

Waiting Time, Patient Satisfaction and Continued Use of NHIS Healthcare Services Among Enrollees in a Nigerian Tertiary Hospital: A Convergent Mixed-Methods Study

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Abstract

Objectives

To examine waiting-time experiences, patient satisfaction, and willingness to continue using National Health Insurance Authority (NHIA) healthcare services among enrollees attending a tertiary hospital in southeastern Nigeria, and to explore participants' experiences of waiting time and factors influencing satisfaction and continued use of NHIA healthcare services.

Design

Convergent mixed-methods cross-sectional study.

Setting

Alex-Ekwueme Federal Teaching Hospital, Abakaliki, a tertiary healthcare institution in southeastern Nigeria. Data were collected between June and August 2025.

Participants

A total of 376 adult NHIA enrollees participated in the quantitative survey, while 20 purposively selected participants completed in-depth interviews. Eligible participants were registered NHIA enrollees aged 18 years and above who attended outpatient clinics during the study period and provided written informed consent.

Primary and secondary outcome measures

The primary outcomes were waiting-time experiences, patient satisfaction, and willingness to continue using NHIA healthcare services. Quantitative data were analysed using descriptive statistics, one-sample proportion tests, chi-square tests, and Cramer's V. Qualitative data were analysed thematically, and findings from both strands were integrated during interpretation.

Results

More than half of respondents (52.7%) waited at least three hours before receiving care, while 29.3% waited four hours or longer. Overall, 58.0% rated waiting time as poor or very poor. Despite these delays, 61.7% were satisfied or strongly satisfied with NHIA healthcare services, and 83.0% expressed willingness to continue using the scheme. Waiting-time perception was significantly associated with patient satisfaction ($\chi^2=91.41$, $df=1$, $p<0.0001$; Cramer's $V=0.35$), while patient satisfaction was significantly associated with willingness to continue using NHIA healthcare services ($\chi^2=121.14$, $p<0.0001$; Cramer's $V=0.57$). Qualitative findings identified treatment-code generation delays, administrative bottlenecks, provider lateness, and perceived queue-jumping as major contributors to prolonged waiting. Affordability, access to specialist care, perceived recovery, and medication effectiveness helped explain continued satisfaction and willingness to continue using the scheme.

Conclusions

Prolonged waiting time was common among NHIA enrollees and was significantly associated with patient satisfaction, while satisfaction was associated with willingness to continue using NHIA healthcare services. Improving treatment authorisation processes, queue management, provider punctuality, medication availability, and patient communication may enhance patient satisfaction and strengthen continued use of Nigeria's national health insurance programme.

Trial registration

Not applicable.

Background of the study

Universal health coverage remains a central global health priority, with the aim of ensuring that all people can access needed healthcare services without experiencing financial hardship [1]. Health insurance schemes are important mechanisms for advancing this goal because they reduce direct out-of-pocket payments and improve financial access to healthcare [1]. In Nigeria, the National Health Insurance Scheme (NHIS), now regulated under the National Health Insurance Authority (NHIA), was established to improve financial risk protection, promote equitable access to healthcare services, and strengthen progress toward universal health coverage [2]. Although enrolment in health insurance schemes has increased in Nigeria, financial coverage alone does not guarantee positive patient experiences or sustained use of healthcare services. The quality, responsiveness, and efficiency of services received by insured patients remain important determinants of whether health insurance achieves its intended objectives [3, 4].

Waiting time is a key indicator of healthcare service responsiveness and patient-centred quality [5]. It reflects the efficiency of patient-flow systems, administrative procedures, provider availability, and the organization of clinical services. Prolonged waiting time may delay access to consultation, investigations, medications, and treatment, thereby weakening patients' confidence in healthcare facilities [5, 6]. For insured patients, long waiting time may be particularly frustrating because health insurance is expected not only to reduce financial barriers but also to facilitate timely access to care. When administrative procedures, treatment authorization processes, provider delays, or medication-related bottlenecks prolong the patient journey, the perceived value of health insurance may decline even when services are subsidized [7, 4].

Patient satisfaction is widely used as an indicator of healthcare quality because it reflects the extent to which healthcare experiences meet patients' expectations, preferences, and perceived needs [6]. From the perspective of Expectation–Confirmation Theory, satisfaction is influenced by the comparison between what patients expect and what they actually experience [8]. When insured patients expect efficient and timely care but encounter prolonged delays, dissatisfaction may occur, even if the eventual clinical care is perceived as effective. Conversely, timely attention, clear communication, respectful

treatment, and access to effective medications may improve satisfaction and strengthen confidence in the healthcare system [6, 9].

Methods

Study Design

This study employed a convergent parallel mixed-methods design, comprising a cross-sectional quantitative survey and a qualitative interview component. The quantitative component assessed waiting-time experiences, patient satisfaction and willingness to continue using National Health Insurance Authority (NHIA) healthcare services, while the qualitative component explored participants' experiences of waiting time, perceptions of service quality and factors influencing continued use of NHIA services. Quantitative and qualitative data were collected concurrently, analysed separately and integrated during interpretation using a convergent design. The study was reported in accordance with the Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) statement for the quantitative component, the Consolidated Criteria for Reporting Qualitative Research (COREQ) for the qualitative component, and the Good Reporting of A Mixed Methods Study (GRAMMS) framework. [15–17].

Quantitative and qualitative data were collected during the same study period, analysed separately, and integrated during interpretation and reporting. Equal priority was given to both strands because the study sought not only to quantify associations among waiting time, satisfaction, and willingness to continue using NHIS services, but also to explain the service-delivery experiences underlying these associations [13,14].

Study Setting

The study was conducted at Alex-Ekwueme Federal Teaching Hospital, Abakaliki, Ebonyi State, Nigeria. The hospital is a tertiary healthcare institution and major referral centre serving Ebonyi State and neighbouring states in southeastern Nigeria [12]. It provides general outpatient, specialist outpatient, diagnostic, surgical, pharmaceutical, and other clinical services and is accredited to provide healthcare services to NHIS beneficiaries.

Data were collected from the General Outpatient Department and selected specialist outpatient clinics that routinely attend to NHIS enrollees. Recruitment was conducted on clinic days during regular outpatient service hours between June and August 2025. The specific clinic days included Monday and Fridays from 8:00am to 4:00PM, depending on the outpatient clinic schedules during the study period.

Study Population

The study population comprised adult NHIS enrollees attending the General Outpatient Department and selected specialist outpatient clinics at Alex-Ekwueme Federal Teaching Hospital during the study

period. Eligible participants were registered NHIS enrollees aged 18 years and above who had accessed healthcare services at the hospital and were willing to provide written informed consent.

Participants were excluded if they were critically ill at the time of recruitment, had cognitive or communication impairments that prevented meaningful participation, were unable to complete the questionnaire or interview, or declined to provide informed consent.

Sample Size Determination

The quantitative sample size was initially determined using Taro Yamane's formula for finite populations [18]:

$$n = N / [1 + N(e^2)]$$

where n represents the required sample size, N represents the estimated study population, and e represents the margin of error set at 0.05.

Hospital attendance records indicated that approximately 3,141 NHIS enrollees accessed outpatient healthcare services at the hospital during the six months preceding the study. Substitution of these values produced an estimated minimum sample size of 355 participants. To compensate for possible non-response and incomplete questionnaires, an additional 6% was added, resulting in a final target sample size of 376 participants.

Because the study also examined associations between waiting time, satisfaction, and willingness to continue using NHIS services, the adequacy of the sample was further considered in relation to the planned multivariable analysis. The final sample of 376 participants was considered sufficient for logistic regression because it provided an adequate number of outcome events for the planned predictor variables, including age, sex, educational level, occupation, monthly income, place of residence, clinic type, duration of NHIS enrolment, waiting-time duration, waiting-time perception, and satisfaction status. This additional justification was used to strengthen the analytical basis of the sample size beyond estimation of a single population proportion.

For the qualitative component, 20 participants were purposively selected from survey respondents for in-depth interviews. Selection was guided by variation in waiting-time experiences, satisfaction levels, willingness to continue using NHIS services, age, sex, occupation, educational level, and place of residence. Interviews continued until thematic saturation was achieved, defined as the point at which additional interviews no longer generated substantially new themes relevant to the study objectives [19].

Sampling Technique and Recruitment Flow

For the quantitative component, consecutive sampling was used. Eligible NHIS enrollees attending the selected outpatient clinics during the study period were approached consecutively by trained research

assistants, informed about the study, screened for eligibility, and invited to participate. Recruitment continued until the required sample size was achieved.

A total of 397 NHIS enrollees were approached during the study period. Of these, 387 met the eligibility criteria, 11 declined participation, and none were excluded because of incomplete responses or other eligibility-related reasons. A final sample of 376 respondents was included in the quantitative analysis, giving a response rate of 100%.

For the qualitative component, purposive sampling was used to select participants from among survey respondents who indicated willingness to participate in follow-up interviews. Selection aimed to capture diverse experiences, including respondents with favourable and unfavourable perceptions of waiting time, satisfied and dissatisfied respondents, and those willing and unwilling to continue using NHIS services. This approach enabled exploration of both positive and negative experiences of NHIS service delivery.

Data Collection Instruments

Quantitative data were collected using a structured questionnaire developed specifically for this study. The questionnaire was informed by relevant literature on waiting time, healthcare quality, patient satisfaction, and health insurance service utilization, as well as the objectives and conceptual framing of the study. It was not adopted in its entirety from any previously published questionnaire. Where individual concepts or items were informed by previous literature, they were contextualized and worded to reflect the NHIS service-delivery processes and the study setting. The final questionnaire comprised 22 items covering socio-demographic and NHIS enrolment characteristics, waiting-time experiences, perception of waiting time, satisfaction with NHIS healthcare services, willingness to continue using NHIS services, and perceived barriers to continued use. The English-language version of the questionnaire is provided as Supplementary File 1a.

The socio-demographic section assessed age, sex, marital status, educational level, occupation, monthly income, place of residence, and duration of NHIS enrolment. The waiting-time section assessed the self-reported duration of time spent before receiving care and the time spent with healthcare providers during consultation. Perception of waiting time was assessed using four response options: very good, good, poor, and very poor. Patient satisfaction was assessed using a four-point response scale ranging from strongly satisfied to strongly dissatisfied. Willingness to continue using NHIS services was assessed using a yes/no response format. Reasons for unwillingness to continue using NHIS services were assessed among respondents who indicated that they were unwilling to continue.

The questionnaire underwent expert review by specialists in public health, health services research, and biostatistics to assess relevance, clarity, comprehensiveness, response options, sequencing, and alignment with the study objectives. It was subsequently pilot-tested among 20 NHIS enrollees attending a healthcare facility outside the study setting. Feedback from the pilot study informed refinement of the

questionnaire. Internal consistency reliability was assessed using Cronbach's alpha, which improved from 0.75 in the initial version to 0.867 in the final version.

Qualitative data were collected using a semi-structured interview guide developed specifically for this study. The guide was developed in accordance with the study objectives and informed by the conceptual framing of patient satisfaction and health service utilization. It explored participants' experiences of waiting time, perceptions of NHIS administrative procedures, satisfaction with healthcare services, experiences with medications and investigations, perceived barriers to service use, and factors influencing willingness to continue using NHIS services. The interview guide was used flexibly to allow participants to elaborate on their experiences and to permit probing of issues that emerged during the interviews. The English-language version of the questionnaire is provided as Supplementary File 1b.

Validity and Reliability of the Quantitative Instrument

Content validity of the questionnaire was established through expert review by specialists in public health, health services research, and biostatistics. The experts assessed the instrument for relevance, clarity, comprehensiveness, response options, sequencing, and alignment with the study objectives. Their feedback informed revisions to improve item wording, response categories, and overall structure.

A pilot study was conducted among 20 NHIS enrollees attending a healthcare facility outside the study setting. The pilot study assessed clarity, comprehensibility, acceptability, average administration time, and field procedures. Participants in the pilot study were not included in the final analysis. Feedback from the pilot study informed further refinement of the questionnaire. Internal consistency reliability was assessed using Cronbach's alpha. The Cronbach's alpha coefficient improved from 0.75 in the initial version to 0.867 in the final version, indicating good internal consistency [20].

Qualitative Rigour and Trustworthiness

Trustworthiness of the qualitative component was enhanced using credibility, transferability, dependability, and confirmability criteria [21]. Credibility was supported through careful participant selection, audio-recording of interviews, field notes, triangulation of qualitative and quantitative findings, and research-team review of emerging interpretations. Transferability was supported by providing detailed descriptions of the study setting, participant characteristics, and service-delivery context. Dependability was strengthened through documentation of recruitment, interview, transcription, coding, and analytic procedures. Confirmability was enhanced through reflexive note-taking, audit-trail documentation, and team discussion of interpretations.

Thematic saturation was assessed during data collection and preliminary analysis. Saturation was considered achieved when additional interviews produced no substantially new themes, codes, or explanations relevant to waiting time, satisfaction, and willingness to continue using NHIS services.

Research Team and Reflexivity

The interviews were conducted by two trained researchers with prior experience in qualitative interviewing and health services research. The interviewers comprises of one female nurse and one male physiotherapist. The interviewers had no prior relationship with participants before recruitment.

Before each interview, participants were informed about the purpose of the study, the interviewer's role, confidentiality safeguards, voluntary participation, and their right to decline or withdraw without consequences. Reflexive notes were maintained throughout the data collection and analysis process to document interviewer assumptions, contextual observations, and potential influences on data interpretation. Regular research-team discussions were held to examine emerging interpretations, consider alternative explanations, and ensure that the findings remained grounded in participants' accounts.

Data Collection Procedure

Data collection was conducted between June and August 2025. Eligible NHIS enrollees attending outpatient clinics were approached by trained research assistants during clinic sessions. Participants received verbal and written information about the study and provided written informed consent before enrolment.

Quantitative data were collected through face-to-face administration of the structured questionnaire. Completed questionnaires were checked daily for completeness, consistency, and legibility. Questionnaires with substantial missing data on key variables were excluded from analysis, while questionnaires with minor missing responses were retained and analysed using available data for each variable.

For the qualitative component, in-depth interviews were conducted in private locations within the hospital to ensure confidentiality and minimize interruptions. Interviews lasted between 33 and 86 minutes and were audio-recorded with participants' permission. Field notes were taken during and immediately after each interview to document contextual observations, non-verbal cues, and preliminary analytic reflections.

Interviews were conducted in both English and Igbo, depending on participants' preference and language proficiency. Where interviews were conducted in Igbo, they were translated into English during transcription by bilingual members of the research team and checked for accuracy. Transcripts were not returned to participants for comment because of logistical constraints and the need to protect participant anonymity. All transcripts were anonymized before analysis.

Quantitative Data Analysis

Quantitative data were entered, cleaned, coded, and analysed using IBM SPSS Statistics version 26. Descriptive statistics, including frequencies, percentages, means, and standard deviations, were used to summarize respondents' socio-demographic characteristics, waiting-time experiences, waiting-time

perception, satisfaction with NHIS healthcare services, willingness to continue using NHIS services, and reasons for unwillingness to continue.

Categorical variables were coded before analysis. Perception of waiting time was dichotomized into favourable and unfavourable categories. Responses of very good and good were coded as favourable perception, while poor and very poor were coded as unfavourable perception. Satisfaction was dichotomized into satisfied and dissatisfied categories. Responses of strongly satisfied and satisfied were coded as satisfied, while dissatisfied and strongly dissatisfied were coded as dissatisfied. Willingness to continue using NHIS services was coded as yes or no. Waiting-time duration was analysed using the original categorical responses and was summarized descriptively, with waiting of three hours or more classified as prolonged waiting time.

Frequencies and percentages were reported for categorical variables. Means and standard deviations were reported for summary scores where applicable. Ninety-five percent confidence intervals were calculated for selected proportions, including waiting-time perception, satisfaction status, willingness to continue using NHIS services, and reasons for unwillingness to continue. One-sample proportion tests were used as secondary analyses to assess whether selected proportions differed significantly from 50%, which was used as a neutral reference benchmark.

Associations between waiting-time perception and satisfaction, and between satisfaction and willingness to continue using NHIS services, were examined using chi-square tests of independence. Cell counts and percentages were presented in cross-tabulation tables where available. Cramer's V was used to estimate the strength of association for statistically significant chi-square tests. Statistical significance was set at $p < 0.05$.

Goodman and Kruskal's lambda was used only as a supplementary descriptive measure of proportional reduction in prediction error between categorical variables. The primary inferential interpretation was based on descriptive statistics, one-sample proportion tests, chi-square tests, and Cramer's V.

Data were checked for completeness and consistency before analysis. Questionnaires with substantial missing information on key variables were excluded. Valid responses were analysed for each variable, and the number of valid responses was reported in the relevant tables where applicable.

Qualitative Data Analysis

Audio-recorded interviews were transcribed verbatim and analysed using thematic analysis following the six-step approach described by Braun and Clarke [22]. The analysis involved familiarization with the data, generation of initial codes, identification of candidate themes, review and refinement of themes, definition and naming of final themes, and selection of representative quotations.

The analysis was primarily inductive, allowing themes to emerge from participants' accounts while remaining sensitized by the study objectives and conceptual framing. Coding was conducted using MAXQDA 2024. A coding framework was developed after initial familiarization with the transcripts and

was refined iteratively as analysis progressed. At least two members of the research team independently coded a subset of transcripts to improve analytic consistency. Coding differences were discussed and resolved through consensus. The final coding framework was then applied to the remaining transcripts.

Themes were reviewed against coded extracts and the full dataset to ensure that they accurately represented participants' experiences. Representative quotations were selected to illustrate key themes and preserve participants' voices. Participant identifiers were replaced with anonymized codes to protect confidentiality.

Integration of Quantitative and Qualitative Findings

Integration occurred at the design, analysis, interpretation, and reporting stages. Quantitative and qualitative data were collected during the same study period and analysed separately. The findings were then compared and integrated to identify convergence, complementarity, divergence, and explanatory insights across both strands [14].

Qualitative findings were used to explain and contextualize quantitative results relating to waiting-time experiences, satisfaction, and willingness to continue using NHIS services. Integrated findings were presented narratively and through a joint display linking quantitative findings, qualitative themes, illustrative quotations, interpretation of convergence or complementarity, and mixed-methods meta-inferences. The joint display was used to show how administrative bottlenecks, provider lateness, queue-jumping, medication stock-outs, and other service-delivery experiences helped explain the quantitative associations among waiting time, satisfaction, and willingness to continue using NHIS services.

Patient and Public Involvement

Patients and members of the public were not involved in the design, conduct, reporting, or dissemination planning of this study. However, NHIS enrollees participated as respondents in the quantitative survey and as interview participants in the qualitative component.

Ethical Considerations

Ethical approval was obtained from the Health Research Ethics Committee of Alex-Ekwueme Federal Teaching Hospital, Abakaliki (Approval No.: EBSU/DRIC/UREC/VOL.04/095). Written informed consent was obtained from all participants before enrolment in the study. Participants were informed about the purpose of the study, the voluntary nature of participation, confidentiality measures, potential risks and benefits, and their right to withdraw at any stage without consequences. Personal identifiers were removed from questionnaires, transcripts, and study records to protect anonymity and confidentiality. Audio recordings and transcripts were stored securely and accessed only by authorized members of the research team. The study was conducted in accordance with accepted ethical principles for medical research involving human participants, including the Declaration of Helsinki [23].

Results

Participant flow

A total of 397 NHIA enrollees were approached for participation during the study period. Of these, 387 met the eligibility criteria, 11 declined participation, and 376 completed the quantitative survey and were included in the final analysis. For the qualitative component, 20 participants were purposively selected from survey respondents and completed in-depth interviews until thematic saturation was achieved.

Participant Characteristics

A total of 376 NHIS enrollees participated in the quantitative survey. The largest age group was 35–44 years, comprising 97 participants (25.8%), followed by those aged 45–54 years (23.7%) and 25–34 years (22.1%). Participants aged 18–24 years represented the smallest age group (9.3%). Females constituted a slight majority of respondents (53.5%), while males accounted for 46.5%.

Most respondents were married (81.1%), while 13.3% were single and 5.6% were widowed, separated, or divorced. More than half of the respondents had attained tertiary education (58.8%), while 33.0% had secondary education and 8.2% had primary education. Civil servants constituted the majority of the sample (64.6%), followed by self-employed respondents (33.0%), while only 2.4% were unemployed.

Regarding income, the largest proportion of respondents earned ₦51,000–₦100,000 monthly (31.6%), followed by those earning below ₦50,000 (28.5%). Smaller proportions earned ₦101,000–₦150,000 (17.6%), ₦151,000–₦200,000 (15.2%), ₦201,000–₦250,000 (5.6%), and above ₦250,000 (2.0%). Most respondents reported access to healthcare services (82.7%), whereas 17.3% reported no access as presented below (see Table 1).

For the qualitative component, 20 NHIS enrollees participated in in-depth interviews. Participants varied in age, sex, educational attainment, occupation, place of residence, and duration of NHIS enrolment, providing diverse perspectives on waiting time, satisfaction with healthcare services, and willingness to continue using NHIS services.

Table 1. Demographic characteristics of NHIS enrollees (N = 376)

Characteristic	Frequency	Percentage
Age group (years)		
18–24	35	9.3
25–34	83	22.1
35–44	97	25.8
45–54	89	23.7
≥55	72	19.1
Sex		
Male	175	46.5
Female	201	53.5
Marital status		
Single	50	13.3
Married	305	81.1
Widowed/separated/divorced	21	5.6
Highest level of education		
Primary	31	8.2
Secondary	124	33.0
Tertiary	221	58.8
Employment status		
Civil servant	243	64.6
Self-employed	124	33.0
Unemployed	9	2.4
Average monthly income		
<N50,000	107	28.5
N51,000–N100,000	119	31.6
N101,000–N150,000	66	17.6
N151,000–N200,000	57	15.2
N201,000–N250,000	21	5.6
>N250,000	6	2.0

Access to healthcare services		
Yes	311	82.7
No	65	17.3

Waiting-Time Experiences and Perceptions

Respondents reported variable consultation durations and waiting times before being attended to by healthcare workers. The largest proportion of respondents reported that doctors spent 10–20 minutes assessing and listening to their complaints (43.1%), followed by 21–30 minutes (23.4%). Only 8.0% reported consultation durations below 10 minutes. Based on grouped midpoint estimates, the average consultation time was approximately 25 minutes.

Waiting time before receiving treatment or being attended to was substantially longer. Nearly one-third of respondents waited four hours or more (29.3%), while 23.4% waited three to four hours. Overall, 198 respondents (52.7%) waited at least three hours before receiving care. In contrast, only 20 respondents (5.3%) were attended to within 30 minutes, and 40 respondents (10.6%) were attended to within one hour. Based on grouped midpoint estimates, the average waiting time before receiving care was approximately 2.8 hours. These findings indicate that although consultation time was relatively moderate, the pre-consultation or pre-treatment waiting period was prolonged for many enrollees.

Perception of waiting time was generally unfavourable. Only 4 respondents (1.1%) rated waiting time as very good, while 154 respondents (41.0%) rated it as good. By contrast, 122 respondents (32.4%) rated waiting time as poor and 96 respondents (25.5%) rated it as very poor. When grouped into favourable and unfavourable categories, 158 respondents (42.0%; 95% CI: 37.0%–47.0%) rated waiting time favourably, while 218 respondents (58.0%; 95% CI: 53.0%–63.0%) rated it unfavourably. A one-sample proportion test against 50% showed that the proportion with unfavourable waiting-time perception was significantly higher than half of the sample ($Z = 3.09$, $p = 0.002$). The mean waiting-time perception score was 2.18 ± 0.83 , indicating an overall tendency toward poor ratings as presented below (see Table 2).

The qualitative findings helped explain the sources and meaning of these waiting-time experiences. Participants described waiting time as being driven not only by patient volume but also by administrative bottlenecks, treatment-code generation procedures, late arrival of providers, and perceived queue-jumping. One participant described the administrative process as follows:

"It takes a long time to get anything done for those of us under the NHIS. We spend so many hours trying to generate treatment codes for investigations and treatment." (P01, Male, 52 years, Civil Servant)

Provider lateness was also perceived as an important contributor to prolonged waiting time:

patients by being here on time." (P03, Male, 44 years, Civil Servant)

Some participants further suggested that perceived preferential treatment and queue-jumping increased waiting time for other patients:

"Patients who are unrelated to staff experience longer waiting times because some people are allowed to jump the queue." (P05, Male, 58 years, Retired Civil Servant)

Participants also described waiting time as one of the most difficult aspects of accessing care under NHIS, with waiting sometimes extending across most of the day:

"Most times, a whole day is spent in the hospital before one receives treatment." (P07, Male, 55 years, Civil Servant)

Together, these accounts suggest that waiting time was not only a measurable delay but also an experience of administrative burden, perceived unfairness, and disruption to patients' daily activities.

Table 2. Consultation duration, waiting time before receiving care, and perception of waiting time (N = 376)

Variable	Frequency	Percentage
<i>Length of time doctor spent assessing/listening to complaints</i>		
<10 minutes	30	8.0
10–20 minutes	162	43.1
21–30 minutes	88	23.4
31–40 minutes	42	11.2
41–50 minutes	12	3.2
51–60 minutes	22	5.9
>60 minutes	20	5.3
Time spent before receiving treatment/being attended to		
Within 30 minutes	20	5.3
Within 1 hour	40	10.6
1–2 hours	72	19.1
2–3 hours	46	12.2
3–4 hours	88	23.4
≥4 hours	110	29.3
Overall perception of waiting time		
Very good	4	1.1
Good	154	41.0
Poor	122	32.4
Very poor	96	25.5
Favourable perception	158	42.0
Unfavourable perception	218	58.0

Mean waiting-time perception score = 2.18 ± 0.83 .

Satisfaction with NHIS Healthcare Services

Overall, 232 respondents (61.7%; 95% CI: 56.8%–66.6%) were satisfied or strongly satisfied with the quality of healthcare services received under NHIS. Specifically, 22 respondents (5.9%) were strongly satisfied and 210 respondents (55.9%) were satisfied. Conversely, 144 respondents (38.3%; 95% CI:

33.4%–43.2%) were dissatisfied or strongly dissatisfied, comprising 134 respondents (35.6%) who were dissatisfied and 10 respondents (2.7%) who were strongly dissatisfied.

A one-sample proportion test against 50% showed that the proportion of respondents who were satisfied or strongly satisfied was significantly higher than half of the sample ($Z = 4.54, p < 0.001$). This suggests that although waiting-time perception was generally unfavourable, overall satisfaction with NHIS healthcare services remained moderately positive.

The qualitative findings showed that satisfaction was linked to perceived recovery, effectiveness of medications, access to specialist care, and affordability. Participants who reported positive experiences often emphasized clinical improvement and financial protection. One participant stated:

"I am satisfied because I am making a quick recovery after receiving my treatment."

(P10, Female, 43 years, Trader)

Another participant linked satisfaction to medication effectiveness:

"The drugs I got here worked for me, so I am very happy about it."

(P11, Male, 48 years, Civil Servant)

Access to specialist services also contributed to satisfaction:

"Experts in the treatment of different diseases are here in one location."

(P12, Female, 51 years, Teacher)

Affordability was a particularly important source of satisfaction and continued value:

"NHIS pays the greater part of our bills, which makes healthcare affordable for me and my family."

(P13, Male, 56 years, Retired Civil Servant)

However, dissatisfaction persisted where administrative procedures delayed access to care:

"We are unsatisfied that half a day and more is spent generating codes to access treatment under NHIS."

(P14, Female, 45 years, Businesswoman)

These findings suggest that satisfaction was shaped by a balance between the perceived benefits of NHIS, especially affordability and access to care, and the negative effect of delays in receiving services as presented below (see Table 3).

Table 3. Satisfaction with the quality of healthcare services among NHIS enrollees (N = 376)

Level of satisfaction	Frequency	Percentage	95% CI
Strongly satisfied	22	5.9	3.5–8.2
Satisfied	210	55.9	50.8–60.9
Dissatisfied	134	35.6	30.8–40.5
Strongly dissatisfied	10	2.7	1.0–4.3
Satisfied/strongly satisfied	232	61.7	56.8–66.6
Dissatisfied/strongly dissatisfied	144	38.3	33.4–43.2

Association Between Waiting-Time Perception and Satisfaction

There was a statistically significant association between perception of waiting time and satisfaction with healthcare services ($\chi^2 = 91.41$, $df = 1$, $p < 0.0001$). The strength of association was moderate, as indicated by Cramer's $V = 0.35$. Further analysis using Goodman and Kruskal's Lambda indicated that knowledge of respondents' waiting-time perception improved prediction of satisfaction levels ($\lambda = 0.61$), while knowledge of satisfaction improved prediction of waiting-time perception ($\lambda = 0.48$).

Qualitative findings supported this statistical association by showing how waiting time shaped patients' overall judgments of service quality. Participants repeatedly described treatment-code generation and prolonged waiting as central sources of dissatisfaction. One participant explained:

"To generate a single code is so gruelling and takes almost half a day before treatment can begin."

(P15, Male, 54 years, Civil Servant)

Another participant described the effect of delay on access to consultation and treatment:

"I have to spend almost the whole day in the hospital before seeing the doctor and getting my treatment."

(P16, Female, 47 years, Trader)

Importantly, some participants distinguished between the quality of treatment and the burden of waiting, suggesting that delays could undermine otherwise positive perceptions of care:

"The treatment may be good, but the waiting time makes the whole experience stressful."

(P17, Male, 50 years, Businessman)

These qualitative accounts indicate that waiting time affected satisfaction not merely through delay itself, but through the stress, uncertainty, administrative burden, and perceived inefficiency associated with accessing care.

Willingness to Continue Using NHIS Services

Most respondents expressed willingness to continue using NHIS services. A total of 312 respondents (83.0%; 95% CI: 79.2%–86.8%) indicated willingness to continue as insured members, while 64 respondents (17.0%; 95% CI: 13.2%–20.8%) were unwilling to continue. The proportion willing to continue was significantly higher than 50% ($Z = 12.79, p < 0.001$), indicating strong overall retention intention despite concerns about waiting time and service-delivery delays.

The qualitative findings suggested that willingness to continue was largely influenced by the perceived financial benefit of NHIS, even when service delivery was imperfect. One participant stated:

"Despite the challenges, NHIS still helps me because I spend much less on treatment compared to paying for everything myself."

(P18, Female, 49 years, Trader)

At the same time, waiting time remained a major source of concern among those who were less willing to continue:

"The waiting time is discouraging. Sometimes you spend almost the whole day before receiving treatment."

(P19, Male, 53 years, Civil Servant)

Among the 64 respondents unwilling to continue with NHIS, the most frequently reported reason was excessive waiting time, reported by 56 respondents (87.5%). This was followed by time-consuming protocols for receiving healthcare services (81.3%), prescribed drugs being out of stock (84.4%), dissatisfaction with treatment received (78.1%), higher-than-expected out-of-pocket expenditure (65.6%), medications not being included in the NHIS package (62.5%), poor communication between patients and healthcare professionals (46.9%), and inadequate treatment (40.6%) as presented below (see Table 4).

Because the study aimed to understand how waiting time shaped satisfaction and continued use, these additional service-delivery findings are interpreted as contextual explanations of waiting-time experience and willingness to continue using NHIS services, rather than as independent primary outcomes.

Table 4. Willingness to continue using NHIS services and title-relevant reasons for unwillingness

Variable	Frequency	Percentage
Willingness to continue with NHIS (N = 376)		
Yes	312	83.0
No	64	17.0
Main reasons among respondents unwilling to continue (N = 64)		
Waiting time is much	56	87.5
Protocols involved in receiving services are time-consuming	52	81.3
Not satisfied with treatment received	50	78.1
Prescribed drugs are always out of stock	54	84.4
Out-of-pocket expenses are higher than expected	42	65.6
Medications are not included in NHIS	40	62.5

Association Between Satisfaction and Willingness to Continue Using NHIS Services

There was a statistically significant association between satisfaction with healthcare services and willingness to continue using NHIS services ($\chi^2 = 121.14, p < 0.0001$). The strength of association was moderate to strong, as indicated by Cramer's V = 0.57. Respondents who reported satisfaction with healthcare services were more likely to express willingness to continue using NHIS services than those who reported dissatisfaction.

Qualitative findings supported this association by showing that positive experiences encouraged continued participation, whereas dissatisfaction with delays and service inefficiencies weakened retention intention. One participant linked continued use to the financial benefit of NHIS:

"Even with some of the challenges, I am willing to continue because the scheme has helped me and my family access treatment at a lower cost."

(P11, Male, 48 years, Civil Servant)

By contrast, another participant explained how delays and stress reduced willingness to remain in the scheme:

"The treatment may be affordable, but the delays and stress make me question whether I should continue with the scheme."

(P16, Female, 47 years, Trader)

A third participant summarized the balance between the scheme's financial value and the need for service improvement:

"The financial support is good, but there is still a need to improve the way services are delivered to patients."

(P13, Male, 56 years, Retired Civil Servant)

These findings suggest that satisfaction operated as an important link between waiting-time experience and willingness to continue using NHIS services. Although the financial protection offered by NHIS encouraged continued use, prolonged delays and stressful service experiences reduced confidence in continued participation for some enrollees.

Integrated Mixed-Methods Explanation of the Waiting Time–Satisfaction–Continued Use Pathway

The quantitative findings indicate a coherent pathway: prolonged waiting time was common, waiting-time perception was mostly unfavourable, waiting-time perception was significantly associated with satisfaction, and satisfaction was significantly associated with willingness to continue using NHIS services. More than half of respondents waited at least three hours before receiving care, and 58.0% rated waiting time as poor or very poor. Despite this, 61.7% were satisfied or strongly satisfied with healthcare services, and 83.0% expressed willingness to continue using NHIS services.

The qualitative findings explain this pattern. Waiting time was experienced as more than a delay; it reflected administrative bottlenecks, late provider availability, queue-jumping, treatment-code generation difficulties, and uncertainty in accessing care. These experiences reduced satisfaction when they made the care process stressful. However, financial protection, access to specialist services, perceived recovery, and effective medications helped preserve satisfaction and willingness to continue among many enrollees.

Service-delivery barriers such as medication stock-outs, time-consuming protocols, and poor provider-patient communication were relevant mainly because they intensified waiting-time experiences or weakened the perceived value of NHIS. For example, medication stock-outs required some enrollees to seek drugs outside the hospital:

"Most of the prescribed drugs are often unavailable, and I end up buying them elsewhere."

(P08, Female, 42 years, Teacher)

Administrative burden also delayed treatment initiation:

"Generating a single treatment code can take several hours before treatment can even begin."

(P02, Female, 47 years, Trader)

For some participants, excessive waiting became a direct reason for questioning continued NHIS use:

"How can I continue when I have to wait all day before getting attention from the doctors?"

(P20, Male, 55 years, Civil Servant)

Taken together, the mixed-methods findings suggest that the effect of waiting time on continued NHIS use was not isolated. Rather, waiting time influenced satisfaction by shaping the overall experience of accessing care, and satisfaction then influenced willingness to continue using NHIS services. The financial value of NHIS appeared to buffer dissatisfaction for many enrollees, but persistent delays, administrative stress, and medication unavailability weakened the perceived benefit of the scheme for others as presented below (see Table 5).

Table 5. Joint display of the waiting time–satisfaction–continued use pathway

Pathway component	Quantitative finding	Qualitative explanation	Integrated interpretation	Theoretical interpretation
Waiting-time burden	52.7% waited at least three hours before receiving care; 58.0% rated waiting time as poor or very poor	<i>"Most times, a whole day is spent in the hospital before one receives treatment."</i> (P07, Male, 55 years, Civil Servant)	Prolonged waiting time was common and was experienced as disruptive and burdensome.	Negative disconfirmation of expected timely care under Expectation–Confirmation Theory
Administrative source of waiting time	Time-consuming protocols were reported by 81.3% of those unwilling to continue	<i>"It takes a long time to get anything done for those of us under the NHIS. We spend so many hours trying to generate treatment codes for investigations and treatment."</i> (P01, Male, 52 years, Civil Servant)	Administrative procedures contributed to waiting time and shaped patients' perception of service inefficiency.	Dissatisfaction occurs when actual service experience falls below expected responsiveness
Waiting time and satisfaction	Waiting-time perception was significantly associated with satisfaction ($\chi^2 = 91.41$, $p < 0.0001$; Cramer's $V = 0.35$)	<i>"The treatment may be good, but the waiting time makes the whole experience stressful."</i> (P17, Male, 50 years, Businessman)	Waiting time reduced satisfaction by making the care process stressful, even when treatment was considered useful.	Prior experience influences future utilization under Andersen's model
Satisfaction and continued use	Satisfaction was significantly associated with willingness to continue using NHIS services ($\chi^2 = 121.14$, $p < 0.0001$; Cramer's $V = 0.57$)	<i>"Even with some of the challenges, I am willing to continue because the scheme has helped me and my family access treatment at a lower cost."</i> (P11, Male, 48 years, Civil Servant)	Satisfaction and perceived financial protection supported continued use of NHIS services.	NHIS functions as an enabling resource under Andersen's model
Threats to continued use	Among those unwilling to continue, 87.5% cited excessive waiting time, 84.4% cited drug stock-outs, and 81.3% cited time-consuming protocols	<i>"How can I continue when I have to wait all day before getting attention from the doctors?"</i> (P20, Male, 55 years, Civil Servant)	Persistent delays and related service inefficiencies weakened willingness to continue among dissatisfied enrollees.	Health-system barriers reduce the enabling value of insurance coverage

The integrated findings were consistent with the study's theoretical framing. From the perspective of Expectation-Confirmation Theory, prolonged waiting time, treatment-code delays, provider lateness, and perceived queue-jumping represented service experiences that fell below enrollees' expectations of timely and responsive care, thereby contributing to dissatisfaction [8]. At the same time, Andersen's Behavioural Model of Health Services Utilization helps explain why financial protection under NHIS supported continued use, while service-related barriers such as long waiting time, administrative burden, medication stock-outs, and poor provider-patient interaction discouraged continued use among some enrollees [10]. Thus, the findings suggest that willingness to continue using NHIS services was shaped by the balance between enabling financial access and negative service-delivery experiences.

The integrated quantitative and qualitative findings suggested a pathway in which waiting-time experience was associated with satisfaction, and satisfaction was associated with willingness to continue using NHIS services. Figure 1 summarizes this mixed-methods pathway and shows how qualitative explanations contextualized the observed quantitative associations.

Overall, the findings show that waiting time was central to enrollees' satisfaction and willingness to continue using NHIS services. Although NHIS provided important financial protection and supported continued use for most respondents, prolonged waiting, administrative delays, and related service inefficiencies reduced satisfaction and discouraged continued use among a subset of enrollees.

Discussion

Principal Findings

This mixed-methods study examined waiting-time experiences, patient satisfaction, and willingness to continue using NHIS healthcare services among enrollees attending a tertiary hospital in southeastern Nigeria. The findings showed that prolonged waiting time was common, with more than half of respondents waiting at least three hours before receiving care and nearly one-third waiting four hours or longer. Waiting-time perception was also generally unfavourable, as most respondents rated waiting time as poor or very poor. Despite these delays, a majority of respondents reported satisfaction with NHIS healthcare services and expressed willingness to continue using the scheme.

The study further showed that waiting-time perception was significantly associated with satisfaction, while satisfaction was significantly associated with willingness to continue using NHIS services. These associations should be interpreted cautiously because the cross-sectional design does not establish causal direction. However, the qualitative findings provided explanatory insight by showing that prolonged waiting time was experienced not merely as delay, but as a reflection of administrative bottlenecks, treatment-code generation difficulties, provider lateness, queue-jumping, and uncertainty in accessing care. At the same time, affordability, access to specialist care, perceived recovery, and effective medications helped preserve satisfaction and willingness to continue using NHIS services among many enrollees. These findings suggest that the perceived value of NHIS depends not only on financial protection but also on the efficiency, fairness, and responsiveness of service delivery.

Waiting Time as a Marker of Service Responsiveness

The finding that more than half of the respondents waited at least three hours before receiving care indicates that waiting time remains a major service-delivery challenge for NHIS enrollees in the study setting. Although doctor-patient consultation time was relatively moderate for most respondents, the longer delay occurred before treatment or clinical attention was received. This distinction is important because patient dissatisfaction may arise less from the duration of the clinical encounter itself and more from the time spent navigating administrative and service-access processes before care begins.

The qualitative findings provided important insight into the sources of these delays. Participants attributed prolonged waiting time to treatment-code generation procedures, delayed arrival of providers, and queue-jumping. These explanations suggest that waiting-time problems are not only clinical but also organizational. Administrative procedures intended to regulate access to insured care may become sources of delay when they are not efficiently implemented. Similarly, perceptions of preferential treatment or queue-jumping may intensify dissatisfaction because they introduce concerns about fairness and equity in access to care.

These findings are consistent with previous evidence that waiting time is an important determinant of patient experience and perceived healthcare quality [5,6]. More recent evidence also supports this interpretation. Zhang et al. showed that different dimensions of waiting time, including expected and perceived waiting time, are relevant to outpatient satisfaction [24], while Ali reported that perceived waiting time influences satisfaction, perceived quality, access, and utilization in a low- and middle-income country context [25]. Nigerian evidence similarly indicates that waiting time, administrative inefficiencies, drug availability, staff attitude, and service quality remain important contributors to satisfaction and dissatisfaction among NHIS/NHIA enrollees [4,7,9,11,26,29]. The present study extends this evidence by showing how waiting-time experience operates in a tertiary hospital context where insured patients may value specialist care and financial protection but still experience frustration with administrative and clinic-flow delays.

Waiting Time, Expectation-Confirmation, and Patient Satisfaction

The significant association between waiting-time perception and satisfaction supports the relevance of Expectation-Confirmation Theory in interpreting the findings. According to this theory, satisfaction is shaped by the extent to which actual experiences confirm or disconfirm prior expectations [8]. For NHIS enrollees, insurance coverage may create expectations of more organized, affordable, and timely access to care. When enrollees spend several hours waiting, struggle to obtain treatment codes, or perceive unfair queue management, their actual experience may fall below these expectations. This negative disconfirmation provides a plausible explanation for the observed association between waiting-time perception and dissatisfaction.

The qualitative findings reinforce this interpretation. Some participants acknowledged that the treatment received was beneficial, yet still described the overall experience as stressful because of the waiting

time. This indicates that satisfaction was not determined solely by clinical outcome. Rather, satisfaction reflected the total care experience, including administrative efficiency, timeliness, fairness, communication, and the emotional burden of waiting. In this sense, prolonged waiting time appeared to weaken the perceived quality of care even when treatment itself was considered effective.

At the same time, satisfaction remained moderately high overall. This apparent contrast can be explained by the competing influence of positive and negative service experiences. On the one hand, long waiting time and administrative delays contributed to dissatisfaction. On the other hand, respondents valued affordability, access to specialist services, recovery after treatment, and medication effectiveness. Thus, satisfaction among NHIS enrollees appeared to reflect a balance between the financial and clinical benefits of the scheme and the negative experience of delayed access.

Satisfaction and Willingness to Continue Using NHIS Services

A major finding of this study was that most respondents expressed willingness to continue using NHIS services, despite unfavourable perceptions of waiting time. Satisfaction was also significantly associated with willingness to continue using NHIS services. This finding suggests that patient satisfaction may function as an important link between service experience and continued use of insured healthcare services.

Andersen's Behavioural Model of Health Services Utilization provides a useful framework for interpreting this relationship [10]. A recent scoping review by Lederle et al. confirms the continued relevance of Andersen's model in health services research and highlights its focus on predisposing, enabling, and need factors [27]. In the present study, participants repeatedly emphasized the financial value of NHIS, particularly its role in reducing treatment costs and improving access to services that might otherwise be unaffordable. This enabling function likely explains why many respondents remained willing to continue using the scheme even when they experienced delays.

However, Andersen's model also recognizes that health-system characteristics influence utilization [10,27]. In this study, long waiting time, administrative procedures, medication stock-outs, poor communication, and perceived disrespect operated as service-related barriers. These barriers did not necessarily eliminate willingness to continue for all respondents, but they weakened the perceived value of the scheme among some enrollees. Therefore, continued use of NHIS services appeared to depend on the balance between financial access and service responsiveness. Where financial protection outweighed the inconvenience of delay, enrollees remained willing to continue. Where waiting time and service inefficiencies became too burdensome, willingness to continue declined.

It is important to clarify that this study measured willingness to continue using NHIS services rather than objectively measured future utilization. Therefore, the utilization-related findings should be interpreted as evidence of utilization intention or retention intention, not confirmed future healthcare-use behaviour. This distinction is important because willingness to continue may not always translate into actual future

use, especially if subsequent experiences, costs, provider availability, or medication access change over time.

Integrating the Two Theoretical Frameworks

Taken together, Expectation-Confirmation Theory and Andersen's Behavioural Model provide a coherent explanation of the findings. NHIS coverage functioned as an enabling resource by reducing financial barriers to care, but the value of this enabling resource depended on the quality of the service experience. When actual experiences, such as prolonged waiting, treatment-code delays, provider lateness, perceived queue-jumping, and medication unavailability, fell below enrollees' expectations of timely and reliable care, satisfaction declined [8]. Satisfaction then appeared to shape willingness to continue using NHIS services. Thus, insurance coverage may promote access, but sustained utilization depends on whether insured care is experienced as timely, respectful, and dependable [10].

Together, the two theories suggest that insurance coverage may enable access to care, but continued use depends on whether the service experience confirms enrollees' expectations of timely, respectful, and reliable care [8,10]. This integrated interpretation is particularly relevant for NHIS/NHIA policy because financial coverage alone may be insufficient to sustain enrollee confidence if the process of obtaining care remains slow, uncertain, or burdensome.

Contextual Explanations for Waiting Time and Continued Use

Although the study focused on waiting time, satisfaction, and continued use, the qualitative and secondary quantitative findings showed that waiting time was embedded within broader service-delivery processes. Time-consuming protocols, drug stock-outs, and administrative procedures were particularly important because they either prolonged the waiting experience or reduced the perceived value of NHIS coverage.

Medication stock-outs, for example, may not directly measure waiting time, but they influence how enrollees evaluate the service experience. If patients wait for several hours and still have to purchase prescribed medications outside the hospital, the benefits of insurance may appear incomplete. Similarly, treatment-code generation delays may be experienced as waiting time, but they are better understood as administrative inefficiencies within the insured-care pathway. Recent Nigerian evidence similarly identifies waiting time, staff attitude, drug availability, service quality, cost of treatment, and knowledge of NHIS as factors associated with satisfaction or dissatisfaction among enrollees [26]. These contextual findings therefore help explain how waiting time relates to satisfaction and continued use, rather than representing separate primary outcomes.

This interpretation is important for maintaining alignment with the study objective. The findings do not suggest that all NHIS implementation barriers were equally central to the study. Rather, they show that selected service-delivery barriers matter because they intensify waiting time, create dissatisfaction, and may weaken willingness to continue using NHIS services. This distinction helps preserve the

manuscript's focus while still acknowledging the real-world complexity of accessing insured care in a tertiary hospital.

Integration of Quantitative and Qualitative Findings

The mixed-methods design strengthened the interpretation of the findings by showing convergence between numerical patterns and participant narratives. Quantitatively, prolonged waiting time was common, waiting-time perception was mostly unfavourable, waiting-time perception was significantly associated with satisfaction, and satisfaction was significantly associated with willingness to continue using NHIS services. Qualitatively, participants explained how waiting time was produced through administrative delays, provider lateness, queue-jumping, and treatment-code procedures. They also explained why some enrollees remained willing to continue despite these challenges: NHIS reduced the cost of care and improved access to treatment.

The integrated findings therefore suggest a plausible pathway in which waiting-time experiences are associated with satisfaction, and satisfaction is associated with willingness to continue using NHIS services. This pathway should be interpreted cautiously because the cross-sectional design does not establish causality. Nevertheless, the convergence of quantitative associations and qualitative explanations provides stronger support for the interpretation than either strand would have provided alone.

Implications for Policy and Practice

The findings have practical implications for improving patient experience and sustaining NHIS/NHIA use. The current policy context is important because the National Health Insurance Authority Act of 2022 repealed the previous NHIS Act and established the National Health Insurance Authority to promote, regulate, and integrate health insurance schemes in Nigeria [28]. As coverage expands under the NHIA framework, service responsiveness becomes increasingly important for enrollee confidence and scheme sustainability.

First, hospitals providing care to NHIS/NHIA enrollees should streamline administrative procedures, especially treatment-code generation and authorization processes. Delays in these processes were repeatedly identified as major sources of waiting time and dissatisfaction. Digitalization should therefore be targeted specifically at authorization workflows, treatment-code generation, HMO desk coordination, and communication between administrative and clinical units.

Second, appointment scheduling and clinic-flow management should be strengthened. Long waiting times may be reduced through better triage, staggered appointment times, visible queue systems, clear patient-flow protocols, and monitoring of provider punctuality. Because participants raised concerns about queue-jumping, transparent and equitable queue-management systems may improve trust and perceived fairness.

Third, medication availability should be strengthened within NHIS/NHIA-accredited facilities. Drug stock-outs may weaken the perceived value of health insurance when patients still have to pay out of pocket after waiting for care. Improving supply-chain management and ensuring availability of essential medicines covered under NHIS/NHIA may improve satisfaction and confidence in the scheme.

Fourth, providers and administrators should improve communication with enrollees during periods of delay. Waiting may be less frustrating when patients understand the reasons for delays, know what steps remain before receiving care, and feel that they are treated respectfully. Patient-centred communication may therefore reduce the negative effect of unavoidable waiting time on satisfaction.

Strengths and Limitations

This study has several strengths. The mixed-methods design enabled both measurement and explanation of waiting-time experiences, satisfaction, and willingness to continue using NHIS services. The quantitative sample size was adequate for estimating the prevalence of waiting-time experiences and satisfaction levels, while the qualitative interviews provided contextual insight into the mechanisms underlying the observed findings. The integration of quantitative and qualitative evidence strengthened interpretation and helped clarify how administrative and service-delivery experiences shaped patient satisfaction and continued use.

However, several limitations should be considered. First, the study was conducted in a single tertiary hospital, which may limit generalizability to other facilities, levels of care, or regions in Nigeria. Second, the cross-sectional design limits causal inference. Although the findings suggest a plausible pathway from waiting time to satisfaction and continued use, the temporal sequence cannot be firmly established. Third, waiting time and satisfaction were based on self-report and may be affected by recall bias or social desirability bias. Fourth, the analysis relied partly on categorical measures of waiting time and satisfaction, which may reduce sensitivity to more nuanced differences in experience. Fifth, continued utilization was assessed using willingness to continue using NHIS services rather than objectively measured subsequent healthcare use. Therefore, the findings should be interpreted as evidence relating to utilization intention or retention intention, rather than confirmed future utilization behaviour. Sixth, although the qualitative findings provided useful explanatory depth, they may not capture all possible experiences of NHIS enrollees across different clinic types or facility contexts.

Conclusion

This study found that prolonged waiting time was common among NHIS enrollees attending a tertiary hospital in southeastern Nigeria and was significantly associated with patient satisfaction. Satisfaction was, in turn, associated with willingness to continue using NHIS healthcare services. The qualitative findings showed that waiting time was shaped by administrative bottlenecks, treatment-code generation delays, provider lateness, and perceived queue-jumping, while affordability, access to specialist care, and perceived treatment effectiveness supported satisfaction and continued use. These findings suggest that improving the efficiency, fairness, and responsiveness of service delivery may strengthen patient

satisfaction and support sustained use of NHIS/NHIA services. While health insurance provides important financial protection, its long-term value to enrollees depends on whether insured care is delivered in a timely, respectful, and reliable manner.

Strengths and limitations of this study

- This convergent mixed-methods study combined quantitative and qualitative approaches to provide a comprehensive understanding of waiting-time experiences, patient satisfaction and willingness to continue using NHIA healthcare services.
- Integration of survey findings with in-depth interviews strengthened interpretation by explaining the mechanisms underlying the observed quantitative associations.
- The study followed recognised reporting guidelines for mixed-methods research, enhancing methodological transparency and reporting quality.
- The single-centre cross-sectional design limits the generalisability of the findings and precludes causal inference.
- Waiting time and patient satisfaction were self-reported and may therefore be subject to recall and social desirability bias.

Abbreviations

AEFUTHA : Alex-Ekwueme Federal University Teaching Hospital, Abakaliki

BMC: BioMed Central

CI: Confidence Interval

COREQ : Consolidated Criteria for Reporting Qualitative Research

df : Degrees of Freedom

GRAMMS: Good Reporting of A Mixed Methods Study

HMO: Health Maintenance Organisation

MAXQDA: MAXQDA Qualitative Data Analysis Software

NHIA: National Health Insurance Authority

NHIS: National Health Insurance Scheme

SDG: Sustainable Development Goal

SPSS: Statistical Package for the Social Sciences

STROBE: Strengthening the Reporting of Observational Studies in Epidemiology

UHC: Universal Health Coverage

WHO: World Health Organization

Declarations

Ethics approval and consent to participate

Ethical approval for this study was obtained from the Health Research Ethics Committee of Alex-Ekwueme Federal Teaching Hospital, Abakaliki, Ebonyi State, Nigeria (Approval No. EBSU/DRIC/UREC/VOL.04/095). Written informed consent was obtained from all participants before enrolment. Participants were informed of the study objectives, the voluntary nature of participation, confidentiality safeguards, and their right to withdraw from the study at any time without consequences. The study was conducted in accordance with the principles of the Declaration of Helsinki.

Consent for publication

Not applicable.

Availability of data and materials

The datasets generated and/or analysed during the current study are available from the corresponding author on reasonable request. The data are not publicly available because they contain information that could compromise participant confidentiality. Requests for access to the data should be directed to the corresponding author at sam.ibeneme@unn.edu.ng

Competing interests

The authors declare that they have no competing interests.

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Authors' contributions

G.C.I. and S.C.I. conceptualised the study. G.C.I., K.E.F., C.G.U., and S.C.I. developed the methodology. G.C.I. and K.E.F. performed the formal analysis. G.C.I., C.G.U., A.O.N., R.S.O., A.I.O., and O.C.A. conducted the investigation. G.C.I. and K.E.F. curated the data. G.C.I. and K.E.F. wrote the original draft of the manuscript. S.C.I., C.G.U., A.O.N., R.S.O., A.I.O., and O.C.A. critically reviewed and edited the manuscript. All authors reviewed and approved the final manuscript and agreed to be accountable for all aspects of the work.

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References

1. World Health Organization, World Bank. Tracking Universal Health Coverage: 2023 Global Monitoring Report. Geneva: World Health Organization and International Bank for Reconstruction and Development/The World Bank. 2023. Available from: <https://www.who.int/publications/i/item/9789240080379>
2. National Health Insurance Authority. NHIA Act. Abuja: National Health Insurance Authority. 2024. Available from: <https://www.nhia.gov.ng/nhia-act/>
3. Eze OI, Iseolorunkanmi A, Adeloye D. The National Health Insurance Scheme (NHIS) in Nigeria: current issues and implementation challenges. *J Glob Health Econ Policy*. 2024;4:e2024002. 10.52872/001c.120197.
4. Ibeneme GC, Ugochukwu CG, Ibeneme SC, Nwosu AO, Fortwengel G, Oko CC, et al. Satisfaction and retention among NHIS enrollees at a tertiary hospital in Ebonyi State, Nigeria: facility-based insights for community-based health insurance policy. *BMC Public Health*. 2026;26:877. 10.1186/s12889-025-26175-6.
5. Bleustein C, Rothschild DB, Valen A, Valaitis E, Schweitzer L, Jones R. Wait times, patient satisfaction scores, and the perception of care. *Am J Manag Care*. 2014;20(5):393–400.
6. Batbaatar E, Dorjdagva J, Luvsannyam A, Savino MM, Amenta P. Determinants of patient satisfaction: a systematic review. *Perspect Public Health*. 2017;137(2):89–101. 10.1177/1757913916634136.
7. Nwanaji-Enwerem O, Bain P, Marks Z, Nwanaji-Enwerem P, Staton CA, Olufadeji A, et al. Patient satisfaction with the Nigerian National Health Insurance Scheme two decades since establishment: a systematic review and recommendations for improvement. *Afr J Prim Health Care Fam Med*. 2022;14(1):e1–10. 10.4102/phcfm.v14i1.3003.
8. Oliver RL. A cognitive model of the antecedents and consequences of satisfaction decisions. *J Mark Res*. 1980;17(4):460–9. 10.1177/002224378001700405.
9. Ibirongbe DO, Ipinimo TM, Omolayo TA, Olasehinde OK, Omotoso AA, Adewumi IP. Patient satisfaction with quality of care in NHIS clinic in a federal tertiary hospital in Southwest Nigeria. *Niger Med J*. 2024;65(5):725–36. 10.60787/nmjv-65i3.511.
10. Andersen RM. Revisiting the behavioral model and access to medical care: does it matter? *J Health Soc Behav*. 1995;36(1):1–10. 10.2307/2137284.
11. Daramola OE, Maduka WE, Adeniran A, Akande TM. Evaluation of patients' satisfaction with services accessed under the National Health Insurance Scheme at a tertiary health facility in North Central

- Nigeria. *J Community Med Prim Health Care*. 2017;29(1):11–7.
12. Alex-Ekwueme Federal University Teaching Hospital Abakaliki. About us. Abakaliki: Alex-Ekwueme Federal University Teaching Hospital. 2024. Available from: <https://aefutha.gov.ng/about-us>
 13. Creswell JW, Creswell JD. *Research Design: Qualitative, Quantitative, and Mixed Methods Approaches*. 6th ed. Thousand Oaks: SAGE; 2023.
 14. Fethers MD, Curry LA, Creswell JW. Achieving integration in mixed methods designs—principles and practices. *Health Serv Res*. 2013;48(6 Pt 2):2134–56. 10.1111/1475-6773.12117.
 15. von Elm E, Altman DG, Egger M, Pocock SJ, Gøtzsche PC, Vandenbroucke JP, STROBE Initiative. The Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) Statement: guidelines for reporting observational studies. *PLoS Med*. 2007;4(10):e296. 10.1371/journal.pmed.0040296.
 16. Tong A, Sainsbury P, Craig J. Consolidated criteria for reporting qualitative research (COREQ): a 32-item checklist for interviews and focus groups. *Int J Qual Health Care*. 2007;19(6):349–57. 10.1093/intqhc/mzm042.
 17. O’Cathain A, Murphy E, Nicholl J. The quality of mixed methods studies in health services research. *J Health Serv Res Policy*. 2008;13(2):92–8. 10.1258/jhsrp.2007.007074.
 18. Yamane T. *Statistics: An Introductory Analysis*. 2nd ed. New York: Harper & Row; 1967.
 19. Guest G, Namey E, Chen M. A simple method to assess and report thematic saturation in qualitative research. *PLoS ONE*. 2020;15(5):e0232076. 10.1371/journal.pone.0232076.
 20. Cronbach LJ. Coefficient alpha and the internal structure of tests. *Psychometrika*. 1951;16(3):297–334. 10.1007/BF02310555.
 21. Lincoln YS, Guba EG. *Naturalistic Inquiry*. Beverly Hills: SAGE; 1985.
 22. Braun V, Clarke V. Using thematic analysis in psychology. *Qual Res Psychol*. 2006;3(2):77–101. 10.1191/1478088706qp063oa.
 23. World Medical Association. World Medical Association Declaration of Helsinki: ethical principles for medical research involving human participants. *JAMA*. 2025;333(1):71–4. 10.1001/jama.2024.21972.
 24. Zhang H, Ma W, Zhou S, Zhu J, Wang L, Gong K. Effect of waiting time on patient satisfaction in outpatient: an empirical investigation. *Med (Baltim)*. 2023;102(40):e35184. 10.1097/MD.00000000000035184.
 25. Ali SK. The perception of waiting times on patient satisfaction and patient care: a cross-sectional study at a tertiary health care institution in Kenya. *PLoS ONE*. 2025;20(5):e0322015. 10.1371/journal.pone.0322015.
 26. Okah PS. Narratives of satisfaction and dissatisfaction with Nigeria's National Health Insurance Scheme: a qualitative study of federal enrollees in Ebonyi State. *Glob Soc Welf*. 2025. 10.1007/s40609-025-00409-2.

27. Lederle M, Tempes J, Bitzer EM. Application of Andersen's behavioural model of health services use: a scoping review with a focus on qualitative health services research. *BMJ Open*. 2021;11:e045018. 10.1136/bmjopen-2020-045018.

28. Federal Republic of Nigeria. National Health Insurance Authority Act, 2022. *Official Gaz*. 2022;109(95):A289–322.

29. Onyekwelu C, Nwobi E, Eze C, Okwor T, Obikeze E, Oguejiofor C et al. Assessment of patients' satisfaction with healthcare services provided under the Nigeria National Health Insurance Authority. *Niger Med J*. 2024.

Figures

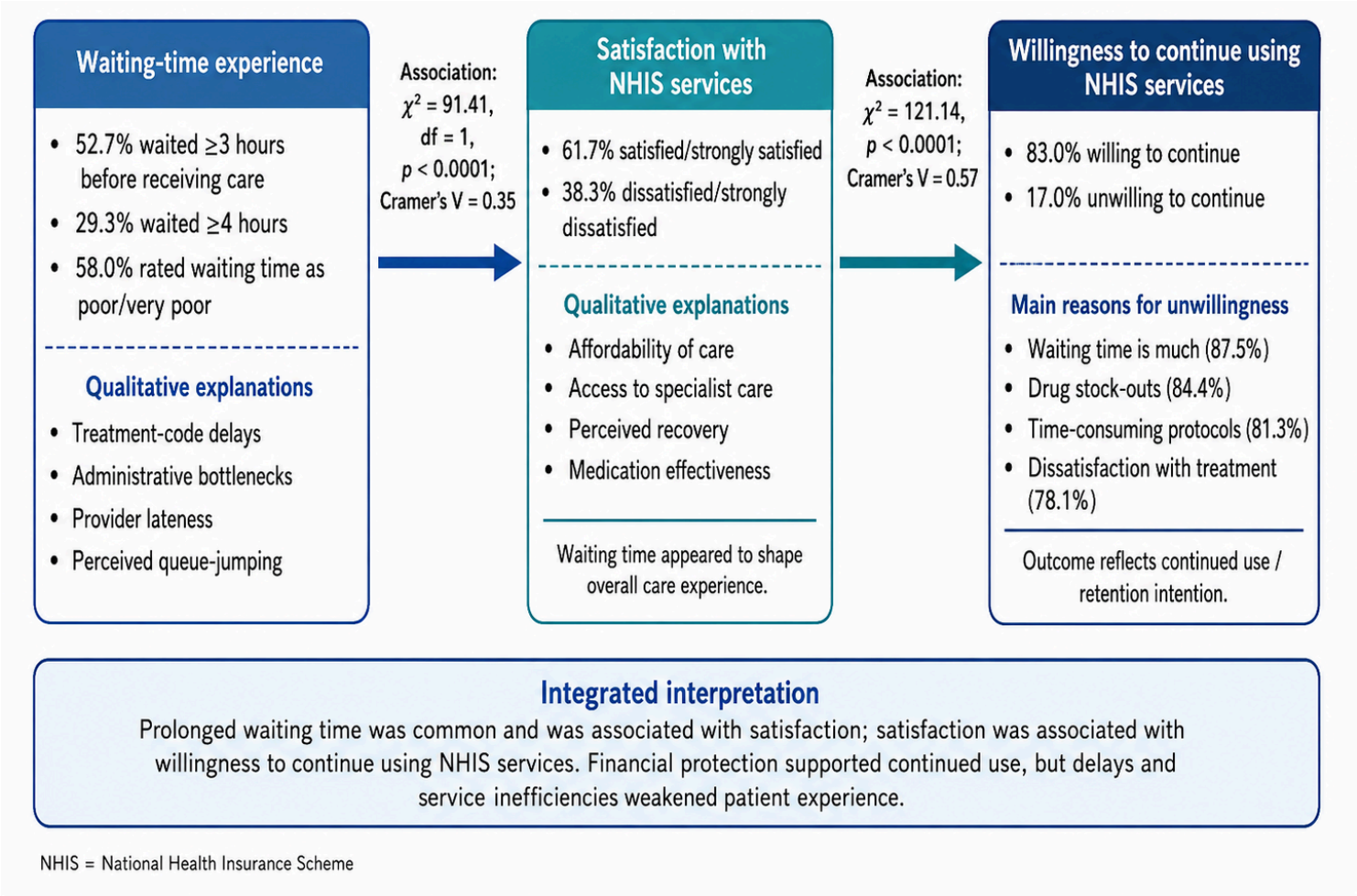


Figure 1

Integrated mixed-methods pathway linking waiting-time experience, satisfaction, and willingness to continue using NHIS services.

The figure summarizes the quantitative findings and qualitative explanations supporting the pathway from waiting-time experience to satisfaction and willingness to continue using NHIS services. NHIS: National Health Insurance Scheme.

Supplementary Files

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

- [NHISEnglishLanguageSemiStructuredInterviewGuide.docx](#)
- [NHISEnglishLanguageStructuredQuestionnaire1.docx](#)