


Findings and Predictors of Patient-Reported Experience of Primary Health Care in Nigeria

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Abstract

Objective: The study reports findings and patients' characteristics that predict their experiences of primary health care (PHC) in Nigeria. **Methods:** A cross-sectional survey of 1680 patients attending 24 primary health centers in 6 states from the 6 geopolitical subdivisions in Nigeria. The patient evaluation scale was used for exit survey of patients' experiences with PHC. Categorical findings and mean ratings on experiences of PHC were analyzed using both descriptive and inferential statistics. **Results:** The mean response rate was 98%, and most respondents were female (73%) and married (72%). A higher proportion of patients gave positive feedback on their relationships with staff (84%) than they did available space in the waiting area (60%). Higher self-rated health status and nonpayment for care at the point of receipt were consistent predictors of positive patient experiences from the multilevel analysis. **Conclusion:** Study reported findings and drivers of patient experiences with PHC. Aspects of PHC showing less positive patient experiences and some patients' factors associated with these are amenable to change and can form the focus of quality improvement actions.

Keywords

predictors, primary health care, PHC, patient experiences, perceived quality, Nigeria

Introduction

Research on patient-reported experiences of primary health care (PHC) in Nigeria is on the increase (1). This increase is possibly the result of greater emphasis on patient-focused health care and the need for improved accountability in the administration of health care (2,3).

Patient views on health care are expressed in their preferences (ideas about what should occur), evaluations (reaction to experience of health care), and reports (objective observations of organization or processes in health care; 4). The patient experiences of health care as a type of evaluation reflect their judgments on aspects or overall health care following an encounter (4,5). Such evaluation by patient is different from direct observation of quality based on the extent the structure and/or processes in health care align with technically defined standards (4,5).

Although studies on observed quality of PHC in the Nigerian setting are rare, an identified report on the structural quality of PHC in rural Lagos revealed that 78% of health centers had an inadequate supply of water, electricity, and poor toilet facilities. Study also found deficiencies in basic equipment, ambulance services, and physical access to facilities. The participation of the community in the

planning and management of health centers was identified in only 22% of these centers (6).

The available studies on patient-reported experiences of PHC assessed PHC performance along the continuum of structure, process, and outcome of care; are focused on specific components of PHC such as child health services (7), immunization services (8), antenatal care (9), or entire primary care services (10-13).

The potential discordance in the values of patients and other stakeholders is an additional reason to understand the

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views of the patients who are impacted by the processes in health care for the notion of quality to be meaningful (14). Quality can appropriately be defined in relation to the extent that the stated or implied needs of the patients are met by health systems (15,16).

Most studies on patient evaluation of health care are reported as their personal satisfaction with services at the health facilities (1,17). Patient satisfaction is often explained using the “value-expectancy model,” “fulfillment,” or “discrepancy model” (18). These models examine satisfaction in relation to the extent the patients’ expectations are met or their attitudes toward the care system following an encounter (19,20). Viewing this against the background that these represent personal evaluation of health care, there are current arguments that “patient evaluation” rather than simply “satisfaction” connote a more valid representation of the process of accessing patients’ experiences of health care (21,22).

Patient-reported experiences of distinct aspects of health care can be used to identify potential problems and undertake quality improvements in health care. Their conduct is underpinned by current standards in ethics, philosophy, law and regulation, politics, and evidence of practical benefits (4,23-25). For instance, positive patients’ experience is predictive of their future utilization of health care, compliance with current management, continuity of care and the overall effectiveness of their encounter with health care (23,26). From a political viewpoint, aligning health services to the expectations of patients shows how a health system is responsive to the public (27). Despite its enormous benefits, patient-reported experiences on health care are influenced by both system attributes and patients’ sociodemographic characteristics (18,22). Therefore, investigating the factors that influence patient experiences of PHC can become a means of creating more opportunities for quality improvement and reorganization of health-care services.

There is no reported large-scale study on patient experience of PHC as well as predictors of evaluative findings across states and geopolitical zones in Nigeria. We aimed to bridge this gap by providing data on predictors from a large-scale study conducted using a valid, reliable, and acceptable measure in multiple centers across all geopolitical subdivisions in Nigeria.

Methods

Study Setting

Nigeria is constitutionally subdivided into 36 states, 774 local government areas, and 9572 wards. Although not constitutional, the 6 geopolitical zones (3 each in the north and south of Nigeria) have become major divisions in modern Nigeria. The geopolitical zones reflect greater homogeneity in culture, religion, and ethnolinguistic groups (Figure 1). The Nigerian population is estimated at 187 million in

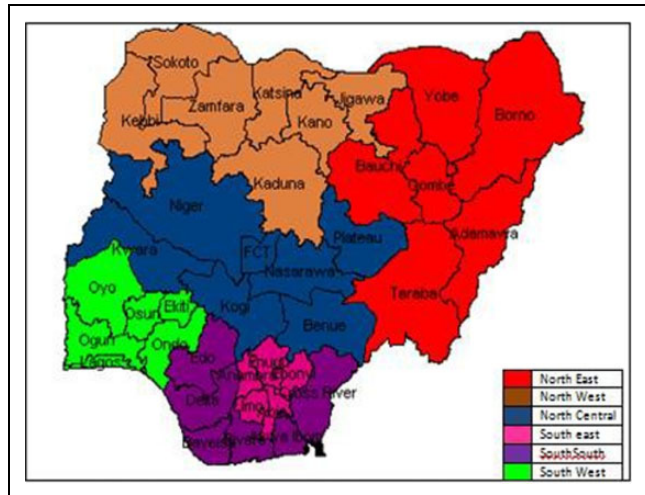


Figure 1. Map of Nigeria showing its 36 states, the federal capital territory, and the geographical zones.

2016 and has an equal male to female ratio, an annual growth rate of 3.2%, and life expectancy at birth of 52 years (28,29). The majority of the population are less than 15 years old, whereas 3% are above 60 years old. Also, a significant proportion of men (21%) and women (38%) aged 15 to 49 years have no formal education. Data on religion are absent in the official census because of its sensitivity (29).

The population access formal health care through primary, secondary, and tertiary facilities with about 90% of current facilities being PHC facilities. The PHC facilities are statutorily administered under the local councils but with increasing support from the states and federal governments. The staff at the health centers are community health practitioners (community health extension workers and community health officers), nurses, and sometimes doctors (30). Health care is predominantly (62%) financed by out-of-pocket payment (30,31) as only 3% of the population (32), including less than 2% of women aged 15 to 49 years, are enrolled under the current social insurance scheme (29).

Study Population and Sampling

Field data for this study were collected by trained research assistants between March and July 2015. The participants were from 24 primary health centers across 12 local government areas in 6 states (Adamawa—northeast, Benue—north central, Kaduna—northwest, Lagos—southwest, Bayelsa—South—South, and Anambra—Southeast; Figure 1). Sites were selected equally across the north and south of the country and in rural and urban settings.

A 4-stage sampling method was used to select eligible patients from each geopolitical zone in the country. The sampling approach began with a stratified disproportionate random selection of a state from each of the geopolitical zones in Nigeria. A similar approach was used to identify

4 PHC centers in rural and urban communities in each state. The criteria for this was remoteness from the headquarter city, population size, socioeconomic activities, spatial organization, and provision of essential infrastructure (33). Two facilities from each stratum were selected using the list of all health facilities in Nigeria. Stakeholders in the ministries of health and/or PHC boards in each state also participated in this selection process (28,29). The PHC centers do not often have an up-to-date record of the details of registered clients, which could have assisted participants' recruitment using a probability sampling technique. A convenient sampling technique was therefore used to select participants from the population of regular visitors to the 24 selected PHC centers.

Sample size of 1680 patients (70 patients per health center) was calculated using the Cochran formula for surveys with continuous data (34). The study design allowed a 3% margin of error of 3% using a multi-item 5-point scale (1-5) with α error of 5% and acceptable β error of 20%. This sample size is enough to compensate for expected non-responses and conduct multilevel analyses. Equal samples were allocated to north/south regions, rural/urban facilities, and the various states and facilities.

Study Design

Cross-sectional study

Survey instrument and data collection. A multiphase mixed-method design was used to develop and validate items, response scale, and domains in the short form of the primary health-care patients' evaluation scale (PES-SF). The items were generated from the literature review and content analysis of interviews with patients ($n = 47$). Content validation of the draft questionnaire was assessed quantitatively by 6 experts (using the content validity index) and a think-aloud session with patients ($n = 20$). Two waves of quantitative cross-sectional pilot studies were then conducted to determine PES acceptability across groups ($n = 200$) and appropriate response format ($n = 322$). Further development of the 18-item shortened form (PES-SF) followed the conduct of a larger multicenter psychometric validation survey ($n = 1680$). The process was used to determine the internal structure (exploratory factor analysis), reliability (internal consistency), construct, criterion validities (Pearson correlation coefficient, structural equation modeling using regression equation method), and the acceptability (scale and item response pattern) of the scale. Items that did not meet recommended criteria, such as eigenvalue < 1 , factor loading < 0.5 , item-total, item-domain correlation < 0.4 , and item-item correlation within domains of < 0.2 , were deleted from the original PES.

The 18-item PES-SF is valid, reliable with good acceptability across population groups in Nigeria. The Cronbach α is 0.87 for PES-SF scale and 0.78, 0.79, and 0.81 for the 3 domains (facility, organization, and health care), respectively. The higher and significant correlation between items and their hypothesized domain than other domains gave

support for the construct validity. Also, the PES-SF scores showed a positive correlation with patients' general satisfaction, willingness to return, or recommend the PHC center to close friends and family members. The 18-item, multidimensional PES-SF with multipoint response format (1 = poor, 2 = fair, 3 = good, 4 = very good, and 5 = excellent) was designed for exit survey of patients' experiences with PHC in Nigeria (Supplemental Appendix 1).

Study Procedure

Participants were regular patients with at least a previous use of index facilities in the last 6 months. Recruitment adverts were placed in the various facilities a month to the survey dates, and participants were approached as they came to the facility and given detailed information on the research and their involvement. The questionnaire was given to patients to respond at the conclusion of other activities at the center. Research assistants were always present at the facilities to offer assistance and retrieve filled questionnaires from respondents. Assistance including the need for interpretation were rendered by research assistants who received training before the commencement of an earlier empirical study. During this training, narrative accuracy checks using health staff with dual linguistic skills were the means adopted to validate translated data by team members involved in assisting less literary-skilled patients in the administration of the questionnaire.

Ethics and Permissions

The first author was undertaking a postgraduate study in the United Kingdom, and so ethical clearance was given by the University of Manchester (ref 14280). Since this study involved collecting data from multiple centers in Nigeria, further ethical approval was obtained from the University of Port Harcourt (ref: UPH/DVC (R&D)/REC.04), the States' Ministry of Health in Bayelsa and Benue states; PHC boards in Lagos and Adamawa states, and the respective LGA authorities in Anambra and Kaduna States. The officers in charge of the various health centers gave their support, while each participant gave verbal consents after receiving detailed information on the research and assurance of confidentiality. Those who returned the questionnaires were given 250 naira (\approx £1) in appreciation for their time.

Data Analysis

The aims of the analyses were to examine the levels and drivers of patients' experiences of PHC in Nigeria. Categorical responses on items in the scale and the mean ratings on the various domains (sum of items' scores) by the respondents were included in the analyses.

Ordinal ratings were transformed into percentage scores using recommended formula (35). The transformed scores

were treated as continuous measures to allow for the use of more robust parametric tests (36,37).

$$\text{Percentage score} = \frac{(\text{Patients' rating} - \text{minimum scale rating})}{(\text{Maximum scale rating} - \text{minimum scale rating})} \times 100$$

Analysis was done to determine the following:

Characteristics of the sample and descriptive data on findings.

Patient-level variables including their clinical and socio-demographic characteristics were explanatory variables in this study. The mean percentage evaluative scores for each of these population subgroups were presented in a table. These clinical data were patient perceived health status, staff consulted at the centre—doctors, nurses, or community health practitioners (CHPs; community health extension workers or community health officers), duration of contact with PHC centers. The sociodemographic characteristics were age, gender, marital status, the level of schooling, and their employment status. We differentiated patients who paid for care at the point of access from those who did not.

The evaluative findings along items, domains, and overall PES-SF scale formed the dependent variable. Also, the frequencies of the categorical responses for each item on the PES-SF questionnaire, and the mean percentage scores for the 3 domains (facility, organization, and health care) and overall PES-SF scale by population subgroups were reported.

Predictors of Patient Experience

The data set was then checked for outliers, normally distributed errors, linearity, multicollinearity, and heteroscedasticity. Multilevel regression analyses were used to explore individual and practice-related predictors of patient experiences as patients in this study were nested in health centre and subsequently LGAs and states. Attempting to explore patient-level predictors in the absence of group context known to influence survey findings would limit the value of the process. The linear regression analysis was found suitable to identify predictors as the outcomes were considered continuous. As commonly done with categorical independent variable, dummy variables were generated to represent variables with 2 or more distinct subgroups as regression analysis treats all variables in the analysis as numerical. For each categorical independent variable, one subgroup served as the baseline or referent group.

The univariate analyses were used to determine how each practice and patients' sociodemographic factors on their own predict patient experiences along the 3 domains and overall PES-SF scale. The hierarchical multivariate analysis adjusted for interrelationships among these predictor variables. The first of the 4 regression models generated contained only patient-level variables, while subsequent models

included captured the effects of health centre, LGA, and states, respectively. In both the univariate and multivariate analyses, we reported the regression coefficients (B) along with its 95% confidence interval and associated *P* value. The effects of the practice-level characteristics are interpreted from the change in *R*² in the various models. All statistical procedures were done with SPSS version 20 (38), and statistical significance was interpreted where *P* value <.05.

Results

Sample Characteristics

Complete data were available for 1649 of the 1680 respondents who participated in the survey from the 24 health centers. Female (72.7%, *n* = 1172), those who attained beyond primary school education (69.3%), Christian (71.9%), and those who paid for care at the point of access (75.9%) formed the preponderance of respondents (Table 1). A comparison of the characteristics among the 6 states is also shown in the Table 1

Response Pattern

Mean scores along domains and overall PES-SF scale. Table 2 shows the average scores along the various domains and overall PES scale about the patients' clinical and sociodemographic variables. Higher scores were observed from the South (59.5), rural areas (56.0), and among patients who consulted doctors (60.7).

Categorical responses on various aspects of PHC. From Table 3, a higher percentage of respondents indicated their experiences being at least good on aspects of PHC such as staff performance (83%), relationship with staff (84%), and the convenience of opening times (83%). Comparatively, fewer respondents gave such categorical feedback for adequacy of space in the waiting area (59%) and the suitable temperature inside the center (60%). Notably, 86% and 89% of respondents evaluated their chance of returning to the facility or recommending close friends and family members to these facilities as at least good.

Predictors of Patients' Experiences

Univariate analyses. Results from the univariate regressions analyses presented in Table 4, show predictors of more positive patient experiences, were consulting doctors or CHP, more educated patients, higher self-rated health status, female patients, and those who did not have to make payments before receiving care. Most of these predictors were consistent across the various domains in PES (facility, organization, and health care) with few exceptions being the requirement to pay at the point of access that was not predictive of facility score and gender that was not predictive of scores for health care.

Table 1. Characteristics of Patients in the Study.

States	n	Response (%)	Female (%)	Young (%) ^a	Working (%) ^b	Paid (%) ^c	Good health (%) ^d	Contact >1 year (%) ^e	Consult doctor (%) ^f
Adamawa	274	97.9	67.7	85.2	36.8	89.8	76.5	67.3	23.5
Kaduna	276	98.6	63.0	84.7	43.3	97.5	67.1	49.1	3.3
Benue	277	98.9	73.3	83.3	36.4	83.3	63.3	60.9	4.7
Lagos	273	97.5	68.0	75.9	76.3	16.8	91.5	47.9	36.5
Anambra	269	96.1	69.0	82.1	53.5	87.3	94.1	32.3	1.9
Bayelsa	280	100.0	95.4	98.6	45.7	82.1	75.4	24.6	50.0
Total	1649	98.2	72.2	85.1	48.5	76.3	77.9	47.0	20.1

^aLess than 40 years of age.

^bPaid employment, either working for self, private, or government.

^cPaid for health care at the point of access.

^dPerceived health status rated at least good.

^fHad consultation with a doctor in index visit.

Multilevel multivariate analyses. Three of the four models were significant in predicting effect of clinical and sociodemographic characteristics on total patients' experiences (model 1—adjusted $R^2 = 12.1\%$; model 2—change in $R^2 = 4.9\%$ [$F(1, 1397) = 82.75, P < .0001$]); model 3—change in $R^2 = 0.0\%$ [$F(1, 1396) = 0.57, P = .451$]; model 4—change in $R^2 = 1.3\%$ [$F(1, 1395) = 22.38, P < .0001$]).

From Table 5, consistent predictors of positive patient experiences were higher self-rated health status and not being required to pay for health care at the point of access to care. Less consistent predictors of aspects or overall experience with care were being able to consult a doctor or CHP at the health centre when compared with those who had consultation with nurses, being female and longer length of contact with particular health center. Specifically, those who rated their health status as good–excellent gave a mean evaluation score of 6.4% (95% confidence interval [CI]: 4.6–8.2) above those who rated theirs as poor–fair. This difference was highly statistically significant ($P < .001$). Similarly, patients not required to pay at point of access gave a mean evaluation score of 8.8% (95%CI: 6.6–11.0, $P < .001$) above those who had to pay. Although there are significant differences in the outcome among the various LGAs ($P < .001$), the addition of LGA to the model shows that LGA does not predict patient experiences ($R^2 = 0.0\%$, $F(1, 1396) = 0.57, P = .451$). Having all patient-level independent variables in the regression model could predict 12.1% of the variance of the outcome.

Discussion

Principal Findings

This multicentre survey of patient experiences of PHC in Nigeria revealed findings on patient experiences with various aspects of PHC services as well as clinical and socio-demographic predictors of their experiences. A higher proportion of respondents showed positive experiences on aspects of PHC related to the convenience of opening times, their relationship with health staff, orderliness in the center,

and the availability of staff at the centre. Less proportion did so for aspects related to the adequacy of space in the waiting area and the suitability of the temperature inside the center. Overall, the majority are willing to return to the respective health centers and also recommend the health centers to their close friends and family should they have similar needs.

Consistent predictors of patient experiences across all domains and overall PES scale from the univariate analyses were self-rated health status, the location of center, staff consulted at the health centre, level of schooling, and religion. Less-consistent predictors were payment and gender of the respondents. After controlling for interrelationship and possible dependency among variables in the regression models, only higher self-rated health status and nonrequest for payment at the point of access to care were consistent predictors of positive patient experiences along various domains and overall encounter. Patients who had consultation with doctor, CHPs, longer length of contact with health centre, and are Christian showed significantly more positive experience with some domains (facility, organization, health care) or overall encounter with PHC in Nigeria.

Comparison With Other Studies

Our finding is similar to that from a cross-sectional study at the primary care clinic in Umuahia, southeast Nigeria, which assessed patients' satisfaction on a 5-point Likert-type scale. This study showed that patients were more satisfied with their relationship (3.9) and communication with staff (3.8) than they were with the cost of care (2.6) and clinic bureaucracy (2.5) (10). It is often difficult to compare studies on patient-reported experiences due to differences in measured scales and the context such measurements were conducted. In essence, previous studies on patient experiences of PHC in Nigeria had measured different scales, which can't be easily compared (8–13). Comparable findings are the proportion of patients' willingness to return to same Centre—76.3% (11), 85.8% (39), and also recommend others to the center—81% (11), 92.9% (39). These high proportions are comparable to findings of 86% and 89%, respectively, in this

Table 2. Mean Score for Population Groups (N = 1649).

Variable	Frequency (%)	Mean evaluation score			
		Facility	Organization	Healthcare	Overall
Age stratum					
Less than 20	183 (11.2)	51.6	59.8	57.8	56.4
20-29	666 (40.6)	52.2	61.8	57.2	57.1
30-39	546 (33.3)	48.7	60.4	56.6	55.2
40-60	202 (12.3)	45.8	60.7	56.7	54.4
Greater than 60	43 (2.6)	45.7	59.0	57.4	54.0
Gender					
Male	441 (27.3)	46.4	59.0	57.2	54.2
Female	1172 (72.7)	51.3	61.5	57.0	56.6
Marital status					
Currently single	466 (28.3)	50.5	59.4	57.2	55.7
Currently married	1183 (71.7)	49.8	61.4	57.0	56.1
Level of schooling					
≤Primary level	507 (30.7)	47.8	57.2	53.6	52.9
>Primary level	1142 (69.3)	51.0	62.5	58.5	57.3
Working status					
No paid employment	845 (51.2)	51.5	60.4	56.3	56.1
Paid employment	804 (48.8)	48.5	61.4	57.8	55.9
Religion					
Christian	1179 (71.9)	51.0	61.4	58.2	56.9
Moslem	446 (27.2)	47.7	59.5	53.7	53.7
Traditional	9 (0.5)	51.7	63.1	68.3	61.0
Nonreligious	5 (0.3)	37.4	66.5	61.3	55.1
Perceived health status					
Poor	58 (3.5)	41.9	53.2	46.7	47.3
Fair	305 (18.6)	46.6	54.1	48.1	49.6
Good	672 (41.0)	47.5	57.6	55.5	53.5
Very good	435 (26.5)	55.3	67.0	62.0	61.4
Excellent	169 (10.3)	55.9	72.9	70.0	66.3
Payment					
Free at point of access	397 (24.1)	50.3	66.7	63.9	60.3
Paid at point of access	1252 (75.9)	49.9	59.0	54.8	54.6
Region of country					
North	827 (50.2)	49.5	55.9	52.9	52.8
South	822 (49.8)	50.5	65.8	61.2	59.2
Facility location–State					
Lagos (south–west)	273 (16.6)	42.0	65.5	63.5	57.0
Bayelsa (south–south)	280 (17.0)	61.0	68.3	57.9	62.4
Anambra (south–east)	269 (16.3)	48.3	63.6	62.3	58.1
Adamawa (north–east)	274 (16.6)	58.9	66.0	53.8	59.5
Kaduna (north–west)	276 (16.7)	43.5	49.2	53.8	48.8
Benue (north–central)	277 (16.8)	46.3	52.6	51.0	50.0
Facility location–Nature					
Rural	831 (50.4)	49.9	61.5	56.1	55.9
Urban	818 (49.6)	50.2	60.1	57.9	56.1
Professional consulted					
Doctor	328 (19.9)	55.3	66.6	59.2	60.4
Nurse	933 (56.6)	48.7	58.3	55.2	54.1
CHP	367 (22.3)	49.9	63.2	59.9	57.7
Contact with center					
Less than 1 year	868 (52.6)	50.6	60.9	57.7	56.4
One year or more	769 (46.6)	49.4	60.8	56.2	55.5

Abbreviation: CHP, community health practitioner.

study. The significance of the large proportion of patients who are willing to return to the centers is that most patients are pleased with their primary care providers. Furthermore,

our findings of 84% represent an improvement over the 67% (with a range of geopolitical zones of 57.9%-81.6%) of satisfied patients reported from a national survey about a

Table 3. Patients' Evaluation on Various Aspects of PHC.

Aspects of PHC Captured by PES (Number of Proportion of Patients Rating Aspect as Respondents)	Poor	Fair	Good	Very Good	Excellent
Adequacy of waiting area space (n = 1630)	9	31	35	18	7
Seating provisions (n = 1613)	8	24	36	24	8
Suitable internal temperature (n = 1629)	14	26	35	20	5
Attractiveness of the center (n = 1621)	10	22	35	24	9
Neatness of the center (n = 1624)	5	17	29	30	19
Ease of paying for your care (n = 1622)	9	20	30	27	14
Convenience of opening times (n = 1636)	2	15	30	34	19
Receptiveness by staff (n = 1627)	2	17	33	31	17
Performance of staff (n = 1622)	1	16	32	33	18
Relationship with staff (n = 1617)	1	15	34	32	18
View on waiting time (n = 1633)	4	22	36	27	11
Safety of care (n = 1614)	1	18	38	30	13
Views on consultation time (n = 1628)	2	19	37	32	10
Health information (n = 1625)	3	21	33	30	13
Clarity of information (n = 1625)	4	22	32	29	13
General satisfaction (n = 1626)	1	15	36	33	15
Chance of returning (n = 1636)	1	13	37	37	12
Chance of recommending to others (n = 1642)	1	10	34	39	16

Abbreviations: PES, patient evaluation scale; PHC, primary health care.

decade ago (40). While satisfied and well-informed patients avoid unnecessary visits and are more likely to recommend health services to others (21,41), it is not certain if the observed upward trend is the fall-out of sustained investment in PHC systems or improvement in socioeconomic indices over the years (31).

Besides possible influence of unmeasured confounders such as the different types of PHC facilities, there are significant disparities in findings across geographical areas. This mirrors the dismal disparities in economic and social development across regions and geopolitical zones in Nigeria (40). The likely existence of differences in perceived quality of PHC across the country could undermine the core objective the national health system.

In keeping with our finding, higher self-rated health status is also associated with higher evaluative score among adults attending health centers in Oman and Rivers State, Nigeria (13,42). The contrast reported among elderly veteran (43), suggest that findings from patients' feedback could transcend patients' actual experience of the service to reflect the influence of background characteristics of the patients.

The observed relationship between religion and health care is in contrast to previous finding among antenatal clients attending primary health center in western Nigeria.(44) It remains unclear whether mere religious affiliations or potential confounders like the broader beliefs, expectancies of patients, or the degree of patients' religiosity are the actual drivers of the differences in experiences among religious groups (22,45).

Patients who had consultations with doctors and CHP had significantly more positive experiences than those who were seen by nurses. The availability of physicians in health centers is needful (13) but remains a rarity in Nigeria. Thus,

CHPs who perform functions similar to physician assistants and nurse practitioners in other settings are the commonest category of staff found in health centers (6,46). The significantly positive experiences of patients who had consultations with this group suggest that current cost-effective strategy of deploying CHPs to underserved areas in the country may not adversely affect the experiences of patient who use the PHC center.

A consistent predictors of positive patient experiences of PHC is excluding payment at the point of accessing such care. Patients in this category were either enrolled in a pre-payment scheme or are entitled to free health care through public funding. Resource shortages in public health systems in many developing countries have resulted in the introduction of cost-recovery measures. Patients are thus required to pay for receipt of health care at the point of access, except they are enrolled in a prepayment plan (47). Our observation corroborates a previous report (13), which revealed the adverse effect of this practice on patient experiences. There is a chance that observed inverse relationship between payment and patient experiences could be the result of higher expectations from those who had to pay for health care at the point of access. Whatever explanation is proffered, payment at the point of access to health care has been linked with negative economic consequence, including catastrophic health expenditures for poorer households (47).

As a contrast to findings from previous cross-sectional surveys (48,49), patients' level of schooling had no significant effect on their experiences. In Nigeria, 38% of women and 21% of men still lacking literary skills (29). This large pool of nonliterary skilled individuals in the population provides added impetus to further investigate potential association between level of education and patient experiences

Table 4. Exploring Association Between Potential Predictors and Domains/Total Evaluation Score of PES Using Univariate Regression Analyses.

Independent Variable–Referent Group	PES Overall Score, B Coefficient ^a	Facility Score, B coefficient ^a	Organization Score, B Coefficient ^a	Health Care Score, B Coefficient ^a
Region				
North	–	–	–	–
South	7.13 ^b	1.33	10.43 ^b	8.70 ^b
State				
Kaduna	–	–	–	–
Lagos (south–west)	9.21 ^b	–1.93	16.75 ^b	10.30 ^b
Bayelsa (south–south)	13.67 ^b	17.52 ^b	19.26 ^b	4.29 ^c
Anambra (south–east)	8.76 ^b	3.81 ^d	14.35 ^b	8.76 ^b
Adamawa (north–east)	11.01 ^b	15.49	16.85 ^b	0.05
Benue (north–central)	1.28	2.23	2.96 ^d	–3.02 ^d
Location				
Rural	–	–	–	–
Urban	–0.03	0.38	–1.84	1.89 ^d
Staff consulted				
Nurse	–	–	–	–
Doctor	6.85 ^b	7.13 ^b	9.22 ^b	4.29 ^b
CHP	4.05 ^b	1.27	5.40 ^b	5.04 ^b
Contact with center				
<1 year	–	–	–	–
≥1 year	–1.26	–1.01	–0.50	–1.60
Age				
<20 years	–	–	–	–
20-29	1.46	1.05	2.65	0.66
30-39	–0.95	–3.07	1.34	–1.44
40-60	–1.25	–5.70 ^c	1.34	–0.99
More than 60	–0.52	–4.94	0.57	0.03
Gender				
Male	–	–	–	–
Female	2.36 ^c	5.16 ^b	2.90 ^c	–0.49
Marital status				
Currently married	–	–	–	–
Currently single	0.07	1.08	–2.16	0.27
Education				
≤Primary	–	–	–	–
>Primary level	4.78 ^b	3.16 ^c	5.41 ^b	5.05 ^b
Employment				
Paid employment	–	–	–	–
Not in paid employment	–0.23	3.10 ^c	–1.25	–1.60
Religion				
Moslem	–	–	–	–
Christian	3.70 ^b	3.41 ^c	2.13 ^d	4.72 ^b
Traditional practice	9.56	5.15	6.32	14.91 ^d
Nonreligious	6.50	–9.85	6.95	11.58
Perceived health				
Poor/fair	–	–	–	–
Good–excellent	9.16 ^b	5.64 ^b	8.93 ^b	12.08 ^b
Payment				
Paid at access point	–	–	–	–
Free at access point	6.47 ^b	0.55	7.89 ^b	9.54 ^b

Abbreviations: CHP, community health practitioner; PES, patient evaluation scale.

^aThe regression coefficient (B) shows the relationship between subgroups within the independent variable and its baseline or referent group (–).

^b $p < .001$.

^c $p < .01$.

^d $p < .05$.

Table 5. Predictions of Patient Experiences Across Domains and Overall PES-SF Scale From Multilevel Linear Regression Analysis.

Independent Variable–Referent Group	PES Total Score B coefficient ^a	Facility Score B coefficient ^a	Organization score B coefficient ^a	Health Care Score B coefficient ^a
Patient-level independent variable				
Constant	39.82 ^b	22.55 ^b	49.38 ^b	46.74 ^b
Staff consulted				
Nurse	–	–	–	–
Doctor	2.71 ^c	5.23 ^b	3.08 ^c	0.78
CHP	3.32 ^d	0.87	4.30 ^b	4.01 ^b
Contact with center				
<1 year	–	–	–	–
≥1 year	0.98	1.88	2.29 ^c	–0.04
Age				
<20 years	–	–	–	–
20-29	0.37	0.49	0.14	–0.52
30-39	–1.10	–1.38	–0.32	–1.48
40-60	0.09	–0.96	1.10	–0.95
More than 60	0.80	–0.36	1.78	0.29
Gender				
Male	–	–	–	–
Female	1.49	3.31 ^d	1.33	–0.21
Marital status				
Currently single	–	–	–	–
Currently married	0.49	–0.75	2.05	0.75
Education				
≤Primary	–	–	–	–
>Primary level	0.94	1.53	1.04	1.25
Employment				
Unpaid employment	–	–	–	–
Paid employment	–0.56	–0.68	–0.66	–1.62
Religion				
Moslem	–	–	–	–
Christian	0.18	–1.16	–1.82	3.16 ^d
Traditional practice	4.60	1.16	–0.53	12.63 ^c
Nonreligious	2.53	–9.45	1.18	4.55
Perceived health				
Poor/fair	–	–	–	–
Good–excellent	6.40 ^b	4.54 ^b	5.29 ^b	9.34 ^b
Payment				
Paid at access point	–	–	–	–
Free at access point	8.81 ^b	8.77 ^b	8.28 ^b	8.48 ^b
Multilevel independent variable				
Health center (model 2)	0.62 ^b	1.12 ^b	0.68 ^b	0.11
Local government area (model 3)	1.22 ^b	1.90 ^b	1.02 ^d	1.08 ^d
State (model 4)	–2.89 ^b	–2.21 ^d	–3.95 ^b	–2.97 ^b

Abbreviations: CHP, community health practitioner; PES, patient evaluation scale.

^aThe regression coefficient (B) shows the relationship between subgroups within the independent variable and its baseline or referent group (–).

^b $P < .001$.

^c $P < .05$.

^d $P < .01$.

For facility domain, the adjusted $R^2 = 4.9\%$; $\Delta R^2 = 7.5\%$ ($F [1, 1526] = 132.96$; $P < .0001$) for model 2; $\Delta R^2 = 1.2\%$ ($F [1, 1525] = 22.09$; $P < .0001$) for model 3; $\Delta R^2 = 0.4\%$ ($F [1, 1524] = 7.50$; $P < .0001$) for model 4.

For organization domain, the adjusted $R^2 = 9.8\%$; $\Delta R^2 = 4.9\%$ ($F [1, 1538] = 89.45$; $P < .0001$) for model 2; $\Delta R^2 = 1.1\%$ ($F [1, 1537] = 21.01$; $P < .0001$) for model 3; $\Delta R^2 = 1.5\%$ ($F [1, 1536] = 28.59$; $P < .0001$) for model 4.

For health care domain, the adjusted $R^2 = 13.1\%$; $\Delta R^2 = 0.1\%$ ($F [1, 1535] = 2.06$; $P < .0001$) for model 2; $\Delta R^2 = 0.2\%$ ($F [1, 1534] = 2.58$; $P < .0001$) for model 3; $\Delta R^2 = 0.9\%$ ($F [1, 1533] = 16.90$; $P < .0001$) for model 4.

For overall scale, the adjusted $R^2 = 12.1\%$; $\Delta R^2 = 4.9\%$ ($F [1, 1397] = 82.75$; $P < .0001$) for model 2; $\Delta R^2 = 0.0\%$ ($F [1, 1396] = 0.57$; $P = .451$) for model 3; $\Delta R^2 = 1.3\%$ ($F [1, 1395] = 22.38$; $P < .0001$) for model 4.

using more rigorous techniques. If this is confirmed, there would need to strengthen the adult mass literacy program in the country.

From a general review of patient satisfaction with medical care, age was identified to be the most consistent significant demographic predictor of patient experiences, with older patients often being more satisfied with health care than younger patients (50). Although age was not a predictor in this study, a previous local study conducted in the south-south of Nigeria also showed older patients being significantly more likely to have more positive experience than younger patients (13).

Strengths and Limitations of the Study

This study derived strength from the large sample size, a multicentre collection of data and the high response rate. This study has several potential limitations. Firstly, assessing the quality of PHC from the experiences of patients is only one of many other approaches to assessing quality in PHC. Secondly, the use of cross-sectional research design limits strong suggestions on causal inferences as this would require analytic or experimental designs. There are additional derivable benefits if opportunities are created for patients also provide narrative reports during a survey. This will improve the depth and breadth of the study as well as the future utilization for quality improvement (4,22).

Similarly, patient experiences are better assessed through community-based rather than facility-based surveys. Indeed, findings from such community-based studies are poorer than those from facility-based studies (1,17).

Another threat to validity in this study is the use of non-probability sampling techniques in the final recruitment of participants. Although no report on the sociodemographic characteristics of PHC users in Nigeria was identified to compare with our sample characteristics, it is clear that participants in this study do not reflect the demographic profile of the general population in Nigeria.

Like previous reports from other settings in sub-Saharan Africa (13,44,48), patient-level predictors can explain less than a fifth of the variance of patient perceived quality of PHC. The imperative is to look beyond patients' characteristics and explore system attributes in future studies on predictors of perceived quality of PHC.

Implications of the Findings

The potential for continuous quality improvement and organizational change in PHC based on our finding appears enormous since evaluative scores are yet to attain very high levels that could limit the utility of patient-reported experience surveys (51).

The study shows that conducting large-scale multicentre patient-reported experiences surveys on PHC is feasible in Nigeria. There is a need for periodic survey and peer review of subnational PHC systems as precursors to improvement in

the responsiveness of the system to the legitimate requirements of the patient. An immediate, compelling need is expanding activities under existing platforms like the New Partnership for African Development (NEPAD), which undertakes the African peer-review mechanism, to include a multicountry comparison of the structure, process, and outcome of PHC system from the perspective of the patients. Similar broadening of scope can also apply to the Nigerian Governors' Forum, which undertakes states peer review similar to NEPAD among the 36 States in Nigeria.

Despite established benefits of surveys on patient-reported experiences of PHC, interventions to mitigate the effect of some negative predictors of patient experiences may be outside the remit of health services or the LGAs. These will require stronger intersectoral collaborative actions and enhanced partnerships with other tiers of governments and development partners working in Nigeria.

Conclusion

Patient-reported experiences surveys provide important findings that can be useful for patient-focused quality improvement in PHC. Findings show the level and predictors of patient experiences of PHC in Nigeria. We recommend the establishment of local thresholds to aid interpretations of findings on such surveys: conduct of periodic nationwide surveys on patients' experiences of PHC and longitudinal studies to establish causal relationships between these predictors and patient experiences.

Authors' Note

All authors were involved in conceptualising and planning the study. Data collection team was headed by DO. DO also drafted the manuscript which was critically reviewed by others. All authors contributed to the interpretation of the results and also read and approved the final manuscript.

Declaration of Conflicting Interests

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Supplemental Material

The online [appendices/data supplements/etc] are available at <http://jpx.sagepub.com/supplemental>

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