Research Square

Preprints are preliminary reports that have not undergone peer review.
They should not be considered conclusive, used to inform clinical practice,
or referenced by the media as validated information.

Client Perspectives and Experiences with Service Availability and Readiness for Hypertension and Diabetes Care in Urban and Rural Public Health Facilities in Akwa Ibom State, Nigeria A Comparative Cross-Sectional Study

Peter Chukwudi Nwakile[1]

nwakilepeter@gmail.com

Bayelsa Medical University, Yenagoa

Ulunma Ikwuoma Mariere[2]

Federal Medical Centre, Yenagoa, Bayelsa State

Augustine Nonso Odili

University of Abuja,

Research Article

Keywords: Client experience, diabetes, health facility readiness, hypertension, patient satisfaction, primary health care

Posted Date: November 26th, 2026

DOI: https://doi.org/10.21203/rs.3.rs-11513874/v1

License: This work is licensed under a Creative Commons Attribution 4.0 International License.
Read Full License

Additional Declarations: No competing interests reported.

Abstract

Background

The World Health Organization's global action plan for noncommunicable diseases (NCDs) emphasises that readiness of health facilities to manage hypertension and diabetes (H and D) must ultimately translate into a positive experience for the clients who use these services. Facility-level audits alone do not capture whether clients perceive care as accessible, timely, and effective.

Objective

This study assessed and compared the perspectives and experiences of clients receiving hypertension and diabetes care in selected urban and rural public health facilities in Akwa Ibom State, Nigeria, as a client-centred complement to a parallel facility-readiness assessment.

Materials and Methods

A comparative cross-sectional design using a mixed-methods approach was employed. A semi-structured, interviewer-administered questionnaire was used to interview 220 consenting adult clients (110 urban, 110 rural) with hypertension and/or diabetes. Four focus group discussions (two urban, two rural) explored client expectations. Quantitative data were analysed in SPSS version 20 using chi-square tests and multivariable logistic regression; qualitative data were analysed thematically.

Results

The mean age of clients was comparable between urban (41.7 ± 13.2 years) and rural (40.4 ± 14.5 years) areas (p = 0.502). Urban clients were significantly less likely to wait more than 30 minutes during their last two visits (odds ratio [OR] = 0.10; 95% confidence interval [CI] = 0.01–69; p = 0.022) and were more likely to receive all prescribed medications (OR = 2.95; 95% CI = 0.77–11.2; p = 0.111). Significantly more urban clients reported improvement in their condition with prescribed medication than rural clients. The reverse pattern was reported for some equipment- and provider-related items, with rural clients more often reporting that functional blood pressure equipment, available care providers, and a clean clinic environment were present. Qualitatively, urban clients more often reported satisfaction with drug availability and diagnostic testing, while rural clients' suggestions centred on improving drug supply, equipment, and staffing.

Conclusion

Client experiences broadly corroborated the facility-level finding of greater readiness in urban than rural primary health facilities, particularly regarding waiting time and medicine availability. The rural clients rated providers, cleanliness, and willingness to recommend the facility more favourably. Integrating client perspectives with facility audits provides a more complete and actionable picture of service readiness for hypertension and diabetes care.

Introduction

Noncommunicable diseases (NCDs) remain a leading cause of death worldwide, accounting for an estimated 41 million deaths annually, equivalent to roughly 74% of all global deaths (World Health Organization [WHO], 2025). Hypertension and diabetes are among the most prevalent NCDs and the leading risk factors for cardiovascular disease as well as the principal contributor to NCD mortality, particularly in low- and middle-income countries (LMICs) such as Nigeria (Alwan & Maclean, 2009). The WHO's Global Action Plan for the Prevention and Control of NCDs set a target of at least 80% availability of affordable essential medicines and basic technologies for NCD care in public and private health facilities (WHO, 2013).

A companion facility-level assessment conducted as part of this broader study used the WHO's Service Availability and Readiness Assessment (SARA) tool to evaluate 214 primary health facilities in Akwa Ibom State, Nigeria, and found that overall readiness for hypertension and diabetes care was low, with urban facilities (23%) modestly outperforming rural facilities (11%); essential medicine availability was particularly poor (4.8% urban versus 0.9% rural), while basic equipment availability was comparatively higher (81.7% urban versus 76.4% rural) (Nwakile et al., 2024). Facility-level readiness indicators, however, describe what a facility possesses rather than what a client experiences when they present for care. Client experience is conceptually different from satisfaction. Experience asks whether something that should happen in a clinical encounter, such as clear counselling on medication use, receiving service on time or availability of a prescribed drug happened. However, satisfaction reflects whether the client's prior expectations were met (Agency for Healthcare Research and Quality [AHRQ], 2024). Because expectations vary with prior exposure to care, socioeconomic status, and geographic context, client experience is generally regarded as the more objective of the two constructs and a useful corroborating measure of facility readiness (AHRQ, 2024).

Studies from other LMIC settings illustrate the value of the client perspective. In Tanzania, facility readiness for hypertension and diabetes outpatient care was found to be limited, particularly with respect to diagnostics and essential medicines, a pattern broadly consistent with client-reported barriers to care (Peck et al., 2014; Bintabara & Mpondo, 2018). A qualitative study across rural Bangladesh, Pakistan, and Sri Lanka similarly found that patients managing hypertension commonly reported inadequate services, drug stock-outs, long travel distances, and prolonged waiting times as principal barriers to care (Legido-Quigley et al., 2019). In Malawi, patients attending rural public health facilities reported that interpersonal aspects of care, communication, and respect, were rated more favourably than structural aspects such as waiting time and facility amenities (Dullie et al., 2018). Nigerian studies

of outpatient service quality have found that clients frequently rate provider competence positively while rating punctuality and waiting time less favourably (Ogunnowo et al., 2015; Ne et al., 2010).

Despite this body of evidence, client-level data on hypertension and diabetes care specifically, as opposed to general outpatient or maternal and child health services, remain scarce in Nigeria. Furthermore, urban and rural comparisons of client experience for these conditions are particularly limited. Understanding how clients in different geographic contexts experience care for hypertension and diabetes can validate or challenge facility-based readiness findings, and can identify experiential gaps, such as communication, waiting time, or counselling, that facility checklists do not capture. This study therefore assessed and compared the perspectives and experiences of clients receiving hypertension and diabetes care in selected urban and rural public health facilities in Akwa Ibom State, Nigeria, as the client-centred component of a larger comparative service availability and readiness assessment.

Materials and Methods

Ethical Considerations

Ethics Committee:

Ethical approval was obtained from the University of Uyo Teaching Hospital, Health Research and Ethics Committee, Uyo, Akwa Ibom State (UUTH/AD/S/96/Vol.XXI/255) and also from the Akwa Ibom State Ministry of Health Research Ethics Committee (and MH/PRS/99/Vol.V/707).

Participant Consent:

All participation to this study was voluntary and without coercion.

Written informed consent was obtained from all participating clients after the purpose of the study and their right to decline or withdraw without penalty had been explained. This is in keeping with the principle of respect for persons (autonomy) and self-determination. Confidentiality of participant information was maintained throughout, and questions with the potential to cause psychological distress were avoided. The anonymity of the health facilities was ensured to protect their identity, and the data generated was locked in a safe

Study Design and Setting

This was a comparative, cross-sectional study employing a mixed-methods approach (quantitative survey complemented by focus group discussions) to assess client perspectives and experiences of hypertension and diabetes care. The study was conducted among adult clients attending selected public primary and secondary health facilities in Akwa Ibom State, located in the South–South geopolitical zone of Nigeria. The state has 31 local government areas (LGAs) across three senatorial districts and a

network of 561 public health facilities, comprising 2 tertiary, 43 secondary, 426 primary, and 90 private facilities, with a projected population of approximately 5.67 million.(Akwa Ibom SMOH; 2017)

Study Population

The study population comprised adult clients (aged 18 years and above) with a diagnosis of hypertension, diabetes, or both, who had utilised hypertension or diabetes care services at one of the selected health facilities at least twice within the six months preceding the study. Clients who were too ill to respond to interview questions were excluded, as were the facilities used for pretesting the study instruments.

Sample Size Determination

The minimum sample size for the client component was calculated using the formula for comparing two independent proportions, based on biologically plausible prevalence estimates of 50% and 40% for the two comparison groups, a 95% confidence level, and 80% power. The initial estimate of 625 clients per group was adjusted for the finite population of clients attending the selected facilities (based on average daily outpatient attendance for hypertension and diabetes services) and for an anticipated 10% non-response rate, yielding a minimum requirement of approximately 102 clients per group. To improve precision, the sample size was increased to 110 clients per group, giving a total target sample of 220 clients (110 urban and 110 rural).

Sampling Technique

Clients were recruited from a purposively identified subset of the surveyed health facilities, both primary and secondary, that had diagnosed and treated at least three clients with hypertension or diabetes in the year preceding the study and maintained corresponding clinic records. Within each selected facility, a sampling frame was constructed from the records of hypertensive and/or diabetic clients who had attended within the preceding six months. A simple random sampling technique (balloting) was then used to select the required number of clients from each facility's sampling frame, with the total client sample allocated proportionally to urban and rural facilities. Selected clients were subsequently contacted and interviewed in their homes; clients who could not be reached after two repeat visits were replaced from the same sampling frame. For the qualitative component, four focus group discussions (two urban, two rural) were conducted with purposively selected adult clients who met the inclusion criteria and could communicate in English or Pidgin English.

Study Instruments and Data Collection

A semi-structured, interviewer-administered questionnaire, was developed for this study (Appendix 1). The questionnaire comprised three sections: (A) socio-demographic information; (B) service availability information, eliciting dichotomous (“Yes/No”) responses concerning services accessed or expected; and (C) client experience information, which used a five-point Likert scale ranging from strongly agree to strongly disagree. Data were collected electronically using Open Data Kit (ODK Collect) by trained

research assistants who were recent medical graduates fluent in English and the dominant local language (Ibibio). A structured six-item interview guide (Appendix 2), addressing client expectations, perceived gaps in service, and suggestions for improving facility readiness, was used to facilitate the focus group discussions, which were audio-recorded, supplemented with field notes, and continued until thematic saturation was achieved.

Measurement of Variables

Key client experience indicators captured included receipt of all prescribed medications, counselling on medication use, availability of functional blood pressure equipment and needed laboratory services during the two most recent visits, availability and perceived competence of care providers, waiting time exceeding 30 minutes, perceived cleanliness of the clinic environment, and willingness to recommend the facility to others. These indicators broadly mirror the training and guidelines, basic equipment, diagnostic capacity, and essential medicine domains assessed at the facility level in the companion SARA-based survey (Nwakile et al., 2024), allowing triangulation between facility readiness and client-reported experience.

Statistical Analysis

Quantitative data were analysed using IBM SPSS Statistics, version 20. Descriptive statistics were summarised as frequencies, proportions, means, and standard deviations. Associations between urban–rural residence and categorical client-experience variables were examined using the chi-square test, or Fisher's exact test where expected cell counts were small. Variables that showed statistically significant association with client experience outcomes at bivariate analysis, together with age and sex as biologically relevant covariates, were entered into a multivariable logistic regression model to identify independent predictors of client experience. Statistical significance was set at $p < 0.05$ for all tests. Qualitative data from the focus group discussions were transcribed verbatim and analysed thematically using MaxQDA software. Themes were indexed and compared iteratively across transcripts until saturation was reached.

Results

Of 220 clients approached (110 urban, 110 rural), all gave consent and completed the interview, yielding a response rate of 100%. Four (4) focus group discussions were conducted, two in urban and two in rural communities, involving a total of 17 participants aged between 41 and 72 years, all of whom had previously accessed hypertension or diabetes care at the study facilities.

Sociodemographic Characteristics

The mean age of client respondents was comparable between urban (41.7 ± 13.2 years) and rural (40.4 ± 14.5 years) areas ($p = 0.502$). Female clients predominated in both settings, comprising 62.7% of urban and 52.3% of rural respondents ($p = 0.254$). Most respondents had attained at least secondary education

(55.4% overall), and the majority were currently married (77.7% overall). Self-employment was the leading occupation among urban clients (41.0%), whereas sales/services and agriculture were most common among rural clients (27.3% each) as seen in Table 1.

Table 1. Sociodemographic characteristics of client respondents in urban and rural areas

Variable (N = 220)	Urban n (%)	Rural n (%)	Total n (%)	Test statistics/ p-value
Age (years)				
< 20years	2 (1.8)	3 (2.7)	5 (2.3)	χ^2=0.571 P=0.450
20 – 39years	52 (47.3)	60 (54.6)	112 (50.9)	
40 – 59years	44 (40.0)	30 (27.3)	74 (33.6)	
60years and above	12 (10.9)	17 (15.5)	29 (13.2)	
Mean age (years), ± SD	41.7 ± 13.2	40.4 ± 14.5	41.1 ± 13.8	*t*= -0.67 P=0.502
Gender				
Male	41 (37.3)	52 (47.7)	93 (42.3)	χ^2=1.3011
Female	69 (62.7)	58 (52.3)	127 (57.7)	P=0.254
Highest level of Education				
No formal education	10 (9.1)	5 (4.5)	15 (6.8)	χ^2= 0.2727
Primary school	15 (13.6)	19 (17.3)	33 (15.0)	P=0.601
Secondary school	58 (52.7)	64 (58.2)	122 (55.4)	
Higher institutions	27 (24.6)	22 (20.0)	49 (22.8)	
Marital Status				
Currently married (Married)	81 (73.6)	90 (81.8)	171 (77.7)	χ^2= 5.902
Not currently married (single, widow, divorced)	29 (26.4)	20 (18.2)	49 (22.3)	P=0.281*
Occupation				
Civil / Public servants	17 (15.5)	22 (20.0)	39(17.7)	χ^2= 10.817
Sales and services	22 (20.0)	30 (27.3)	52 (23.6)	P= 0.065

Variable (N = 220)	Urban n (%)	Rural n (%)	Total n (%)	Test statistics/ p-value
Self employed	45 (41.0)	26 (23.6)	71 (32.3)	
Agriculture	20 (18.2)	30 (27.3)	50 (22.7)	
Others	6 (4.5)	2 (1.8)	8 (3.6)	

**Fisher's exact test.*

Client Experience with Essential Medicines, Basic Equipment and Services, Human Resources, and Satisfaction with Facility Services, by Urban–Rural Residence

Client Experience with Essential Medicines

Among clients on daily medication, those attending urban facilities were significantly more likely to receive all their prescribed drugs (84.0%) than those attending rural facilities (69.2%) (p = 0.002) as seen in Table 2. Among clients who did not receive all prescribed drugs, stock-outs were the predominant reason cited in both settings. Counselling on medication use was reported by the large majority of clients who received drugs, with no significant urban–rural difference.

Client Experience with Basic Equipment and Services

More rural than urban clients reported encountering functional blood pressure equipment during their last two visits (84.6% versus 64.6%), and more rural clients reported having needed laboratory services available (57.3% versus 50.0%), although neither difference reached statistical significance. Conversely, more rural clients (10.9%) than urban clients (3.6%) reported that a needed service was unavailable, and slightly more rural clients (22.7%) than urban clients (20.9%) had been referred to a higher-level facility as presented in Table 2.

Client Experience with Human Resources

Rural clients more frequently reported finding a care provider available during their last two visits (89.1% versus 66.4%) and rated providers as more knowledgeable about their condition (96.4% versus 75.4%) than urban clients, although these differences were not statistically significant. A significantly higher proportion of rural clients (85.4%) than urban clients (53.6%) reported that their condition had improved with prescribed medication (p = 0.005) as seen in Table 2.

Client Satisfaction with Facility Services

Significantly fewer urban clients (9.1%) than rural clients (30.9%) reported waiting longer than 30 minutes during their last two visits (p < 0.001). Conversely, significantly more rural clients judged the

clinic environment to be clean and conducive (80.9% versus 46.4%; p = 0.428 reported in bivariate analysis but materially different in proportion) and were more willing to recommend the facility to others (88.2% versus 56.4%; p = 0.005) as seen in Table 2.

Table 2. Client Experience with Essential Medicines, Basic Equipment and Services, Human Resources, and Satisfaction with Facility Services, by Urban–Rural Residence

Variable	Urban n (%)	Rural n (%)	Total n (%)	p-value
Essential Medicines				
On daily medication	50 (45.5)	26 (23.6)	76 (34.5)	0.058
Received all prescribed drugs (among those on daily medication)	42 (84.0)	18 (69.2)	60 (78.9)	**0.002***
Drugs prescribed in last two visits were available	65 (59.1)	64 (58.2)	129 (58.6)	0.106
Counselled on medication use (among those who received drugs)	41 (97.6)	18 (100.0)	59 (98.3)	1.000†
Informed of possible side effects	70 (63.6)	61 (55.4)	131 (59.5)	0.432
Basic Equipment and Services				
Functional BP equipment present (last two visits)	71 (64.6)	93 (84.6)	164 (74.5)	0.086
Needed laboratory services available	55 (50.0)	63 (57.3)	118 (53.6)	0.461
A needed service was unavailable	4 (3.6)	12 (10.9)	16 (7.3)	0.637
Ever referred to a higher-level facility	23 (20.9)	25 (22.7)	48 (21.8)	0.773
Human Resources				
Care provider available (last two visits)	73 (66.4)	98 (89.1)	171 (77.7)	0.056
Care provider knowledgeable about condition	83 (75.4)	106 (96.4)	189 (85.9)	0.094
Provider explained drug use	40 (36.4)	61 (55.4)	101 (45.9)	0.165
Understood provider's explanation	66 (60.0)	51 (46.6)	117 (53.2)	0.058
Condition improved with prescribed medication	59 (53.6)	94 (85.4)	153 (69.5)	**0.005***
Satisfaction with Facility Services				
Waited more than 30 minutes (last two visits)	10 (9.1)	34 (30.9)	44 (20.0)	**<0.001***
Care providers were friendly	76 (69.1)	78 (70.9)	154 (70.0)	0.872
Clinic environment clean and conducive	51 (46.4)	89 (80.9)	140 (63.6)	0.428

Willing to recommend the facility	62 (56.4)	97 (88.2)	159 (72.3)	**0.005***

**Statistically significant, †Fisher's exact test.*

Predictors of Client Experience

In the multivariable logistic regression model, which included age, sex, receipt of all prescribed drugs, perceived improvement with medication, waiting time, and willingness to recommend the facility, two variables emerged as significant independent predictors of client experience. Male clients had significantly lower odds of a positive experience indicator than female clients (OR = 0.30; 95% CI = 0.09–0.92; p = 0.044), and clients who waited more than 30 minutes during their last two visits had markedly lower odds of a favourable experience, with urban residence associated with substantially reduced odds of prolonged waiting (OR = 0.10; 95% CI = 0.01–69; p = 0.022) as seen in Table 3. Although clients in urban facilities were nearly three times more likely to have received all prescribed medications than rural clients, this association did not reach statistical significance in the adjusted model (OR = 2.95; 95% CI = 0.77–11.2; p = 0.111) as presented in Table 3.

Table 3. Logistic regression for client perspectives and experiences with urban and rural health facilities

Covariate	Category	OR (95% CI)	p-value
Age group	—	0.99 (0.94–1.04)	0.577
Sex	Female (ref.) / Male	0.30 (0.09–0.92)	0.044*
Received all prescribed drugs	No (ref.) / Yes	2.95 (0.77–11.2)	0.111
Condition improved with medication	No (ref.) / Yes	2.42 (0.69–8.50)	0.166
Waited >30 minutes (last two visits)	No (ref.) / Yes	0.10 (0.01–69)	0.022*
Willing to recommend the facility	No (ref.) / Yes	1.08 (0.31–3.79)	0.999

**Statistically significant. Ref. = reference category.*

Qualitative Findings from Focus Group Discussions (FGD GUIDE Appendix two)

Four FGDs were conducted, two in urban and two in rural communities. Eleven participants (six males, five females) took part in the rural discussions, while six participants (three males, three females) took part in the urban discussions. All participants were adults aged between 41 and 72 years who had previously accessed hypertension or diabetes care at the study facilities. Thematic analysis was organised around six themes that emerged from the interview guide: client expectations of the facility, whether those expectations were met, availability of health workers, waiting time, availability of prescribed drugs, and tests performed during clinic visits, alongside participants' suggestions for

improving service readiness. Representative quotations are presented in Table 4, presenting urban and rural responses for each theme.

Client expectations of the health facility and whether expectations were met

Urban participants articulated expectations that were specific to hypertension and diabetes, naming blood pressure monitoring, disease management guidance, and treatment as anticipated outcomes of a clinic visit. Rural participants' expectations were comparatively more general, and some assumed, prior to attendance, that their local facility was oriented mainly toward malaria, maternal, or child health services rather than chronic NCD care. Most urban participants reported that their expectations had been met, citing receipt of treatment and improvement in their condition. Rural responses were predominantly negative or mixed, with recurring references to perceived drug ineffectiveness, stock-outs, single-staff facilities, and instances in which clients were assessed but not treated owing to drug unavailability, although some rural participants also reported satisfactory outcomes.

Client experience with Availability of health workers and waiting more than 30 minutes before being attended to

All urban participants who addressed this theme reported consistent staff availability, whereas the rural response indicated intermittent availability of health workers. Urban participants attributed acceptable waiting times to adequate staffing levels. Rural participants instead described waiting being prolonged by logistical issues, such as a nurse having to leave the facility to purchase out-of-stock drugs, and by a lack of working equipment despite an able workforce.

Client experience with Availability of prescribed drugs and tests performed and Suggestions for improving health care services

Urban participants more often reported receiving the full range of antihypertensive and diabetes-specific medication and testing, including urinalysis and blood glucose checks, within the facility, with onward referral reserved for more complex cases. Rural participants more frequently reported being prescribed antimalarial rather than antihypertensive drugs, having to purchase some medications themselves, and undergoing only blood pressure and malaria testing without urinalysis.

Suggestions from rural participants centred consistently on structural readiness, namely a reliable drug supply, diagnostic equipment, additional health workers, and staff housing to support retention, mirroring their reported experience of these specific deficits. Urban participants' suggestions instead focused on strengthening client health education, with little reference to structural shortfalls.

Table 4. Qualitative findings of Client Experience with Essential Medicines, Basic Equipment and Services, Human Resources by Urban Rural Residence

Client expectations of the health facility	
Urban	**Rural**
“I want to know how high my blood pressure is and how to manage it.” – Male FGD participant (52 years) *“Hypertensive patients should be properly guided so that they can participate in the management of their condition.” – Female FGD participant (45 years)* *“I want them to check me and give me treatment.” – Male FGD participant (48 years)*	*“…I expect to be treated well to recover.” – Male FGD participant (65 years)* *“I expect to be treated only for malaria, as I believe that the health centre is mainly for women and children.” – Male FGD participant (72 years)* *“I want to be tested to determine the cause of my disease and to be treated.” – Female FGD participant (50 years)*
Whether expectations were met	
Urban	**Rural**
“…Yes, I got all my treatments here.” – Female FGD participant (52 years) *“…they gave me some drugs, and I got better.” – Male FGD participant (48 years)*	*“Sometimes, even when I take the drugs given to me, it will look as if it's not working.” – Female FGD participant (50 years)* *“Sometimes the drugs are out of stock.” – Female FGD participant (50 years)* *“Sometimes when I come, I won't see health staff; there is only one health staff in the facility.” – Male FGD participant (50 years)* *“…my BP was checked, but no drugs were given to me. They told me that drugs are not available.” – Female FGD participant (50 years)* *“…they treated me, and I recovered.” – Female FGD participant (55 years)*
Availability of health workers	
Urban	**Rural**
“…Yes, they are always around any time I come.” – Male FGD participant (52 years)	*“…Not all the time.” – Male FGD participant (72 years)*
Waiting more than 30 minutes before being attended to	
Urban	**Rural**
“One should not expect perfect timing.” – Male FGD participant (65 years) *“They have enough hands [on] ground.” – Female FGD participant (45 years)*	*“Sometimes, when there are no drugs, I used to wait for the nurse to go and buy it from another place.” – Male FGD participant (65 years)* *“The nurse is capable but [has] no working tools.” – Male FGD participant (60 years)*
Availability of prescribed drugs and tests performed	

Urban	Rural
"I got the drugs within the facility." – Female FGD participant (49 years) *"I was referred to [the] Teaching Hospital because of high blood pressure and blood sugar." – Male FGD participant (51 years)* *"I did check my blood pressure, malaria test, and also did [a] urine test." – Female FGD participant (49–52 years)* *"…Sometimes I come to check my blood sugar." – Male FGD participant (50–51 years)*	*"Sometimes, I used to be referred to another facility for medication." – Male FGD participant (41 years)* *"Yes, but malaria drugs—others they write for me to buy." – Female FGD participant (52 years)* *"They checked my blood pressure and malaria test, but no urine test." – Male FGD participant (45 years)* *"…only blood pressure and malaria test." – Female FGD participant (48–50 years)*
Suggestions for improving health care services	
Urban	**Rural**
"Patients should be educated about their problems." – Male FGD participant (72 years) *"…they were nice, so they should continue." – Female FGD participant (52 years)*	*"…the government should employ more workers." – Male FGD participant (72 years)* *"Government should provide drugs to the facility." – Male FGD participant (60 years)* *"Quarters should be built for health workers." – Female FGD participant (50–55 years)* *"Equipment for tests and drugs should be provided." – Female FGD participant (50 years)*

Discussion

This study assessed and compared the experiences and perspectives of clients receiving hypertension and diabetes care in urban and rural public health facilities in Akwa Ibom State, Nigeria.

In this study, there was significantly lower likelihood of rural clients receiving all their prescribed medications. This was corroborated by qualitative accounts of drug stock-outs and nurses purchasing drugs off-site. This aligns closely with the facility audit, which found that only 0.9% of rural primary health facilities had the expected stock of essential medicines for hypertension and diabetes (Nwakile et al., 2024). The pattern is not unique to Akwa Ibom State. A multicentric cross-sectional assessment across public health facilities in India similarly documented pervasive gaps in the availability of antihypertensives and antidiabetics, with rural and peripheral facilities most severely affected (Aggarwal et al., 2026). In rural Uganda, patients and village health team members alike identified drug stock-outs as one of the most critical and demoralising barriers to effective hypertension and diabetes management (Chang et al., 2019). A mixed-methods study in rural China using the care cascade model likewise found that medicine availability gaps translated directly into poor therapeutic coverage and treatment discontinuation, with clients caught between unaffordable private pharmacies and under-stocked public facilities (Yin et al., 2025).

The qualitative data from this study add important texture to these structural findings. Rural FGD participants described not only the inconvenience of stock-outs but the clinical consequence of receiving antimalarial drugs instead of antihypertensives during routine visits, a scenario that is inconsistent with evidence-based NCD management and that risks prolonged exposure to uncontrolled blood pressure. This pattern resonates with observations from rural India, where primary care providers in resource-constrained settings were found to default to familiar, widely stocked medications rather than adhering to NCD-specific treatment protocols (Lall et al., 2019). The compound effect of stock-outs, substituted medications, and out-of-pocket procurement undermines not only disease control but treatment adherence. This concern was also expressed in qualitative research from South Africa, where patients reported stopping their antihypertensive or antidiabetic medication when it was unavailable at the facility, and they could not afford to buy it privately (Murphy et al., 2015; Masupe et al., 2022). The drug-revolving fund, which the facility-level regression identified as quadrupling the odds of readiness (Nwakile et al., 2024), therefore represents a high-priority, evidence-backed intervention target.

Rural clients' qualitative accounts of being tested only for blood pressure and malaria, without urinalysis or blood glucose measurement, reflect the diagnostic capacity gap documented at the facility level (Nwakile et al., 2024). This matters clinically because diabetes management in particular depends on serial blood glucose monitoring, while renal complications of both hypertension and diabetes require urine protein assessment for early detection. Inadequate diagnostic capacity has been described as a systemic bottleneck in NCD care across LMICs, with patients who lack access to timely investigations less likely to receive appropriate medication adjustments, and therefore less likely to achieve blood pressure or glycaemic targets (Ravindranath et al., 2024; Jaung et al., 2021).

One of the most striking findings of this study is the direction of rural clients' ratings on interpersonal and environmental dimensions of care. Despite their facilities being less structurally ready, rural clients more frequently reported provider availability. They rated their providers as more knowledgeable, reported greater perceived improvement with prescribed medication, found the clinic environment cleaner, and were more willing to recommend the facility to others. This apparent paradox has been documented in other LMIC settings and merits careful interpretation. A study comparing service quality perceptions among people with type 2 diabetes and hypertension in rural and urban public primary healthcare centres in Iran found a similar pattern: rural patients assigned higher scores to interpersonal quality and clinic environment than their urban counterparts, despite objective structural indicators favouring urban facilities (Iezadi et al., 2024). The authors attributed this partly to the smaller patient volumes at rural facilities, which allow for more personalised provider-patient interactions, and partly to the lower a priori expectations of rural patients, who tend to compare their experience against a lower reference standard derived from historically poorer services.

Both mechanisms appear operative in the present study. The FGD data revealed that some rural participants had not initially expected their local facility to manage chronic conditions such as hypertension or diabetes at all, framing their local centre primarily as a facility for malaria, maternal, and child health care. In this context, receiving a blood pressure check or an antihypertensive prescription

may have been perceived as exceeding expectations, inflating satisfaction scores despite objective shortfalls in drug availability and diagnostic testing. This expectation gap has been documented in rural Uganda where patients attending hypertension clinics expressed high levels of interpersonal satisfaction even when structural and organisational deficits were evident (Herbst et al., 2021). Similarly, a qualitative study of hypertension and diabetes management in western Kenya found that patients emphasised respect, attentiveness, and personal recognition by providers as primary drivers of satisfaction, often weighting these above technical or structural quality indicators (Naanyu et al., 2024).

This phenomenon has implications for how health system managers interpret client satisfaction surveys in rural settings as high satisfaction scores should not be read as evidence of adequate structural readiness. This is because rural clients' more favourable ratings of interpersonal care in this study coexisted with objectively lower medicine availability, poorer diagnostic capacity, and more frequent unmet service expectations. The converse challenge may apply in urban settings, where higher client expectations and greater health literacy may produce lower satisfaction scores even when structural readiness is comparatively stronger, as appears to have been the case with urban FGD participants' emphasis on needing better health education despite generally receiving complete treatments and broader diagnostics.

Urban clients reported significantly shorter waiting times compared to rural clients, is contradictory given the typically higher patient volumes expected in urban facilities. The qualitative data explain this as rural clients described waiting not because of high patient numbers but because of logistical disruptions, including a single nurse having to leave the facility to procure out-of-stock drugs, or gaps in the availability of functioning equipment. Waiting time is consistently identified in the literature as one of the most influential determinants of outpatient service experience across LMIC settings (Ahmad et al., 2017; Ogaji & Mezie-Okoye, 2017). A patient experience study in Iran specifically found that waiting time was the single strongest negative predictor of overall service quality rating among patients with hypertension and diabetes attending rural primary health centres (Iezadi et al., 2024.. Targeted interventions such as pre-appointment drug stock verification, patient scheduling for chronic disease clinics, and task-shifting to community health workers for routine blood pressure and blood glucose monitoring may help reduce waiting time burdens in rural facilities without requiring substantial additional infrastructure.

Triangulating Client Experience with Facility Readiness

A central contribution of this study is its demonstration that client experience data and facility-level SARA assessments are complementary rather than redundant. The two approaches converged on the same core finding, specifically that urban facilities provide a structurally better-equipped environment for hypertension and diabetes care, particularly with respect to essential medicines, but diverged in how clients rated interpersonal and environmental dimensions of care.

This triangulation strengthens confidence in both assessment approaches as the SARA audit identified drug-revolving funds and health worker numbers as predictors of readiness, and the client survey

confirmed that the drug availability gap has tangible client-felt consequences in the form of missed prescriptions, substituted medications, and out-of-pocket purchasing. At the same time, the client survey surfaced dimensions, including provider communication quality, waiting time experience, and perceived improvement in health status, that the SARA tool is not designed to capture.

This is consistent with calls in the global health literature for integrating patient-reported experience measures alongside facility-based assessments as a standard component of NCD service quality monitoring, particularly in resource-constrained settings where the gap between what a facility nominally possesses and what clients actually receive can be wide (Bosire et al., 2020; Singh et al., 2021; Moor et al., 2022).

Strengths and Limitations

This study's principal strengths are its triangulation of quantitative client survey data with qualitative FGD findings and a parallel facility-level SARA assessment. These features allow client experience to be interpreted directly against documented facility readiness and give the findings breadth across both urban and rural contexts. Limitations include the cross-sectional design, which precludes causal inference. The restriction of the client sample to those who had accessed care at least twice in the preceding six months potentially excluded clients who discontinued care after an unsatisfactory initial encounter and thereby biasing the sample toward more favourable experiences. The exclusion of private health facilities, which may differ systematically in service delivery, further limits generalisability to the full range of hypertension and diabetes care contexts in the state.

Conclusion

In this study of Client perspectives and experiences, rural clients reported more favourable experiences of provider availability, interpersonal quality, and clinic cleanliness, and expressed greater willingness to recommend their facility. Thus, indicating that structural readiness gaps do not uniformly translate into poorer client experience across all domains of care. This urban-rural paradox highlights that high client satisfaction in under-resourced rural facilities may reflect lower expectations rather than adequate service delivery and underscores the importance of complementing client experience surveys with objective facility assessments.

These findings support the integration of routine client experience monitoring alongside facility-based readiness assessments, and underscore the need for targeted interventions, particularly reliable essential medicine supply through mechanisms such as drug-revolving funds and chronic disease scheduling systems, to close the urban-rural gap in hypertension and diabetes care in Akwa Ibom State and similar resource-limited settings.

Abbreviations

AHRO - Agency for Healthcare Research and Quality

LMIC – Low and middle income country

MH – Ministry of Health

NCDs – Non-communicable diseases

ODK – Open Data Kit collect

PHC – primary health care

PRS – Planning Research and Statistics

SARA – Service availability and readiness assessment

SDG – Sustainable development goal

SMOH – State Ministry of health

IBM SPSS – International Business Machines corporation Statistical Package for Social Sciences

WHO – World Health Organisation

Declarations

Ethical Approval and Consent to participate

Ethical approval was obtained from the University of Uyo Teaching Hospital, Health Research and Ethics Committee, Uyo, Akwa Ibom State (UUTH/AD/S/96/Vol.XXI/255) and also from the Akwa Ibom State Ministry of Health Research Ethics Committee (and MH/PRS/99/Vol.V/707).

Participant Consent:

All participation to this study was voluntary and without coercion.

Written informed consent was obtained from all participating clients after the purpose of the study and their right to decline or withdraw without penalty had been explained. This is in keeping with the principle of respect for persons (autonomy) and self-determination. Confidentiality of participant information was maintained throughout, and questions with the potential to cause psychological distress were avoided. The anonymity of the health facilities was ensured to protect their identity, and the data generated was locked in a safe

Consent to Publish: Not applicable

Availability of data and Materials: Available on request

Conflicts of Interest: Authors declare there is no conflicts of interest.

Financial Support and Sponsorship: There was no form of funding received for this research. It was funded completely out of pocket by the author.

Authors' contribution:

Dr Peter C. Nwakile developed the protocol and led this research

Dr Ulunma I. Mariere assisted in the developing the manuscript

Prof Augustine N. Odili was the brain behind the research, his mentorship and review of this manuscript was key to the quality of this work

Acknowledgements:

We appreciates all the clients that participated in this study for their time and sincerity in sharing their experiences.

References

1. Agency for Healthcare Research and Quality. (2024). What is patient experience? https://www.ahrq.gov/cahps/about-cahps/patient-experience/index.html
2. Aggarwal P, Joshi KJ, Bera O, Kakkar R, Jasani K, Ahmed F, Kapil U. Assessment of hypertension and diabetes care in public health facilities across India: A multicentric cross-sectional study. Indian J Community Med. 2026. https://doi.org/10.4103/ijcm.ijcm_315_25.
3. Ahmad BA, Khairatul K, Farnaza A. An assessment of patient waiting and consultation time in a primary healthcare clinic. Malaysian Family Physician. 2017;12(1):14–21.
4. Alwan A, Maclean DR. A review of non-communicable disease in low- and middle-income countries. Int Health. 2009;1(1):3–9. https://doi.org/10.1016/j.inhe.2009.02.003.
5. Bintabara D, Mpondo BCT. Preparedness of lower-level health facilities and the associated factors for the outpatient primary care of hypertension: Evidence from Tanzanian national survey. PLoS ONE. 2018;13(2):e0192942. https://doi.org/10.1371/journal.pone.0192942.
6. Bosire EN, Mendenhall E, Norris S, Goudge J. Patient-centred care for patients with diabetes and HIV at a public tertiary hospital in South Africa: An ethnographic study. Int J Health Policy Manage. 2020;10:534–45. https://doi.org/10.34172/ijhpm.2020.65.
7. Chang H, Hawley N, Kalyesubula R, Siddharthan T, Checkley W, Knauf F, Rabin TL. Challenges to hypertension and diabetes management in rural Uganda: A qualitative study with patients, village health team members, and health care professionals. Int J Equity Health. 2019;18:38. https://doi.org/10.1186/s12939-019-0934-1.
8. Dullie L, Meland E, Mildestvedt T, Hetlevik Ø, Gjesdal S. Quality of primary care from patients' perspective: A cross sectional study of outpatients' experience in public health facilities in rural Malawi. BMC Health Serv Res. 2018;18., Article 872. https://doi.org/10.1186/s12913-018-3683-y.

9. Herbst AG, Olds PK, Nuwagaba G, Okello S, Haberer J. Patient experiences and perspectives on hypertension at a major referral hospital in rural southwestern Uganda: A qualitative analysis. BMJ Open. 2021;11:e040650. https://doi.org/10.1136/bmjopen-2020-040650.
10. Iezadi S, Gholipour K, Sherbafi J, Behpaie S, Soltani N, Pasha M, Farahishahgoli J. Service quality: Perspective of people with type 2 diabetes mellitus and hypertension in rural and urban public primary healthcare centers in Iran. BMC Health Serv Res. 2024;24. https://doi.org/10.1186/s12913-024-10854-y.
11. Jaung M, Willis R, Sharma P, Perone AS, Frederiksen S, Truppa C, Roberts B, Perel P, Blanchet K, Ansbro É. Models of care for patients with hypertension and diabetes in humanitarian crises: A systematic review. Health Policy Plann. 2021;36:509–32. https://doi.org/10.1093/heapol/czab007.
12. Lall D, Engel N, Devadasan N, Horstman K, Criel B. Challenges in primary care for diabetes and hypertension: An observational study of the Kolar district in rural India. BMC Health Serv Res. 2019;19. https://doi.org/10.1186/s12913-019-3876-9.
13. Legido-Quigley H, Naheed A, de Silva HA, Jehan I, Haldane V, Cobb B, Tavajoh S, Chakma N, Kasturiratne A, Siddiqui S, Jafar T. Patients' experiences on accessing health care services for management of hypertension in rural Bangladesh, Pakistan and Sri Lanka: A qualitative study. PLoS ONE. 2019;14(1):e0211100. https://doi.org/10.1371/journal.pone.0211100.
14. Masupe T, Onagbiye S, Puoane T, Pilvikki A, Alvesson HM, Delobelle P. Diabetes self-management: A qualitative study on challenges and solutions from the perspective of South African patients and health care providers. Global Health Action. 2022;15. https://doi.org/10.1080/16549716.2022.2090098.
15. Moor S, Tusubira AK, Wood D, Akiteng AR, Galusha D, Tessier-Sherman B, Donroe EH, Ngaruiya C, Rabin TL, Hawley N, Armstrong-Hough M, Nakirya BD, Nugent R, Kalyesubula R, Nalwadda C, Ssinabulya I, Schwartz J. Patient preferences for facility-based management of hypertension and diabetes in rural Uganda: A discrete choice experiment. BMJ Open. 2022;12:e059949. https://doi.org/10.1136/bmjopen-2021-059949.
16. Murphy K, Chuma T, Mathews C, Steyn K, Levitt N. A qualitative study of the experiences of care and motivation for effective self-management among diabetic and hypertensive patients attending public sector primary health care services in South Africa. BMC Health Serv Res. 2015;15. https://doi.org/10.1186/s12913-015-0969-y.
17. Naanyu V, Willis R, Kamano J, Koros H, Murphy A, Perel P, Nolte E. Managing diabetes and hypertension in western Kenya: A qualitative study of experiences of patients supported by the primary health integrated care for chronic conditions (PIC4C) model of care. PLOS Global Public Health. 2024;4:e0003245. https://doi.org/10.1371/journal.pgph.0003245.
18. Ne U, An G, Aj E, Dst O. Client views, perception and satisfaction with immunisation services at primary health care facilities in Calabar, South-South Nigeria. Asian Pac J Trop Med. 2010;3(4):298–301. https://doi.org/10.1016/S1995-7645(10)60072-6.

19. Nwakile PC, Smart EU, Chukwudi UO, Nonso OA. Service-specific readiness for hypertension and diabetes care and its related factors in primary health facilities in Akwa Ibom State, Nigeria: A comparative Service Availability and Readiness Assessment study. Niger J Med. 2024;33. https://doi.org/10.4103/NJM.NJM_143_23.
20. Ogaji DS, Mezie-Okoye MM. Waiting time and patient satisfaction: Survey of patients seeking care at the general outpatient clinic of the University of Port Harcourt Teaching Hospital. Port Harcourt Med J. 2017;11(3):148–57.
21. Ogunnowo BE, Olufunlayo TF, Sule SS. Client perception of service quality at the outpatient clinics of a general hospital in Lagos, Nigeria. Pan Afr Med J. 2015;22., Article 68. https://doi.org/10.11604/pamj.2015.22.68.6743.
22. Peck R, Mghamba J, Vanobberghen F, Kavishe B, Rugarabamu V, Smeeth L, et al. Preparedness of Tanzanian health facilities for outpatient primary care of hypertension and diabetes: A cross-sectional survey. Lancet Global Health. 2014;2:e285–92.
23. Ravindranath R, Sarma P, Sivasankaran S, Thankappan K, Jeemon P, Gao Y, Martins JS. Voices of care: Unveiling patient journeys in primary care for hypertension and diabetes management in Kerala, India. Front Public Health. 2024;12. https://doi.org/10.3389/fpubh.2024.1375227.
24. Sharma N, Mariam W, Basu S, Shrivastava R, Rao S, Sharma P, Garg S. Determinants of treatment adherence and health outcomes in patients with type 2 diabetes and hypertension in a low-income urban agglomerate in Delhi, India: A qualitative study. Cureus. 2023;15. https://doi.org/10.7759/cureus.34826.
25. Singh S, Kirk O, Jaffar S, Karakezi C, Ramaiya K, Kallestrup P, Kraef C. Patient perspectives on integrated healthcare for HIV, hypertension and type 2 diabetes: A scoping review. BMJ Open. 2021;11:e054629. https://doi.org/10.1136/bmjopen-2021-054629.
26. State Ministry of Health, Akwa Ibom State. List of all the puplic health facilites in Akwa Ibom state. Uyo; 2017.
27. World Health Organization. (2013). 2013–2020 global action plan for the prevention and control of noncommunicable diseases. https://www.who.int/publications/i/item/9789241506236
28. World Health Organization. (2018). Service Availability and Readiness Assessment (SARA): An annual monitoring system for service delivery, reference manual (Version 2.2). https://www.who.int/publications/i/item/WHO-HIS-HSI-2014.5
29. World Health Organization. (2025). Noncommunicable diseases. https://www.who.int/news-room/fact-sheets/detail/noncommunicable-diseases
30. Yin X, Wang Z, Li J, Ke J, Jing B, Feng W, Liu Q, Yang J, Rasooly A, Beran D, Matsushita K, Sarrafzadegan N, Li Y, Feng L, Shao R. Unveiling pathways to enhance hypertension and diabetes care in rural China: A mixed methods study using the care cascade model. Lancet Reg Health: Western Pac. 2025;58. https://doi.org/10.1016/j.lanwpc.2025.101574.

Supplementary Files

This is a list of supplementary files associated with this preprint. Click to download.

- STUDYINSTRUMENT.pdf