are where the zones differ most, and where improvement efforts should be focused.

**Recommendations**

1. Teaching hospitals, particularly in the North-Central zone, should provide customer-care and communication training for health information professionals, emphasising empathy, attention to individual patients and handling of patients' anxiety.
2. Hospital managements in both zones should review staffing levels in health information departments and deploy additional trained staff to high-volume points such as registration and clinic records units.
3. North-West teaching hospitals should strengthen the reliability of record processes, including retrieval of request and prescription forms and referral management, through process redesign and electronic record systems.
4. Both zones should maintain their strength in records security and confidentiality while adopting electronic records with appropriate access controls.
5. Hospital managements should conduct routine patient feedback surveys using the SERVQUAL dimensions to monitor service quality and compare performance across hospitals.

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