Humanities & Social Sciences Communications

ARTICLE

https://doi.org/10.1057/s41599-023-02159-y OPEN

# Healthcare service delivery perception among NHIS-HMO enrollees in Lagos hospitals

Abigail Affiong Mkperedem [1]✉, Peter Ogunlade[1], Chisaa Igbolekwu[2], Ogadimma Arisukwu[1], Abiodun Olawale Afolabi[3] & Ruth Adefunke Adedayo[3]

The National Health Insurance Scheme and Health Maintenance Organization partnership serves as a vital instrument in Nigeria's government efforts to attain Universal Health Coverage, however, patients' low-level satisfaction with health service quality has been reported across literatures. This study therefore aims to assess healthcare service delivery perception among NHIS-HMO enrollees in Lagos hospitals. Anchoring on the filter theory of attention, the study utilize the convergent parallel mixed method research design which involves the collection and analysis of both quantitative (questionnaire) and qualitative (in-depth interviews (IDIs)) data. Using a simple random and convenient sampling techniques, a total of 252 retrieved questionnaires and 15 in-depth interviews were used to elicit data from selected respondents across 9 healthcare facilities in 3 local government areas. Enrollees' perception was significantly affected by the tangible Healthcare facilities (HCFs) physical environment variable. Related to process variables, the quantitative study found positive response towards humane treatment, and prompt medical attention questions, however, the qualitative interviews had differing results. Both the quantitative and qualitative confirmed presence of long waiting queues. Quantitative result on outcome variable indicated HCFs competence in providing quality services, however, in-depth interview session revealed being an enrollee limits accessibility to HCFs competent service. The research concludes that healthcare enrollees' perception may alter depending on the type of healthcare service accessed at the HCF. Therefore, to attain the Universal Health Coverage mission, the study recommends reduction or total removal of every form of challenge such that makes for NHIS-HMO enrollees spending too much time at the HCFs during healthcare access.

[1] SDG 3, Good Health and Well-being, Landmark University, Omu-Aran, Nigeria. [2] Redeemer's University, Ẹdẹ, Nigeria. [3] Landmark University, Omu-Aran, Nigeria. ✉email: abigaileyo23@gmail.com

## Introduction

Nigeria has two competing and distinct systems of care: the indigenous native/spiritual and the cosmopolitan. The Cosmopolitan western-style medicine or orthodox medicine as it sometimes called is the only officially recognized practice. However, no singular form of prepaid arrangement exists. This means that there is no health insurance of any kind that caters for the populace altogether. The closest arrangement to this is found under the National Health Insurance Scheme (NHIS) and its collaboration with the Health Maintenance Organizations (HMO) where governments and certain companies cater for their employees, their spouse and a maximum of four children. Physicians in such practice usually send their health care bills on monthly or quarterly basis. Other than these, all forms of practice both public and private operate are on a fee-for-service basis. As in United States of America, utilization of orthodox services does not take cognizance of tiers of health care. People utilize tier or system depending on the definition of disease. This study therefore seeks to assess how NHIS-HMO enrollees perceive healthcare services delivery quality in healthcare facilities (HCFs).

According to Quadagno (2010) health care system consists of all organizations (hospitals, practices, and clinics), people (physicians), and actions that arrange for the financing of care (governments, agencies, states, local communities, and private insurance companies) with the primary intent to restore, promote and maintain health and one of its major components is service delivery (Amzat and Razum, 2014). Although, Nigeria operates a decentralized health system run by the Federal Ministry of Health (FMOH), State Ministry of Health (SMOH), and Local Government Health Department (LGHD). The NHIS scheme aims to guarantee healthcare needs are provided for at a reasonable cost to citizens through HMO institutions who are responsible for procuring healthcare services for enrolled populations in exchange for the enroller's monthly prepaid payment (Unachukwu et al., 2020).

The NHIS-HMO partnership which serves as a vital instrument in Nigeria's government efforts to attain Universal Health Coverage (Sui et al., 2021) is an approach meant to ensure healthcare is accessed by insured persons as at when needed without incurring Catastrophic Health Expenditure (CHE). The precise organization and content of health services differ from one country to another. Primary care is the backbone of Nigeria health system. It forms an integral part of both the country's health system. It constitutes the first element of a continuing health care process. The secondary health care system is managed by the ministry of health at the state level. Patients at this level are often referred from the primary health care. This is the first level of specialty services and is available at different divisions of the state. The tertiary primary health care is provided by teaching hospitals and specialist hospitals. At this level, the federal government also works with voluntary and nongovernmental organizations, as well as private practitioners. Irrespective of the subjective, dynamic, and multidimensional nature of the subject matter of quality in healthcare, in any well-functioning health system, quality healthcare involves the application of medical science in ways that optimizes health benefits without risk increment (Berwick and Fox, 2016); provision of proper medical services in a clinically proficient way, involves excellent information dissemination, and mutuality in the decision-making process such that takes into consideration the patient's cultural differences without personal prejudice (Paparella, 2016).

Features such as intangibility, heterogeneity, and simultaneity complicate the quality of healthcare service in terms of definition and measurement, however, the standard of health care is inherently a complex term that includes and depends on a variety of these features. The network of service delivery therefore, involves delivering safe, reliable, and efficient healthcare services that exceed the consumer's explicit and implicit health desires without necessarily tampering with the providers' benefits (Mosadeghrad, 2013). Regarding the definition and prioritization of quality issues, the various stakeholders contained in the health sector, beginning from the healthcare consumer to the health services providers hold different views, relating to "the degree and direction of the discrepancy between customers' expectations and perceptions of the service" (Fatima et al., 2019; Frichi et al., 2019).

Several studies (Gallan et al., 2013; Fatima et al., 2019; Zarei et al., 2020) have been conducted to measure what areas of healthcare service are considered important and significant in building necessary cues to patient's experience. Conroy (2018) noted that a health consumer's quality perception may take into consideration their expected health outcome; access and determining factors in healthcare providers (HCPs) preferences (Al-Abri and Al-Balushi, 2014; Papanikolaou and Zygiaris, 2014). Mosadeghrad (2012) identified 182 quality healthcare characteristics and classified them into five categories: environment, empathy, competence, performance, and efficacy.

Many quality characteristics in health care, such as timeliness, continuity, and precision, are difficult to quantify outside the customer's subjective evaluation. Therefore, this study objective is to assess the healthcare service delivery perception among NHIS-HMO enrollees in Lagos hospitals through the Donabedian's Structure, Process, and Outcome (SPO) Model. Measurement variables include; HCF physical environment, equipment functionality, humane treatment, prompt medical attention, long waiting queue, and HCF competency in delivering healthcare services.

## Theoretical framework

**Evaluating healthcare services perception through the lens of filter theory of attention**. Our environment can be aptly described as a milieu of stimuli that impact all of our senses. However, not all sensory cues within an individual's physical environment are perceived simultaneously. The abundance of stimuli has the potential to overwhelm our sense of touch, hearing, taste, smell, and sight. Given that humans are unable to simultaneously process perceptible information from every stimulus present in their physical surroundings, the myriad of sensory input is typically filtered, with only a select few making it into an individual's conscious awareness.

A significant proponent of the attention theory (Broadbent, 2013), proposed that concrete features present in the environment at specific times are stored in a sensory buffer of unlimited capacity for cues processing and selection. Initially, such filters are applied at the sensory level for recording, but over time, they begin to move into the perception filter stage. The information that successfully passes through these filters is then remembered, assigned with meaning, and stored in our memory for later use (Gleitman and Papafragou, 2012). The attention theory also highlights the function of perceptual experience, known as Naïve Realism, which involves the direct awareness of the mind to filter external objects independently. This filtering ability becomes immediately apparent to the mind when external objects are perceived.

An individual's perceptual experiences consist of mind-independent objects and their comprising features. Therefore, our connection to these objects is mediated by our experiences, and the unique quality of perception is attributed to objects that exist independently of the mind's subjective interpretation. For example, when a patient enters a healthcare facility, they observe

every visible aspect of the healthcare service provider (HCP), which is an external entity. The patient is directly conscious of the object (HCP), and the sensory attributes that are perceived are components of the mind-independent item.

The attention theory can be viewed in the context of one of the major proponents of Naïve Realism, who believed that experience is the relationship that connects individuals with the object of their awareness. In this sense, the filter theory emphasizes why and how user's perception is important in the ability of the human mind to receive, process, and retain certain signals from the healthcare context, while dismissing others, thus making perception a process that involves the recognition of mentally independent objects (Martin, 2002).

The filter theory suggests that healthcare consumers' sensory cues can be distorted during their first interaction, leading them to selectively distort information. Our experiences are formed by mind-independent objects, and "one's experience relates one to the mind-independent world, and yet does so in a non-representational manner" (Martin, 2002). The unique attribute of our perceptual experiences is therefore determined by the objects we are exposed to and their elements. Naïve realism is often seen as capturing an individual's ability to have practical judgment about everyday matters, or the basic ability to perceive, understand, and judge that is shared by nearly all people.

The attention perspective provides a searchlight into understanding the manner in which an enrollee assigns significance to cues and links these interpretations to a healthcare stimulus. Perceptive experiences as being positive or negative depends on the intensity of the cue. The personal interpretations made by the enrollee will be stored in their memory and used as a reference when considering the quality of healthcare services in the future.

The relation between this research work and the attention theory depends on how human consciousness processes perceptions based on stimuli present in cues, whether positive or negative. The meanings attached to encountered objects, such as the interactions with healthcare professionals, physical structure and equipment of a healthcare facility, are linked to enrollees' perceptions. This includes both static objects like a hospital building, and successional objects like a mobile X-ray machine. The filtered cues are then used to develop fundamental assumptions about the quality of the service at the point of contact.

**Evaluating healthcare service quality through the Donabedian's structure, process, and outcome (SPO) Model**. The standard of healthcare services has historically been measured in terms of structure, process, and outcome indicators (Donabedian, 1988; Elverson and Samra, 2012; Chazapis et al., 2018). Whereas the systemic dimension considers, for example, the accessibility and relative efficiency of the many measurable healthcare elements, how transparent was the enrollee's care?; procedure considers, for example, the suitability of treatment, place, and duration, was the care given to the enrollee is appropriate for his/her ailment, was the care provided on time, and whether was it provided for by the appropriate unit. Measurement of outcome examines the resultant effects of the care received, and functionality, medical outcomes, or scientific technologies may be included.

The triad of structure, process, and outcome (SPO) constructs is such that explain how to evaluate the user's experiences and perception as it encompasses all aspects of healthcare services. Thus, the tangible aspects of equipment and physical structure emerged from the category structure; subcategories: access, care, work process, and treatment emerged from the category process; and subcategories: resoluteness and strategies to speed up health actions emerged from the outcomes category. Donabedian noted an existing association between the SPO setup based upon the assumption that a standardized structure ought to promote efficient process and efficient process ardently is supposed to lead to good health outcomes (single direction). For him, Structure is the professional and institutionalized ethos relating to healthcare provision (for example, the accessibility to equipment and medicines); Process involves the procedures carried out on and for the health consumer (for example, HCFs/HCPs referrals as well as medical examinations) and Outcome is the expected result considered necessary after receiving care from the health service provider (for example, health consumer's approval with the modus operandi in delivering the care).

Donabedian described seven elements of quality of medical care: efficacy, effectiveness, efficiency, equity, optimality, acceptability, and legitimacy. Though efficacy is difficult to quantify, it can be regarded as healthcare provided under optimum circumstances. The resultant effect from the health interventions is regarded as effectiveness; performances that do not compromise on the necessary health outcome despite their relatively low cost define efficiency. While equity is regarded as the ability to distribute health services to consumers without prejudice, optimality is the capacity to manage health services benefits as well as the attendant risks. Easy access to healthcare services as well as the interpersonal relationship between healthcare consumers and the provider is regarded as acceptability. Legitimacy on the other hand deals with the social acceptability of the HCFs/HCPs concerning the way it delivers health services. The option of which of these components should be prioritized in terms of quality is to be guided according to the circumstance upon which the health care service is measured (Rai and Wood, 2018).

Overall, literatures on the effect of healthcare physical surroundings on consumers' welfare and health outcome revealed a positive correlating importance between the healthcare environment and patients' health outcome (Dijkstra et al., 2006). However, public HCFs infrastructure in Nigeria has been reported to be inadequate and plagued with decaying facilities (Adekunle and Olusa, 2021). The severely poor quality of care therefore, illustrates the weakening status of Nigeria's healthcare (Okafor et al., 2021). Noteworthy, Ulrich (1984) study found an association between faster recovery among patients in hospitals while viewing vegetation or nature as opposed to structures, Drahota et al. (2005) study laid bare the capability of environmental factors in the production of optimistic results in health consumers outcomes, an idea referred to as "healing environments." The "healing environments" ideology makes reference to cognitive effects of the physical environment through neurophysiological processing (sensory perception). The surrounding physical state in healthcare facilities therefore has the ability to affect and influence health consumer's perception.

**Evaluating healthcare service quality through the NHIS-HMO partnership**. The main goal NHIS-HMO partnership is to ensure an improvement in the health indices in the country while at the same time providing financial assistance to healthcare consumers. The mainstay of the program is to ensure that all citizens have equal access to healthcare. The inscription on the scheme's logo "NHIS, Easy Access to Healthcare for All" sums up the program's core objective. Onwujekwe et al. (2019) noted that in addition to benefits culled under the NHIS program, the HMOs are tasked with the responsibility of setting up efficient quality control programs to ensure services delivered to members enrolled under of the scheme is of good standard. As provided for by the scheme, an enrolled member and the spouse with four legitimate offspring beneath the age of 18 years are covered for medicare accessibility

in whichever HCFs/HCPs are accredited to provide services covered by the scheme. However, children above 18 years are excluded from the initial coverage but those in higher institutes of learning are to be enrolled under the Tertiary Insurance Scheme.

Patients referral owing to the need for investigations requiring specialized expatriates, such as surgical and or therapeutic care or other services demanding further intensive investigative diagnosis, rehabilitation, etc., is from a primary to a secondary service provider, or from secondary to tertiary level but with prior authorization (PA) approval from the HMOs, except for cases requiring utmost immediate emergency care where delay can lead to complications or death and or contacting the HMO is futile; in such situations providers are required to provide care but the HMO is to be duly notified within 48 h.

Overall, in assessing the NHIS-HMO partnership in healthcare service quality delivery across countries, Saloojee et al. (2011), Obamiro (2013), Garcia-Subirats et al. (2014), Roby and Jones (2016), Loving et al. (2017), Girma et al. (2020), Adeniran et al. (2020), Abba-Aji et al. (2021), Alawode and Adewole (2021), Zhang et al. (2022), and Mkperedem et al. (2023) reported negative perceptions of healthcare services quality, long waiting queue, suboptimal referral system, low scope of coverage, HMO delay in issuing authorization code, inequality evident in the varying healthcare plans, and healthcare personnel negative attitude. Although the capitation fee ₦750 was reported to be sufficient in Alawode and Adewole (2021) study in Nigeria, HCPs preferred private HMO enrollees because of the availability of financial negotiations that reflect the current economic realities. enrollees perception this study objective is to assess the healthcare service delivery perception among NHIS-HMO enrollees in Lagos hospitals through the Donabedian's Structure, Process, and Outcome (SPO) Model. Measurement variables include; HCF physical environment, equipment functionality, humane treatment, prompt medical attention, long waiting queue, and HCF competency in delivering healthcare services.

**Evaluating healthcare service quality through patients' experience**. Diverse scholars in countries throughout the world have deduced that there is a connection between patients' experiences and the quality of healthcare delivery information. For example, Rademakers et al. (2011) corroborated that evaluating patient experiences as part of a systematic survey program in the United States as well as many other European countries, did more than provide knowledge regarding health consumers' actual experiences. It revealed the quality attribute consumers considered to be very essential. Similarly, Van der Elst et al. (2012) assessed the experiences of older people and their relatives in acute care settings. Patients' satisfaction with health service quality has been reported low in Jordan (Zamil et al., 2012), Indonesia (Akbar and Jaya, 2017), and Ghana (Ampaw et al., 2020).

Suhonen et al. (2012) and Zarei et al. (2020) identified patient experiences as a pointer necessary for measuring and enhancing the quality of healthcare service. Other authors have also analyzed the attributes considered to be important by health service users. For example, Gillespie et al. (2017) assessment of patients' and relatives' experiences and "good" and "not so good" perspectives of quality care; Claessen et al. (2013) measured relatives' perspectives on the quality of palliative care using the consumer quality index instrument.

In the context of primary care, patients' generated dimensions such as; quick access, trust in the professional providing care, respect for patient's preferences, patients' involvement; information, education, and support for self-care; attention to physical and environmental needs, emotional support, involvement of family and carers; continuity of care, smooth transition and coordination of care have been described as important to the provision of good quality care (Supper et al., 2015). Therefore, the opinions of consumers in health services are important, as their perception of quality of delivery is one of the most important determinants in the success of any policy aimed at providing citizens with a fair, efficient, and sustainable health care service (Bombard et al., 2018).

## Materials and methods

**Research design**. The study employs the convergent parallel mixed method research design which involves the collection and analysis of both quantitative and qualitative data, to determine if they support or contradict each other. Hence, the quantitative data was elicited using questionnaires and the qualitative data was captured using in-depth interviews (IDIs). All questions were formulated to follow the Donabedian's Structure, Process, and Outcome (SPO) Model which encompasses all aspects of healthcare services. Measurement variables included question on; HCF physical environment, equipment functionality, humane treatment, prompt medical attention, long waiting queue, and HCF competency in delivering healthcare services. These questions were developed to measure both the intangible and tangible aspect of healthcare service.

### Sample size and sampling procedure

*Quantitative sample size determination*. Pett et al. (2011) and Garson (2012) factor analyses of subjects-to-variables ratio with a minimum of 10 subjects per variable in the study instrument was utilized to choose a sample size of 240 enrollee respondents which was calculated (20 subjects per each of the 12 variables in the study instrument). The minimum sample size of approximately 266 (240/0.9) patients was reached after adjusting for 10% non-response to the questionnaire (Mkperedem et al., 2020, 2023).

*Study population*. The study population was enrollees visiting selected hospitals in Lagos. The accredited public and private HCFs included: (1) St. Mary Specialist Hospital, (2) Awoyaya hospital, (3) Blue cross hospital, (4) Unity hospital, (5) The Eko hospital, (6) General hospital Akodo, (7) Budo specialist hospital, (8) Etta Atlantic memorial hospital, and (9) St. Nicholas hospital (Mkperedem et al., 2020, 2023)

*Justification for HCP/HCF selection*. The sample hospitals were chosen through the ballot system from a list of registered HCPs across the senatorial districts in the state available on the NHIS website (Mkperedem et al., 2023). The selected HCFs are located within the three senatorial districts of Lagos, Nigeria and are accredited to provide either primary or secondary services or both (Mkperedem et al., 2020).

*Quantitative sampling technique*. A multistage sampling technique was used to select the study participants. Simple random sampling was employed at each stage to reduce selection bias. Twenty Local Governments were clustered into the three senatorial districts, selecting only one Local Government from each district through balloting in stage 2. Stage 3 involved obtaining a list of all registered HCFs within the local governments and stratifying them into private and government-administered (Mkperedem et al., 2020, 2023). It also involved the selection of 9 HCFs from the larger pool through a ballot system. At this point, every HCFs had the same probability of being chosen to be sampled in the study.

*Validity and reliability of the research instrument*. Applicable in this study are the construct and content validities. To guarantee the validity of the study, the research instrument was carefully structured in line with the study objective. The content of the instrument was compared with available works of literature on the topic (Mkperedem et al., 2023). The internal consistency of the instrument was determined by a pre-test on 15 enrollees and 3 HCFs in the study location.

*Method of data collection*. The methods of data collection for this study are the questionnaire for quantitative data, and IDI for qualitative data. Both qualitative and quantitative methods were used to enhance the validity of results through triangulation. To this end, both interview and questionnaire administration was conducted physically at the same time in selected healthcare facilities in Lagos. The fieldwork for the study was conducted from August 2019 through January 2020. Data were collected in English and Yoruba, (the most commonly spoken local languages in Lagos state). The questionnaire items were interpreted by responders who were not able to communicate in English by the Research Assistants (Mkperedem et al., 2020, 2023).

**Table 1 Socio-demographic characteristics of respondents.**

| Variable | Frequency ($N = 252$) | Percentage (%) |
|---|---|---|
| Sex | | |
| Male | 82 | 32.5 |
| Female | 170 | 67.5 |
| Age, years | | |
| 18–20 | 22 | 8.7 |
| 21–30 | 66 | 26.2 |
| 31–40 | 93 | 36.9 |
| 41–50 | 25 | 9.9 |
| 51–65 | 46 | 18.3 |
| Marital status | | |
| Single | 70 | 27.8 |
| Married | 134 | 53.2 |
| Others | 48 | 19.0 |
| Public–private partnership | | |
| Public/NHIS | 47 | 18.7 |
| Private/HMO | 205 | 81.3 |
| Public–private HCFs | | |
| Public HCFs | 44 | 17.5 |
| Private HCFs | 208 | 82.5 |

### Research instruments

*Quantitative data collection instrument*. To determine how enrollees' perceived the quality of services accessed during their visit in the selected private or public HCFs, a 24-item structured questionnaire divided into three sections—demographic data, quality of healthcare services, and satisfaction perception—were administered to all NHIS-HMO enrollees who visited the selected HCFs during the time of the study.

### Questionnaires and scales

*Quality of services questionnaire*. While constructed quality measures were performed by adjusted Pett et al. (2011) and Garson (2012) factor analyses (Mkperedem et al., 2020), service quality variables were assessed using the Donabedian's Structure, Process, and Outcome (SPO) Model. Measurement variables included HCF physical environment, equipment functionality, humane treatment, prompt medical attention, long waiting queue, and HCF competency in delivering healthcare services. The quality indicator variables were presented according to Ndiyo's (2005) five (5) Likert scale position ranking. All questions had response options rating variables on a five-point Likert scale (1 = strongly disagree, 2 = disagree, 3 = slightly disagree/agree, 4 = agree, 5 = strongly agree). During hypotheses testing, these ordered categories were transformed and the responses converted into five categories termed as five (very good), four (good), three (undecided), two (bad), and one (very bad). The transformation was done for ease of comparison and interpretation.

*Self-efficacy for healthcare delivery scale*. Enrollees were asked to indicate, under several different circumstances, their level of confidence about their satisfaction with HCFs service quality on a three-point response scale (1 = low satisfaction perception, 2 = somewhat/medium satisfaction perception, 3 = high satisfaction perception). High satisfaction perception was considered the optimal level, and low and medium were considered suboptimal levels of satisfaction. The contingency Chi-Square and Spearman's Correlation Coefficient ($r$) was used to analyze elicited data.

### Qualitative data collection instrument

*In-depth interview*. IDIs were conducted with 15 selected enrollees whose experiences in the HCFs were perceived to be critically important to understanding the phenomenon of quality of services perception as they were patients who had accessed the HCFs for clinical services during the time of the study. The choice to use an IDI was because it allowed for a broad process of experiences and information. To facilitate analysis, interviews were recorded digitally with the participants' permission and notes were taken for participants who were reluctant about voice recording (Mkperedem et al., 2023).

### Method of data analysis

*Quantitative data analysis*. The quantitative data collected in this research were analyzed using the nominal descriptive statistics of frequencies and simple percentages with the help of the Statistical Product and Service Solutions (SPSS) version 20. The hypotheses were tested with the contingency Chi-Square and Spearman's correlation analysis. These tools were chosen due to the ordinal nature of the data. To ensure adequateness, completeness, legibility, and consistency, the questionnaire was edited before the entry of the data into the system. Enrollees' socioeconomic characteristics were analyzed using descriptive statistics and results presented in frequency distribution and percentages. Perception of healthcare service quality to enrollees' was analyzed using Spearman's correlation coefficient ($r$). This is because the variables were taken from ordinal scales. Also, correlation analysis was used to reveal meaningful relationships between the two variables of the study (enrollees' perception and healthcare services).

*Qualitative data analysis*. Inductive content analysis known as Hermeneutics was used in the analysis of the qualitative data following Donabedian's SPO framework. The structure variables evaluated HCP/HCF physical and environmental outlook; process variable evaluated the procedures and standards of healthcare services and Outcome variable assessed the change in a patient's current and expected health status following an experience from accessing healthcare services.

## Results

**Socio-demographic characteristics of the respondents**. Table 1 show that the majority (67.5%) of the respondents were females. This percentage of female respondents corresponds with the last

**Table 2 Distribution of respondents' on quality of healthcare service.**

| Questionnaire item | Responses | | | | | Total |
|---|---|---|---|---|---|---|
| | Strongly agree (%) | Agree (%) | Undecided (%) | Disagree (%) | Strongly disagree (%) | |
| I am treated as a human, not as a number (respect) | 85 (33.7%) | 74 (29.4%) | 26 (10.3%) | 31 (12.3%) | 36 (14.3%) | 252 (100%) |
| Medical staffs of the HCF attends to patients promptly | 57 (22.6%) | 72 (28.6%) | 50 (19.8%) | 37 (14.7%) | 36 (14.3%) | 252 (100%) |
| The HCF is competent in providing healthcare services | 72 (28.6%) | 79 (31.3%) | 32 (12.7%) | 33 (13.1%) | 36 (14.3%) | 252 (100%) |
| The HCF is plagued with unexplainable long waiting queue | 98 (38.9%) | 44 (17.5%) | 34 (13.5%) | 42 (16.7%) | 34 (13.5%) | 252 (100%) |

**Table 3 Distribution of respondents' perception on quality of healthcare service.**

| Questionnaire item | Responses | | | | | Total |
|---|---|---|---|---|---|---|
| | Very high perception (%) | Fairly high perception (%) | Average perception (%) | Low perception (%) | Very low perception (%) | |
| Respondents' rating of healthcare service quality | 48 (19.0%) | 78 (31.0%) | 53 (21.0%) | 40 (15.9%) | 33 (13.1%) | 252 (100%) |

**Table 4 Distribution of respondents' on quality of HCF's physical structure and equipment.**

| Questionnaire item | Responses | | | | | Total |
|---|---|---|---|---|---|---|
| | Strongly agree (%) | Agree (%) | Undecided (%) | Disagree (%) | Strongly disagree (%) | |
| Statements regarding conducive state of HCF's physical environment | 60 (23.8%) | 94 (37.3%) | 32 (12.7%) | 36 (14.3%) | 30 (11.9%) | 252 (100%) |
| Statements regarding the standard and functional state of HCF's medical equipment | 42 (16.7%) | 113 (44.8%) | 29 (11.5%) | 40 (15.9%) | 28 (11.1%) | 252 (100%) |

**Table 5 Distribution of respondents' perception on quality of HCF's physical structure and equipment.**

| Questionnaire item | Perception responses | | | | | Total |
|---|---|---|---|---|---|---|
| | Very high (%) | Fairly high (%) | Average (%) | Low (%) | Very low (%) | |
| Respondents' rating of HCF's physical structure and equipment quality | 53 (21.0%) | 86 (34.1%) | 36 (14.3%) | 36 (14.3%) | 41 (16.3%) | 252 (100%) |

census report. Again, a larger proportion (53.2%) of the respondents was married. The majority (36.0%) of the respondents fall within the age bracket of 31 and 40 that represents the active working population with a mean interval of 3.0278. Although more expensive, a larger proportion of the respondents (81.3%) subscribed to the private HMO plan and 82.5% accessed care in private HCFs (Mkperedem et al., 2020). This may be because quality is mostly associated with a price tag as discovered by Howick et al. (2020).

Table 2 represents a sample distribution of the quality of healthcare services. A significant number (26.3%) combined weight of Strongly Disagree (SD) and Disagree (D) to being treated as humans. Similarly, 29% combined weight of Strongly Disagree (SD) and Disagree (D) confirmed a lack of prompt attention. While 59.9% combined weight of Strongly Agree (SA) and Agree (A) asserted HCF healthcare competency, the majority (56.4%) combined weight of Strongly Agree (SA) and Agree (A) to unexplainable long queues.

Compared to the 50.0% combined weight of very high and fairly high positive rating, the combined weight of low and very low 29% and 21.0% average rating in Table 3, shows significant negative perception concerning the quality of healthcare service.

Table 4 presents the results of the respondents' assessment of the tangible aspects of healthcare services provided by the healthcare facilities (HCFs). The majority of the participants (61.1%) agreed that the physical environment of the HCFs was conducive, as evidenced by the combined weight of the responses in the Strongly Agree (SA) and Agree (A) categories. Similarly, 61.5% of the respondents in the Strongly Agree (SA) and Agree (A) categories felt that the HCFs had standard and functional equipment. In comparison, only 27% of the respondents in the Disagree (D) and Strongly Disagree (SD) categories expressed dissatisfaction with the quality of the HCFs' equipment.

Table 5 presents the respondents' perceptions of the physical structure and equipment of the healthcare facilities (HCFs). The majority of the participants (55.1%) rated the HCFs positively,

**Table 6 Cross tabulation of relationship between enrollees' perception and quality of healthcare services.**

| Variables | Very high perception (%) | Average perception (%) | Very low perception (%) | Total | $\chi^2$ |
|---|---|---|---|---|---|
| Very good | 11 (26.8) | 19 (17.0) | 20 (17.8) | 112 (100.0) | $\chi^2 = 32.051$ |
| Good | 16 (34.1) | 14 (29.8) | 17 (36.2) | 47 (100.0) | $^{**}r = 0.183$ |
| Undecided | 10 (38.4) | 6 (23.1) | 10 (38.4) | 26 (100.0) | $P = 0.000$ |
| Bad | 13 (39.4) | 8 (24.2) | 12 (36.4) | 33 (100.0) | df = 16 |
| Very bad | 14 (41.2) | 6 (17.6) | 14 (41.1) | 34 (100.0) | |
| Total | 126 (50) | 53 (21.0) | 73 (29) | 252 (100.0) | |

**Correlation is significant at the 0.01 level.

**Table 7 Cross tabulation of relationship between enrollees' perception and quality of HCF's physical structure and equipment.**

| Variables | Very high perception (%) | Average perception (%) | Very low perception (%) | Total | $\chi^2$ |
|---|---|---|---|---|---|
| Very good | 29 (48.3) | 8 (13.3) | 23 (38.3) | 60 (100.0) | $\chi^2 = 66.750$ |
| Good | 70 (73.7) | 8 (8.4) | 17 (17.9) | 95 (100.0) | $^{**}r = 0.064$ |
| Undecided | 11 (35.5) | 6 (19.4) | 14 (45.2) | 31 (100.0) | $P = 0.000$ |
| Bad | 17 (44.8) | 8 (21.1) | 13 (34.3) | 38 (100.0) | df = 16 |
| Very bad | 12 (42.9) | 6 (12.8) | 10 (35.8) | 28 (100.0) | |
| Total | 139 (55.1) | 36 (14.3) | 77 (30.6) | 252 (100.0) | |

**Correlation is significant at the 0.01 level.

with a combined weight of Very High and Fairly High ratings. In contrast, 30.6% of the participants had a negative perception of the HCFs' physical structure and equipment, as evidenced by the combined weight of Low and Very Low ratings.

*Test of hypothesis*. Decision criterion: Reject H0 if the calculated (observed value) of chi-square ($\chi^2_c$) is found to be greater than the critical (table) value of chi-square $\chi^2_t$ (0.01), if not, do not reject. Data from Tables 2 and 3 were cross-tabulated and used in testing this hypothesis. The result is shown in Table 6.

H0: There is no significant relationship between enrollees' perception and healthcare services.

H1: There is significant relationship between enrollees' perception and healthcare services.

Table 6 shows the relationship between enrollees' perception and the quality of healthcare service variables (Humane treatment, prompt medical attention, HCF competency, and long waiting queue). Empirically, respondents' views indicate some balancing where a total of 27 respondents' who are very high in perception saw the quality of healthcare service as very good and good, and 27 who are also very high in perception saw the quality of healthcare service as very bad and bad.

Further group comparison shows a total of 37 respondents' who are very low in perception but saw the quality of healthcare service as very good and good is higher than those (26) who are very low in perception and saw the quality of healthcare service to be bad and very bad. Similarly, a total of 33 respondents' who average in perception and saw the quality of healthcare service to be good and very good is higher than those (14) who are average in perception but saw the quality of healthcare service to be bad and very bad. As we see from these group comparisons, therefore, we can see empirically that the relationship between perception and quality of healthcare service is significant but relatively weak.

Inferential statistics support this empirical observation as shown in the calculated $\chi^2(16) = 32.051$ is higher than the chi-square table ($P > 0.01$). Therefore, the null hypothesis is rejected and the alternate hypothesis is accepted. Also, Spearman's correlation ($r$) = 0.183 shows a positive relation between perception and quality of healthcare service.

H0: There is no significant relationship between enrollees' perception and HCF's physical structure and equipment quality.

H1: There is significant relationship between enrollees' perception and HCF's physical structure

Data from Tables 4 and 5 were cross tabulated and used in testing this hypothesis. The result is shown in Table 7.

Table 7 displays the relationship between enrollees' perceptions and the quality of the physical structure and equipment of the HCFs. The table shows that out of the 99 respondents who rated the physical structure and equipment as Very Good and Good, a higher proportion of them (also 99) had a Very High perception of the HCFs, compared to the 29 respondents who rated the physical structure and equipment as Bad and Very Bad while having a Very High perception. Moreover, the 99 respondents with a Very High perception of the HCFs is higher than the 23 respondents who rated the physical structure and equipment as Bad and Very Bad while having a Very Low perception. Thus, these group comparisons empirically demonstrate a relationship between enrollees' perception and the quality of physical structure and equipment in the HCFs.

The empirical observation that there is a relationship between enrollees' perception and the quality of physical structure and equipment in the HCFs is supported by inferential statistics. The calculated chi-square value ($\chi^2(16) = 66.750$) is higher than the chi-square table ($P < 0.01$), indicating that the null hypothesis is rejected and the alternate hypothesis is accepted. Furthermore, Spearman's correlation coefficient ($r$) of 0.064 shows a positive correlation between enrollees' perception and the quality of equipment and physical structure in the HCFs.

**IDI and observation report**. During the interviews, participants were asked about the tangible physical aspects (Structure) of the HCFs. An enrollee noted thus:

The windows in the female ward are all broken and there is no greenery in the environment. The atmosphere consistently has a foul odor, ranging from vomit to the smell of corpses being embalmed. The smell is always frightful and psychologically torturing. **(IDI 6. Male. 60)**

Enrollees' assessment of the quality of physical structure in the HCFs also involves evaluating the use of standard and functional equipment in treatment. An interviewee asserted thus:

I have not been sent for laboratory diagnosis during my one year of receiving care at this HCF. When I complained about this issue, the doctor seemed to take offense **(IDI 9. Female. 28)**

Another interviewee noted thus:

Since only sick people visit hospitals, proper diagnosis should be carried out so that patients can get better and stop visiting the hospital, however, I belief that every medical facility aims to make profit, therefore the longer a patient's ailment persists, the more frequent they will visit the hospital for treatment. I have been visiting the hospital for treatment of malaria for six months without being asked to do any blood related test **(IDI 3. Female. 34)**

Regarding healthcare services quality, an interviewee asserted thus:

The service is good, but the treatment is different from that of out-of-pocket patients because of the bureaucratic nature of the NHIS scheme. The hospital does not really have a problem; it is when the HMO responds to the hospital, that is when they attend to the patient **(IDI 9. Female. 28)**

As observed, care drew upon two things—the type of HCF, and the number of enrollees' patronizing the HCF. As observed, some HCF was over-patronized, while the opposite was the case for some others thereby delimiting their access to quality care an interviewee asserted thus:

Being an NHIS-HMO enrollee means signing up for delay here (in the hospital) where a patient has to arrive the premise as early as 6:00am to hurriedly get treatments only to finish up at 3:00 p.m. This has really affected my health seeking behavior **(IDI 3, Female, 34)**

Regarding process to care, an interviewee summed thus:

The medical profiling of HMO patients is such that feels like criminal profiling. It takes too long with a lot of document signing, photocopying of ID card, different PA (Prior authorization) code request from the hospital to the HMO with a lot of "madam, please sit down, the HMO is yet to respond to our mail" most times I want to make payment at the cashier stand, but if the PA code arrives, I will not be refunded either by the HMO nor the hospital, so, I am always left with no other choice than waiting and wasting almost my entire day at the hospital for something that should normally not take above an hour if I were to be a fee paying patient. Most times out of five prescriptions, the hospital can only provide one, two is not covered by the scheme, the other two is usually out of stock **(IDI 1. Female. 60)**

Another respondent shared his observation thus:

I noticed out-of-pocket paying patients were able to access various units of the hospital that conducted tests, scans, dialysis, and other procedures. I believe that the equipment in those units is standard and functional. However, as an enrollee, I did not have access to such services, and I am often told that the services were "not covered" under my plan. **(IDI 3. Female. 34)**

Regarding health services **outcome**, as observed, interviewers showed little or no positiveness to the expected effect of treatments and interventions accessed. An enrollee noted thus:

Many times, I am asked to pay the difference for quality medications, tests, and the like… I have to be asking the doctor to be sincere and tell me my health issue as well as the best treatment not as an enrollee but as a patient in need of quality health attention, but I wonder what is the fate of those enrollees who can't afford to make an out-of-pocket payment? **(IDI 6. Male. 60)**

The response above suggests that enrollees' experience towards accessing care at the HCFs is bottlenecked (for example, PA code requirement) thereby leading to delay in service delivery and time wasting. The researcher observed that overburdened facilities may have a grossly inefficient impact on health services delivery resulting in long waiting hours. There is an obvious distinction in services accessed by out-of-pocket paying patients and enrollees, and enrollees are required or obligated to make payments at the HCFs for relative services or medications considered high in quality contrary to the services covered by the scheme.

The health plan of an enrollee also affects the quality of service rendered, thereby causing enrollees' to succumb to the out-of-pocket payment method which is perceived to be a more guaranteed route to quality service, this, therefore, negates the scheme's plan of providing equitable healthcare at a low price. But then, after a thorough look at the scheme's logo inscription "National Health Insurance Scheme, Easy Access to Healthcare for All" one may assume the undertone is to provide easy access to healthcare for all not easy access to quality healthcare. This, therefore, raises concern for the quality of services accessed at the HCFs by the poor and low economy enrollees'. Conclusively, putting care in a broader perspective from the IDI and observation, HCFs should aim in the direction of the 9th National Health Conference consideration, which advocacy for healthcare models includes a developmental program aiming at group works, action-based health education, and not limiting care to individual healing.

It is also clear from the responses provided that patients' perceptions of the quality of healthcare services they receive are influenced by a range of factors, including the physical state of the healthcare facility, the quality of equipment and testing kits available, and the type of health insurance plan they have. The fact that out-of-pocket paying patients are able to access better quality equipment and services than those with health insurance plans raises concerns about the accessibility and equity of healthcare services for low-income individuals.

**Discussion for improvement of NHIS-HMO healthcare service delivery**. This finding related to the major objective of the study, which was to assess the healthcare service delivery perception among NHIS-HMO enrollees in Lagos hospitals through the Donabedian's Structure, Process, and Outcome (SPO) Model. Enrollees' perception was significantly affected by the tangible HCF physical environment variable. This finding reiterates the importance of Mosadeghrad (2013) environmental attribute in delivering quality healthcare. This also supports the filter theory of attention that the mind is capable of filtering objects in the environment thereby presenting cues, whether positive or negative for perception formation. The positive report on the state of the HCFs physical environment in this study negates that of Adekunle and Olusa (2021) which indicated decaying public HCFs status. This result can be an implication of Ramez (2012), Ali et al. (2018), and AlOmari (2020) studies that indicated tangibility as a major element influencing hospital performance from patients' perceptions. Because many health services are often intangible and difficult for consumers to evaluate (Mosadeghrad, 2013; Ding and Keh, 2017) patients' opinions of the quality of health services are strongly impacted by HCFs outward appearance.

Question regarding the functionality of HCF equipments received varying responses as Enrollees perception were formed based on beliefs and not personal encounter and usage of facility's equipment in their treatment process. This finding raises a question on the efficiency characteristics in providing quality healthcare for positive outcome. This can be as a result of the varying healthcare plans and HCPs believe that the capitation fee does not reflect the current economic realities reported across studies (Adeniran et al., 2020; Abba-Aji et al., 2021; Alawode and Adewole, 2021; Zhang et al. (2022)).

Related to process variables, the quantitative study found positive response towards the humane treatment, and prompt medical attention questions, however, the qualitative interviews had differing results. The quantitative report negated that of Onwujekwe et al. (2019), Adeniran et al. (2020); Abba-Aji et al. (2021), and Alawode and Adewole (2021), where the services

offered to NHIS enrollees were reported to lack the care aspect due to the varying healthcare plans. The report on humane treatment corroborates that of Mkperedem et al. (2023) study which reported positive medical personnel attitude to enrollees. On question related to presence of long waiting queues, both the quantitative and qualitative confirmed this. This could be as a result of delay during PA code requirement as noted during IDI session. This result corroborates those of Garcia-Subirats et al. (2014) and Loving et al. (2017).

Quantitative result on outcome variable indicated HCFs competence in providing quality services, however, IDI session revealed being an enrollee limits accessibility into the quality of HCFs competent service. This could be caused by the suboptimal scope of coverage reported in Alawode and Adewole (2021) study. Some studies (Roby and Jones, 2016; Cookson et al., 2018; Alawode and Adewole, 2021) have suggested that variables related to healthcare services delivered to enrollees are related to socioeconomic status and varying enrollee plans.

Overall, the IDI response indicated low satisfaction with healthcare services delivered. This result is consistent with the patients' low-level satisfaction with health service quality studies in South Africa (Saloojee et al., 2011), Jordan (Zamil et al., 2012), Nigeria (Obamiro, 2013), Indonesia (Akbar and Jaya, 2017), Ghana (Ampaw et al., 2020); and Ethiopia (Girma et al., 2020).

## Conclusion and recommendations

The research concludes that healthcare service quality perception is subjective, which means that enrollees' perception may alter depending on the type of healthcare service accessed at the HCF. The research also concludes that enrollees' perception is sharpened by their experience or the experience of others witnessed or heard.

The research further concludes that the unexplainable long waiting queue experienced by enrollees during service delivery for PA codes and eligibility confirmation may serve as deterrence to out of pocket paying patients, thereby contributing to the slow enrolment experienced under the scheme, while encouraging enrolled members to patronize out-of-pocket payment methods in hopes of prompt service delivery. Therefore, to attain the Universal Health Coverage mission, the study recommends reduction or total removal of every form of challenge such that makes for NHIS-HMO enrollees spending too much time at the HCFs during healthcare access. Also, to ensure scientific rigor in healthcare services quality measurement; suitability, clinical relevance (including laboratory investigations), context, and incorporation practicability are important properties for positive health outcome.

### Limitations of the study.

1. The study was limited to enrollees (healthcare users), more interviews to assess the perceptions of other actors (healthcare professionals) should be conducted in a comparative study.
2. Respondents who were on admission were excluded from participating in the survey research.
3. The study was limited to only three Local governments selected through balloting thereby making the results inconclusive for the remaining seventeen local governments in the State.
4. The primary data was limited to enrollees visiting selected HCFs in Lagos State; therefore, the result is not conclusive to the other 35 States in Nigeria.
5. The scope of the study was limited to users visiting HCFs accredited by NHIS to provide primary and secondary care therefore, not necessarily conclusive for users who although enrolled still pay out-of-pocket at the service delivery point.
6. The qualitative study was limited to IDI and the selection of interviewees may affect both representativeness and typicality.
7. The qualitative method of analysis was limited to inductive content analysis while the quantitative was limited to Chi-Square and Spearman's correlation analysis.

### Prospects for future research.

1. This study focused solely on enrollees visiting selected hospitals in 3 local governments of Lagos. The same study should be replicated in the other 17 local government areas of the state and results should be compared.
2. It is not enough to assess the perception of the NHIS-HMO enrollees concerning the issue of healthcare service quality. The health providers' quality indications should also be considered viz-a-viz.
3. In the course of the researcher's visits to the accredited HCPs in the State, differences in enrollee distribution across the HCFs was noted. Research should also be conducted to find out the determining factor or factors responsible for enrollees' choice of HCFs and its consequences on quality service delivery.
4. Considering the method of analysis in this present study, studies should be conducted with other methods of analysis.

## Data availability

All data generated or analyzed during this study are included in this published article.

Received: 1 January 2023; Accepted: 25 September 2023;
Published online: 11 October 2023

## References

Abba-Aji M, Balabanova D, Hutchinson E, McKee M (2021) How do Nigerian newspapers report corruption in the health system? Int J Health Policy Manag 10(2):77. https://doi.org/10.34172/ijhpm.2020.37

Adekunle O, Olusa A (2021) The impact of fraudulent practices on infrastructural development in Nigeria. J Econ Sustainable Dev 12(6):81–89. https://doi.org/10.7176/JESD/12-6-08

Adeniran AS, Aun II, Fawole AA, Aboyeji AP (2020) Comparative analysis of caesarean delivery among out-of-pocket and health insurance clients in Ilorin, Nigeria. Nigerian Postgraduate Med J 27(2):108. https://doi.org/10.4103/npmj.npmj_181_19

Akbar FH, Jaya MT (2017) Relationship between service quality on public health center and patient satisfaction. Glob J Health Sci 9(7):96–102. https://doi.org/10.5539/gjhs.v9n7p96

Alawode GO, Adewole DA (2021) Assessment of the design and implementation challenges of the National Health Insurance Scheme in Nigeria: a qualitative study among sub-national level actors, healthcare and insurance providers. BMC Public Health 21(1):1–12. https://doi.org/10.1186/s12889-020-10133-5

Ali SS, Basu A, Ware N (2018) Quality measurement of Indian commercial hospitals–using a SERVQUAL framework. Benchmarking 25(3):815–837. https://doi.org/10.1108/BIJ-05-2016-0060

Al-Abri R, Al-Balushi A (2014) Patient satisfaction survey as a tool towards quality improvement. Oman Med J 29(1):3. https://doi.org/10.5001/omj.2014.02

AlOmari F (2020) Measuring gaps in healthcare quality using SERVQUAL model: challenges and opportunities in developing countries. Meas Bus Excellence 25(4):407–420. https://doi.org/10.1108/MBE-11-2019-0104

Ampaw EM, Chai J, Liang B, Tsai SB, Frempong J (2020) Assessment on health care service quality and patients' satisfaction in Ghana. Kybernetes 49(12):3047–3068. https://doi.org/10.1108/K-06-2019-0409

Amzat J, Razum O (2014) Medical pluralism: traditional and modern healthcare. In: Medical sociology in Africa. Springer, Cham, p. 207–240. https://doi.org/10.1007/978-3-319-03986-2_10

Berwick D, Fox DM (2016) Evaluating the quality of medical care": Donabedian's classic article 50 years later. Milbank Qly 94(2):237. https://doi.org/10.1111/1468-0009.12189

Bombard Y, Baker GR, Orlando E, Fancott C, Bhatia P, Onate K, Denis JL, Casalino S, Pomey MP (2018) Engaging patients to improve quality of care: a systematic review. Implement Sci 13(1):1–22

Broadbent DE (2013) Perception and communication. Elsevier, p. 5–337. https://books.google.com.ng/books?hl=en&lr=&id=ZCOLBQAAQBAJ&oi=fnd&pg=PP1&dq=Broadbent+D.+Perception+and+Communication.+London:+Pergamon+Press.+1958.&ots=sIQpp2lCIT&sig=T8xiM5eJylyXJ9vrpq5Arf7MK0Q&redir_esc=y#v=snippet&q=attention%20theory&f=false

Chazapis M, Gilhooly D, Smith AF, Myles PS, Haller G, Grocott MP, Moonesinghe SR (2018) Perioperative structure and process quality and safety indicators: a systematic review. Br J Anaesth 120(1):51–66. https://doi.org/10.1016/j.bja.2017.10.001

Claessen SJ, Francke AL, Sixma HJ, de Veer AJ, Deliens L (2013) Measuring relatives' perspectives on the quality of palliative care: the consumer quality index palliative care. J Pain Symptom Manag 45(5):875–884. https://doi.org/10.1016/j.jpainsymman.2012.05.007

Conroy T (2018) Factors influencing the delivery of the fundamentals of care: Perceptions of nurses, nursing leaders and healthcare consumers. J Clin Nurs 27(11-12):2373–2386. https://doi.org/10.1111/jocn.14183

Cookson R, Asaria M, Ali S, Shaw R, Doran T, Goldblatt P (2018) Health equity monitoring for healthcare quality assurance. Soc Sci Med 198:148–156. https://doi.org/10.1016/j.socscimed.2018.01.004

Dijkstra K, Pieterse ME, Pruyn A (2006) Physical environmental stimuli that turn healthcare facilities into healing environments through psychologically mediated effects: systematic review. J Adv Nurs 56(2):166–181. https://doi.org/10.1111/j.1365-2648.2006.03990.x

Ding Y, Keh HT (2017) Consumer reliance on intangible versus tangible attributes in service evaluation: the role of construal level. J Acad Mark Sci 45:848–865. https://doi.org/10.1007/s11747-017-0527-8

Donabedian A (1988) Quality assessment and assurance: unity of purpose, diversity of means. Inquiry 25(1):173–192. https://www.jstor.org/stable/29771941

Drahota A, Stores R, Ward D, Galloway E, Higgins B, Dean T (2005) Sensory environment on health-related outcomes of hospital patients. (Protocol). Cochrane Database Syst Rev 3:CD005315. https://doi.org/10.1002/14651858.CD005315.pub2

Elverson CA, Samra HA (2012) Overview of structure, process, and outcome indicators of quality in neonatal care. Newborn Infant Nurs Rev 12(3):154–161. https://doi.org/10.1053/j.nainr.2012.06.002

Fatima I, Humayun A, Iqbal U, Shafiq M(2019) Dimensions of service quality in healthcare: a systematic review of literature. Int J Qual Health Care 31(1):11–29. https://doi.org/10.1093/intqhc/mzy125

Frichi Y, Jawab F, Boutahari S (2019) The mixed-method 5W2D approach for health system stakeholders analysis in quality of care: an application to the Moroccan context. Int J Environ Res Public Health 16(16):2899. https://doi.org/10.3390/ijerph16162899

Gallan AS, Jarvis CB, Brown SW, Bitner MJ (2013) Customer positivity and participation in services: an empirical test in a health care context. J Acad Mark Sci 41:338–356. https://doi.org/10.1007/s11747-012-0307-4

Garcia-Subirats I, Vargas I, Mogollón-Pérez AS, De Paepe P, da Silva MR, Unger JP, Vázquez ML (2014) Barriers in access to healthcare in countries with different health systems. A cross-sectional study in municipalities of central Colombia and north-eastern Brazil. Soc Sci Med 106:204–213. https://doi.org/10.1016/j.socscimed.2014.01.054

Garson GD (2012) Testing statistical assumptions. Statistical Associates Publishing, Asheboro, NC, p. 15–17

Gillespie H, Kelly M, Duggan S, Dornan T (2017) How do patients experience caring? Scoping review. Patient Educ Counsel 100(9):1622–1633. https://doi.org/10.1016/j.pec.2017.03.029

Girma M, Robles C, Asrat M, Hagos H, G/slassie M, Hagos A (2020) Community perception regarding maternity service provision in public health institutions in 2018 and 2019: a qualitative study. Int J Women's Health 6:773–783. https://doi.org/10.2147/IJWH.S250044

Gleitman LR, Papafragou A (2012) New perspectives on language and thought. Oxford, p. 543–568. https://doi.org/10.1093/oxfordhb/9780199734689.013.0028

Howick J, Mittoo S, Abel L, Halpern J, Mercer SW (2020) A price tag on clinical empathy? Factors influencing its cost-effectiveness. J R Soc Med 113(10):389–393. https://doi.org/10.1177/0141076820945272

Hsieh HF (2005) Three approaches to qualitative content analysis. Qual Health Res 15(9):1277–1288. https://doi.org/10.1177/1049732305276687

James TL, Calderon ED, Cook DF (2017) Exploring patient perceptions of healthcare service quality through analysis of unstructured feedback. Expert Syst Appl 71:479–492. https://doi.org/10.1016/j.eswa.2016.11.004

Loving VA, Ellis RL, Rippee R, Steele JR, Schomer DF, Shoemaker S (2017) Time is not on our side: how radiology practices should manage customer queues. J Am Coll Radiol 14(11):1481–1488. https://doi.org/10.1016/j.jacr.2017.06.006

Martin MG (2002) The transparency of experience. Mind Lang 17(4):376–425. https://doi.org/10.1111/1468-0017.00205

Mkperedem AA, Ogunlade P, Igbolekwu CO, Asamu F, Rasak B, Arisukwu OC (2020) Impact of quality healthcare equipment and physical structure on NHIS-HMO outpatient enrollees' perception in Lagos hospitals. Preprint at Research Square. https://doi.org/10.21203/rs.3.rs-86152/v1

Mkperedem AA, Ogunlade P, Igbolekwu C, Arisukwu O, Owa SO, Afolabi AO, Etta-Oyong SO (2023) Perception among NHIS–HMO enrolees of the attitudes of medical personnel during outpatient care in Lagos Hospitals. Int J Environ Res Public Health 20(2):1218. https://doi.org/10.3390/ijerph20021218

Mosadeghrad AM (2012) Towards a theory of quality management: an integration of strategic management, quality management and project management. Int J Model Oper Manag 2(1):89–118. https://doi.org/10.1504/IJMOM.2012.043962

Mosadeghrad AM (2013) Healthcare service quality: towards a broad definition. Int J Health Care Qual Assur 26:203–219. https://doi.org/10.1108/09526861311311409

NHIS (2006) National health insurance scheme handbook. Government Press, Abuja, p. 6–16

Ndiyo NA (2005) Fundamentals of research in behavioral sciences and humanities. Wusen Publishers, Calabar

Obamiro JK (2013) Effects of waiting time on patient satisfaction: Nigerian hospitals experience. Int J Econ Behav 3(1):117–126. https://doi.org/10.14276/2285-0430.1875

Okafor IJ, Ozohu-Suleiman A, Vambe JT (2021) Equipment, drugs and consumables in the implementation of NHIS: a survey of the Federal Capital Territory, Abuja, Nigeria. Int J Humanit Soc Sci Invention 10(2):30–40. https://doi.org/10.35629/7722-1002033040

Onwujekwe O, Obi F, Ichoku H, Ezumah N, Okeke C, Ezenwaka U, Uzochukwu B, Wang H (2019) Assessment of a free maternal and child health program and the prospects for program re-activation and scale-up using a new health fund in Nigeria. Nig J Clin Pract 22(11):1516–1529. https://doi.org/10.4103/njcp.njcp_503_18

Papanikolaou V, Zygiaris S (2014) Service quality perceptions in primary healthcare centres in Greece. Health Expect 17(2):197–207. https://doi.org/10.1111/j.1369-7625.2011.00747.x

Paparella G (2016) Person-centred care in Europe: a cross-country comparison of health system performance, strategies and structures. Oxford, p. 1–47

Pett M, Lackey N, Sullivan J (2011) An overview of factor analysis. In: Making sense of factor analysis. Sage Publications, p 2–12

Polsa P, Spens K, Soneye A, Antai I (2011) Comparing the perceived quality of private and public health services in Nigeria. J Manag Policy Pract 12(7):18–26. http://www.na-businesspress.com/JMPP/polsa_abstract.html

Quadagno J (2010) Institutions, interest groups, and ideology an agenda for the sociology of health care reform. J Health Soc Behav 51(2):125–136. https://doi.org/10.1177/0022146510368931

Rademakers J, Delnoij D, de Boer D (2011) Structure, process or outcome: which contributes most to patients' overall assessment of healthcare quality? BMJ Qual Saf 20(4):326–331. https://doi.org/10.1136/bmjqs.2010.042358

Rai GK, Wood A (2018) Effectiveness of community pharmacies in improving seasonal influenza uptake—an evaluation using the Donabedian framework. J Public Health 40(2):359–365. https://doi.org/10.1093/pubmed/fdx078

Ramez WS (2012) Patients' perception of healthcare quality, satisfaction and behavioural intention: an empirical study in Bahrain. Int J Bus Soc Sci 3(18):1–11

Roby DH, Jones EE (2016) Limits on same-day billing in Medicaid hinders integration of behavioral health into the medical home model. Psychol Serv 13(1):110–119. https://doi.org/10.1037/ser0000044

Saloojee GM, Rosenbaum PL, Stewart AV (2011) Using caregivers' perceptions of rehabilitation services for children with cerebral palsy at public sector hospitals to identify the components of an appropriate service. South Afr J Physiother 67(3):35-40. https://doi.org/10.4102/sajp.v67i3.53

Sheldon TA (2005) The healthcare quality measurement industry: time to slow the juggernaut? BMJ Qual Saf 14(1):3–4. https://doi.org/10.1136/qshc.2004.013185

Suhonen R, Papastavrou E, Efstathiou G, Tsangari H, Jarosova D, Leino-Kilpi H, Patiraki E, Karlou C, Balogh Z, Merkouris A (2012) Patient satisfaction as an outcome of individualised nursing care. Scand J Caring Sci 26(2):372–380. https://doi.org/10.1111/j.1471-6712.2011.00943.x

Sui Y, Ahuru RR, Huang K, Anser MK, Osabohien R (2021) Household socioeconomic status and antenatal care utilisation among women in the reproductive-age. Front Public Health 9:724337. https://doi.org/10.3389/fpubh.2021.724337

Supper IO, Catala O, Lustman M, Chemla C, Bourgueil Y, Letrilliart L (2015) Interprofessional collaboration in primary health care: a review of facilitators and barriers perceived by involved actors. J Public Health 37(4):716–727. https://doi.org/10.1093/pubmed/fdu102

Ulrich RS (1984) View through a window may influence recovery from surgery. Science 224(4647):420–421. https://doi.org/10.1126/science.61434

Unachukwu JC, Sajuyigbe AS, Odebiyi II (2020) Adoption of the National Health Insurance Scheme and its influence on organizational commitment. An empirical investigation. Bus Perspect Rev 2(3):1–10. https://doi.org/10.38157/business-perspective-review.v2i3.171

Van der Elst E, de Casterlé BD, Gastmans C (2012) Elderly patients' and residents' perceptions of 'the good nurse': a literature review. J Med Eth 38(2):93–97. https://doi.org/10.1136/medethics-2011-100046

Zamil AM, Areiqat AY, Tailakh W (2012) The impact of health service quality on patients' satisfaction over private and public hospitals in Jordan: a comparative study. Int J Mark Stud 4(1):123. https://doi.org/10.5539/ijms.v4n1p123

Zarei E, Bagheri A, Daneshkohan A, Khodakarim S (2020) Patients' views on service quality in selected Iranian hospitals: an importance-performance analysis. Shiraz E-Medical J 21(9):e97938. https://doi.org/10.5812/semj.97938

Zhang X, Anser MK, Ahuru RR, Zhang Z, Peng MY, Osabohien R, Mirza M (2022) Do predictors of health facility delivery among reproductive-age women differ by health insurance enrollment? a multi-level analysis of Nigeria's data. Front Public Health 10:797272. https://doi.org/10.3389/fpubh.2022.797272

## Author contributions

Conceptualization, methodology, software: AAM, PO, and CI; validation: PO, CI, OA, RAA, and AOA; quantitative analysis: AAM; PO, CI, OA, and AOA; qualitative analysis: AAM, PO, CI, OA, and RAA; investigation, writing—original draft preparation, visualization: AAM; resources: PO, CI, OA, and RAA; data curation: PO, CI, OA, and AOA; writing—review and editing: AAM, PO, CI, OA, AOA, and RAA; supervision: PO and CI; project administration: PO; all authors have read and agreed to the published version of the manuscript.

## Competing interests

The authors declare no competing interests.

## Ethical approval

The questionnaire and methodology for this study was approved by the management of all healthcare facilities used in the study. Approval was obtained from the Lagos State Government Health Service Commission (Ethics approval number: LSHSC/88/S.3/II/257).

## Informed consent

Informed consent was obtained from individual participants involved in the study. Participants' confidentiality was upheld and ensured. After all elements of the consent form were carefully, patiently, and clearly explained to the prospective participants, a signed copy of the written informed consent form was obtained from willingly participants.

## Additional information

**Correspondence** and requests for materials should be addressed to Abigail Affiong Mkperedem.