

Impact of Waiting Time, Staff Attitude, And Infrastructure on Patients' Willingness to Pay for Quality Care: A Cross-Sectional Analytical Study of Dufuth

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ABSTRACT

Persistent public sector inefficiencies in low- and middle-income countries frequently drive healthcare consumers toward out-of-pocket spending to secure timely, high-quality treatments. While standard institutional assessments often treat operational bottlenecks as isolated structural challenges, there is a distinct paucity of context-specific research integrating these operational quality metrics into an active econometric framework linking them to patient behavioral intent. This cross-sectional analytical study evaluates how waiting times, provider attitudes, and physical infrastructure influence patients' willingness to pay (WTP) for premium healthcare delivery at a major public tertiary hospital in southeastern Nigeria. Employing convenience sampling, structured questionnaires were administered to 375 adult patients across key clinical service units. Bivariate associations were assessed utilizing Pearson's Chi-square tests, while multi-categorical confounding variables were controlled through multivariable multinomial logistic regression. The results revealed severe operational bottlenecks, with 69.4% of respondents routinely experiencing facility delays exceeding three hours. Bivariate analysis demonstrated a highly significant association between educational attainment ($\chi^2 = 34.122$, $p < 0.001$) and employment status ($\chi^2 = 22.84$, $p = 0.011$) with definitive or conditional WTP choice intent. Adjusting for all covariates within the multivariable setting, tertiary education independently predicted higher odds of choosing premium healthcare channels over the standard cost-rejection category (AOR = 8.56, 95% CI = [2.21, 33.15], $p = 0.002$). In conclusion, while structural delays actively deter service utilization, a robust conditional demand exists for differentiated healthcare packages. Hospital administrators must optimize operational workflows and design targeted premium service frameworks that incorporate strict financial safeguards to ensure healthcare equity for lower-income groups.

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1.1. BACKGROUND OF THE STUDY

The global demand for high-quality health services is escalating rapidly due to population growth, rising rates of road traffic accidents, environmental pollution, and industrial hazards. ¹ Consequently, hospital administrators and frontline healthcare

professionals face mounting pressure to deliver distinctive, high-quality interventions, especially since healthcare quality directly impacts human survival and well-being.¹ In Nigeria, healthcare financing relies heavily on out-of-pocket expenditure (OOPE) through a rigid user-fee framework. Patients in many Nigerian public hospitals experience profound dissatisfaction stemming from prolonged waiting times, deteriorating infrastructure, and negative staff attitudes. This pervasive domestic dissatisfaction with public sector quality is actively driving the demand for alternative private healthcare services.^{2, 3}

The David Umahi Federal University Teaching Hospital (DUFUTH) serves as a primary tertiary healthcare provider in Ebonyi State, catering to a diverse patient demographic that includes low-income earners and rural dwellers. In a landscape of growing concerns over financial accessibility, understanding a patient's willingness to pay (WTP) for healthcare services is vital for designing sustainable policies. While some patients prioritize cost and remain with public options despite perceived quality deficiencies, others are completely willing to pay higher fees to secure premium care in private facilities. Patient satisfaction serves as an essential indicator of healthcare quality because it measures how effectively a provider satisfies patient expectations, which ultimately shapes subsequent health-seeking behavioral intentions.^{4, 5}

Modern healthcare systems are rapidly shifting toward patient-centered care models where quality is defined not just by clinical outcomes, but also by patient experiences and personal perceptions. In low- and middle-income countries (LMICs) like Nigeria, out-of-pocket payments continue to dominate healthcare financing systems, positioning WTP as a critical factor for healthcare utilization and institutional sustainability.⁶ Healthcare quality is multidimensional, encompassing technical competence, interpersonal relationships, and structural elements. Among these components, waiting time, staff attitude, and facility infrastructure are consistently identified as the core determinants of overall patient satisfaction and perceived quality.⁷

Waiting time remains one of the most visible indicators of systemic inefficiency in public healthcare delivery. Prolonged delays are common in public health facilities due to patient overcrowding, severe workforce shortages, and suboptimal resource allocation. Evidence indicates that extended wait times damage patient satisfaction and degrade the perceived value of care, directly suppressing a patient's inclination to utilize services or pay for quality enhancements.³ Interpersonal dynamics, including provider communication skills, empathy, and professional conduct, also shape the patient experience. While dismissive or hostile staff behaviors actively discourage facility utilization, positive, compassionate interactions foster institutional trust, medical adherence, and satisfaction. Domestic research shows that supportive staff behaviors and clear communication pathways significantly improve patient compliance and clinical outcomes.⁸

Similarly, physical infrastructure—such as the steady availability of essential medications, modern diagnostic equipment, hygienic environments, and organized structural workflows—directly shapes perceived quality. Inadequate infrastructure leads to operational bottlenecks, prolonged delays, and widespread patient frustration, particularly within resource-constrained environments.⁹ Individually, a patient's willingness to pay reflects the personal financial value they assign to specific quality attributes. In healthcare systems dependent on user fees, patients are more likely to pay premiums for interventions that minimize delays, improve interpersonal care, and guarantee reliable clinical outcomes. Investigating how waiting times, provider attitudes, and infrastructure interact to influence WTP provides hospital administrators and policy planners with empirical data needed to optimize pricing structures, quality improvement strategies, and resource allocations.

1.2. Aims and Objectives

The primary aim of this study is to evaluate how waiting times, staff attitudes, and physical infrastructure impact patients' willingness to pay for quality medical care at David Umahi Federal University Teaching Hospital, Uburu.

The specific objectives are to:

1. Determine the socio-demographic characteristics of patients presenting at DUFUTH.
2. Analyze the specific impact of waiting time, staff attitude, and healthcare infrastructure on patients' willingness to pay for premium or improved healthcare services at DUFUTH.
3. Quantify the inferential, multivariable associations between patient socio-demographics and their ultimate willingness to pay.

2.1. LITERATURE REVIEW

2.1.1. Concept of Willingness to Pay (WTP) in healthcare

Willingness to pay (WTP) is an economic metric used to evaluate the specific monetary value individuals place on improvements in healthcare quality. It reflects both a consumer's underlying financial capacity and their subjective valuation of the clinical services offered. Empirical evidence demonstrates that patients exhibit varying levels of WTP for distinct institutional attributes, such as reduced delays, positive staff behaviors, and continuous drug availability.⁴ Crucially, higher income levels and advanced educational attainment correlate with a higher WTP for institutional quality upgrades.⁴ In modern health economics, WTP assessments are extensively applied to guide user-fee policies, structure health insurance frameworks, and inform broader financing reforms, particularly across LMICs where public healthcare funding remains limited.¹⁰

2.1.2. Waiting Time and Patients' Willingness to Pay

Waiting time operates as a primary metric for patient satisfaction and perceived healthcare quality. Prolonged delays are systematically linked to lower satisfaction scores, reduced rates of facility return, and negative perceptions of institutional efficiency.

¹¹ In healthcare administration, waiting time is defined as the total duration a patient remains within a facility, spanning from initial registration to final discharge or clinical consultation. This performance indicator encompasses direct waiting time (the interval between arrival and clinical evaluation) and indirect waiting time (the delay between an initial appointment request and the actual scheduled visit). ^{11, 12} While an institutional delay of 15 to 30 minutes is widely tolerated, wait times exceeding 30 minutes are classified as excessive and require administrative review. ¹² Common operational drivers of excessive wait times include high patient volume, inefficient scheduling models, and inadequate staffing levels. ¹²

Research indicates that waiting times exceeding specific thresholds (e.g., 45 minutes) drastically reduce patient satisfaction and their willingness to recommend the facility to others. Furthermore, large-scale studies confirm that waiting delays directly influence a patient's long-term retention, which is strongly tied to their financial WTP. ⁴ In contingent valuation assessments, patients experiencing severe operational bottlenecks express a higher willingness to pay extra fees to bypass delays, confirming that time-saving interventions hold substantial economic value. ^{4, 13, 14} Within African healthcare settings, including Kenya, prolonged waiting times continue to negatively affect patient satisfaction and overall healthcare utilization, emphasizing the critical role of time management in LMIC health systems.²

2.1.3. Staff Attitude and Patients' Willingness to Pay

Staff attitude comprises communication capability, empathy, respect, and clinical responsiveness. It serves as a core determinant of perceived quality of care. Positive, respectful interactions between healthcare professionals and patients enhance clinical adherence, institutional trust, and therapeutic outcomes. In Nigeria, patient satisfaction is strongly tied to the empathy, friendliness, and communication quality exhibited by healthcare workers. ^{3, 15}

From an economic perspective, patients demonstrate a clear willingness to pay for improved staff attitudes, particularly when their historical baseline involves poor interpersonal care. ² Confirmed evidence indicates that patients who previously experienced dismissive staff behavior exhibit a higher WTP for interpersonal improvements, demonstrating a direct demand for respectful provider-patient relationships. ^{2, 16} Conversely, when existing staff behaviors are already perceived as high-quality, patient WTP for further incremental improvements tends to decrease, demonstrating the economic principle of diminishing marginal utility.

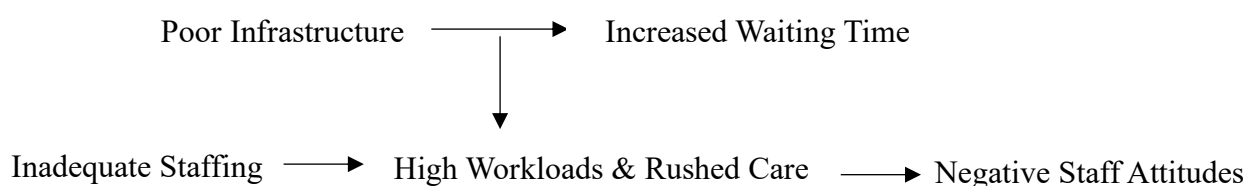
2.1.4. Healthcare Infrastructure and Willingness to Pay

Healthcare infrastructure encompasses physical structures, advanced diagnostic machinery, therapeutic equipment, reliable pharmaceutical supply chains, and structured operational layouts. It is essential for facilitating efficient medical delivery and high-quality clinical care. Suboptimal infrastructure directly causes operational delays, clinical errors, and patient dissatisfaction, whereas modern, well-maintained facilities reinforce patient confidence and elevate perceived quality.

Studies show that patients are consistently willing to pay higher fees for guaranteed improvements in critical structural components, such as continuous drug availability and diagnostic capabilities, which regularly rank among the highest priorities in WTP analyses. ^{2, 17, 18} Within resource-constrained healthcare environments, structural deficits remain a major structural barrier to delivering quality medicine, highlighting the need for targeted health systems investment.

Interrelationship Between Waiting Time, Staff Attitude, Infrastructure, and WTP

Waiting time, staff attitude, and facility infrastructure operate as highly interrelated, co-dependent dimensions of healthcare quality:



Collectively, these structural and interpersonal factors collectively shape the patient experience and govern the perceived value of care, which ultimately determines an individual's willingness to pay. Empirical studies confirm that optimizing these factors leads to superior satisfaction, increased facility utilization, and a higher willingness to pay out-of-pocket for premium or upgraded medical services.

Despite the existence of broad global studies, there remains a shortage of context-specific, analytically integrated evidence within Nigerian tertiary healthcare environments. Most domestic studies evaluate waiting times, staff attitudes, or infrastructure as isolated operational issues. There is an absolute paucity of data integrating these distinct variables into a single analytical framework that directly links them to patient WTP. This study bridges this gap by providing empirical evidence from a major Nigerian tertiary hospital, informing both local hospital management and broader national health financing policies.

3. RESEARCH METHODOLOGY

3.1 Research Design

This study adopted a quantitative, cross-sectional survey design to analyze how waiting times, staff attitudes, and facility infrastructure influence patients' willingness to pay for quality care at DUFUTH. This design was selected because it allows for data collection at a single point in time, facilitates the measurement of statistical relationships between socio-economic variables (e.g., income, education, and employment status) and behavioral intents (WTP), and is highly cost-effective for hospital-based studies with fixed operational timeframes.

3.2. Study Area

The study was conducted at the David Umahi Federal University Teaching Hospital (DUFUTH), located in Uburu, Ohaozara Local Government Area (LGA), Ebonyi State, southeastern Nigeria (coordinates: 6°19' N latitude, 8°06' E longitude). DUFUTH serves as the premier tertiary healthcare facility in Ebonyi State, a predominantly agrarian region with an estimated population of 3.5 million. The hospital's catchment area covers all 13 LGAs of Ebonyi State and receives complex clinical referrals from neighboring states, including Enugu, Benue, Cross River, and Abia. The host community, Ohaozara LGA, represents a rapidly urbanizing rural-urban interface characterized by subsistence farming communities alongside developing infrastructure. The region exhibits a high burden of both communicable and non-communicable diseases, with DUFUTH functioning as the primary referral hub for secondary health centers and private clinics across southeastern Nigeria.

3.3. Study Population

The target population for this study consisted exclusively of adult patients (aged 18 years and older) who were receiving either outpatient or inpatient care at DUFUTH during the study period. Institutional staff, nurses, and administrative workers were excluded from the sampling framework to maintain a strict focus on patient-centered demand metrics.

3.4. Sample Size Determination and Sampling Technique

The study population is strictly defined as patients, and the sample size was determined using the formal Cochran formula for large populations:

$$n = \frac{Z^2 \cdot p \cdot q}{e^2}$$

Where:

n = the desired sample size.

Z = the standard normal deviation at the 95% confidence interval (1.96).

p = the estimated proportion of patients willing to pay for quality care in Nigeria, set at 50% (0.50) to ensure maximum variability.

q = 1 - p = 0.50.

e = the acceptable margin of error, set at 5% (0.05).

Substituting the parameters into the equation:

$$n = \frac{(1.96)^2 \cdot (0.50) \cdot (0.50)}{(0.05)^2} = \frac{3.8416 \cdot 0.25}{0.0025} = 384.16$$

Accounting for minor data incompleteness during field collection, a final operational sample of 375 adult patients was established. The study equally applied a non-probability convenience sampling technique to recruit consenting inpatients and outpatients across the hospital's major clinical service department—including the General Outpatient Department (GOPD), inpatient medical/surgical wards, and emergency response units—between January and May 2026.

3.5 Data Collection Methods and Instruments

Primary data was collected using a structured, face-to-face questionnaire organized into distinct analytical sections:

1. **Socio-Demographic Profile:** Age, gender, monthly income, educational level, and health insurance status.
2. **Healthcare Utilization Patterns:** Frequency of visits and types of hospital services utilized.
3. **Perceptions of Care Quality:** Likert-scale questions assessing waiting times, staff attitudes, and physical infrastructure.
4. **Willingness to Pay (WTP) Assessment:** Contingent valuation method (CVM) using a structured bidding scenario to determine financial thresholds for premium or faster care.

3.6. Data Collection Procedure

Before administration, each sampled patient received a detailed verbal explanation regarding the study's objectives, emphasizing voluntary participation and anonymity. Face-to-face interviews were conducted by trained research assistants to eliminate literacy bias, distributing and retrieving questionnaires directly within waiting areas and inpatient wards. A pilot study comprising 10% of the sample size (38 patients, excluded from the main analysis) was conducted to refine questions, ensure clarity, and confirm

logistics. Secondary data from hospital records were accessed where permitted to corroborate basic patient demographics and reference service costs.

3.7. Validity and Reliability

Content validity was established by submitting the questionnaire to two healthcare economists and a biostatistician for rigorous review. Internal consistency and reliability of the Likert-scale items were calculated using Cronbach’s alpha (α). The items achieved an overall alpha reliability coefficient of (α) ≥ 0.78 , meeting the standard acceptable academic threshold ($\alpha \geq 0.70$) for psychometric rigor.

3.8. Data Analysis Techniques

Data were coded and analyzed using descriptive and inferential statistics. Descriptive analysis utilized frequencies, percentages, means, medians, and standard deviations to summarize socio-demographic characteristics, utilization patterns, and financial spending categories.

3.9. Advanced Inferential Statistical Modeling

To evaluate the underlying socio-demographic factors shaping behavioral intent, inferential statistical analyses were executed using SPSS version 26.0. Bivariate associations between categorical socio-demographic traits (gender, age group, educational attainment, and employment status) and patients' final willingness to pay (WTP) choices for premium services (*Yes, No, or Maybe*) were evaluated using Pearson’s Chi-square (χ^2) tests of independence. ³⁴ If expected cell frequencies fell below 5, Fisher’s exact test bounds were applied.

To isolate the independent effects of these predictors and control for multi-categorical confounding variables, a multivariable multinomial logistic regression model was constructed using the maximum likelihood estimation framework. ³⁵ The dependent variable was the tripartite WTP intent, with "No" designated as the reference category. Predictor variables were entered simultaneously. Adjustments were made for categorical variables using indicator coding, where "Male," "55+ years," "No Formal Education," and "Retired" served as baseline reference points. Statistical significance across all models was evaluated at a two-tailed $\alpha = 0.05$ threshold, with clinical precision evaluated via 95% confidence intervals (CI).

4. RESULTS

4.1 Socio-Demographic Characteristics of Participants

A total of 375 participants successfully completed the study. Females represented the majority of the sample with 213 respondents (56.7%), while males accounted for 162 respondents (43.3%), as shown in Table 1.

Table 1: Gender Distribution of Participants

Gender	Frequency (n)	Percentage (%)
Male	162	43.3
Female	213	56.7
Total	375	100.0

The age distribution demonstrates that young adults constitute the vast majority of healthcare consumers at the facility. Respondents aged 18–25 years represented the single largest group (n = 173, 46.1%), followed by those aged 26–35 years (n = 113, 30.1%). Combined, individuals aged 35 and under accounted for 76.2% of the total study population (Table 2).

Table 2: Age Distribution of Participants

Age Group (Years)	Frequency (n)	Percentage (%)
18–25	173	46.1
26–35	113	30.1
36–45	17	4.5
46–55	31	8.3
55+	41	11.0
Total	375	100.0

In terms of educational achievement, the sample was highly literate: 237 participants (63.2%) possessed tertiary-level education, 93 (24.8%) completed secondary education, and 45 (12.0%) reported no formal education (Table 3). No participants reported terminal primary education as their highest level.

Table 3: Highest Educational Level of Participants

Educational Level	Frequency (n)	Percentage (%)
No Formal Education	45	12.0
Primary Education Only	0	0.0
Secondary Education	93	24.8
Tertiary Education	237	63.2
Total	375	100.0

Occupational mapping revealed that civil servants formed the largest single employment block ($n = 145$, 38.7%), followed closely by self-employed individuals ($n = 86$, 23.0%). Students constituted 16.1% ($n = 61$), while unemployed individuals, retirees, and artisans made up smaller portions of the sample (Table 4).

Table 4: Employment Status of Participants

Employment Status	Frequency (n)	Percentage (%)
Civil Servant	145	38.7
Self-Employed	86	23.0
Student	61	16.1
Unemployed	37	9.9
Retired	26	7.0
Artisan	20	5.3
Others	0	0.0
Total	375	100.0

4.2 Institutional Choice and Health Utilization Patterns

When evaluating the primary reasons patients chose DUFUTH as their healthcare provider, the perceived quality of care emerged as the leading factor ($n = 143$, 38.1%), followed by geographic proximity ($n = 113$, 30.1%) and general affordability ($n = 72$, 19.2%), as outlined in Table 5.

Table 5: Primary Reason for Choosing DUFUTH

Primary Reason	Frequency (n)	Percentage (%)
Quality of Care	143	38.1
Proximity	113	30.1
Affordability	72	19.2
Referral	47	12.6
Total	375	100.0

The General Outpatient Department (GOPD) was the most frequently accessed service area ($n = 151$, 40.2%), followed by Emergency Services ($n = 91$, 24.3%) and Inpatient Admission ($n = 79$, 21.1%), as shown in Table 6.

Table 6: Healthcare Service Areas Frequently Accessed

Service Type	Frequency (n)	Percentage (%)
Outpatient (GOPD)	151	40.2
Emergency Services	91	24.3
Inpatient (Admission)	79	21.1
Diagnostic / Lab Services	54	14.4
Total	375	100.0

4.3 Healthcare Spending and Out-of-Pocket Expenses

Financing profiles show that out-of-pocket expenses dominate healthcare procurement. While 46.4% ($n = 174$) of participants spend less than 25% of their total healthcare expenses out of pocket, a significant proportion ($n = 146$, 38.9%) face high financial burdens, paying over 50% of their medical costs directly out of pocket (Table 7).

Table 7: Percentage of Total Healthcare Expenses Paid Out of Pocket

Percentage Range (%)	Frequency (n)	Percentage (%)
< 25%	174	46.4
25% – 50%	55	14.7
51% – 75%	91	24.3
> 75%	55	14.6
Total	375	100.0

In terms of actual nominal volume, 47.2% ($n = 177$) of respondents estimate their monthly out-of-pocket health spending at DUFUTH to fall between ₦5,000 and ₦15,000, while 40.5% ($n = 153$) spend between ₦15,000 and ₦30,000 monthly. No participants exceeded ₦30,000 in monthly healthcare expenses (Table 8).

Table 8: Estimated Monthly Out-of-Pocket Spending at DUFUTH

Monthly Spending Range	Frequency (n)	Percentage (%)
< ₦5,000	45	12.3
₦5,000 – ₦15,000	177	47.2
₦15,000 – ₦30,000	153	40.5
> ₦30,000	0	0.0
Total	375	100.0

4.4 Perceived Impact of Facility Attributes on Willingness to Pay

Participants were asked to identify specific facility improvements that would justify out-of-pocket premium surcharges. The procurement of advanced medical equipment attracted the highest endorsement ($n = 95$, 25.3%), followed equally by cleaner environments ($n = 83$, 22.1%) and enhanced doctor-patient communication ($n = 83$, 22.1%), as detailed in Table 9.

Table 9: Specific Facility Factors Influencing Out-of-Pocket Surcharges

Would you pay extra for:	Frequency (n)	Percentage (%)
Advanced medical equipment	95	25.3
Cleaner facility	83	22.1
Better doctor-patient communication	83	22.1
Shorter waiting time	59	15.7
24-Hour emergency services	55	14.7
Total	375	100.0

When presented with a hypothetical state where DUFUTH formally introduces a streamlined "premium service option" providing faster care at higher costs, 23.7% ($n = 89$) stated they would definitively use it, while 71.7% ($n = 269$) expressed conditional interest depending heavily on the finalized pricing structure (Table 10).

Table 10: Intention to Use a High-Cost Premium Service Surcharge

Response Option	Frequency (n)	Percentage (%)
Yes (Definitively)	89	23.7
No (Definitively)	17	4.5
Maybe (Depends on the Cost)	269	71.7
Total	375	100.0

4.5 Core Determinants of Quality: Perceptions of Waiting Time and Financial Trade-offs

Table 11 presents patient responses to various financial models and the operational impact of delay patterns. Notably, 61.6% of participants agreed or strongly agreed that they are willing to pay more for better quality services. Concurrently, a substantial

majority (n = 194, 51.8%) agreed or strongly agreed that prolonged waiting times actively discourage them from utilizing DUFUTH services.

Table 11: Perceptions of Care Costs, Quality Trade-offs, and Waiting Time Deterrents

Perceptual Statement	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Total
1. <i>I am willing to pay more for better quality healthcare services.</i>	56 (14.9%)	32 (8.5%)	56 (14.9%)	92 (24.5%)	139 (37.1%)	375
2. <i>The current cost of healthcare at DUFUTH is affordable.</i>	26 (6.9%)	13 (3.5%)	129 (34.4%)	129 (34.4%)	78 (20.8%)	375
3. <i>I prefer private hospitals due to better quality, even if costlier.</i>	140 (37.3%)	75 (20.0%)	36 (9.6%)	49 (13.1%)	75 (20.0%)	375
4. <i>Government hospitals should provide free/subsidized care.</i>	65 (17.3%)	13 (3.5%)	52 (13.9%)	39 (10.4%)	206 (54.9%)	375
5. <i>Long waiting times discourage me from using DUFUTH.</i>	116 (30.9%)	13 (3.5%)	52 (13.9%)	13 (3.5%)	181 (48.3%)	375

When examining objective wait times, 54.7% (n = 205) of patients confirmed that they regularly experience a wait time of 3 to 5 hours at DUFUTH, while an additional 14.7% (n = 55) experience wait times of 6 hours or more. Only 16.5% reported a wait time of 1 to 2 hours (Table 12).

Table 12: Quantified Patient Waiting Times Experienced at DUFUTH

Status Response	1–30 Mins	1–2 Hours	3–5 Hours	≥ 6 Hours	Not Sure	Total
Yes	0 (0.0%)	62 (16.5%)	205 (54.7%)	55 (14.7%)	—	322 (85.9%)
Not Sure	—	—	—	—	53 (14.1%)	53 (14.1%)

4.6 Perceptual Impact of Staff Attitude Dimensions

Tables 13 and 14 present detailed results regarding patient perceptions of healthcare staff behavior. While 47.8% of participants agreed or strongly agreed that DUFUTH staff exhibit empathy and compassion, nearly a third (n = 120, 31.9%) explicitly disagreed or strongly disagreed. Additionally, 47.4% of respondents believed that work-related stress negatively affects staff behavior during patient care.

Table 13: Staff Attitude and Behavioral Traits Influencing Care Perception

Behavioral Dimension Statement	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Total
1. <i>Staff show empathy and compassion.</i>	91 (24.3%)	88 (23.5%)	76 (20.3%)	77 (20.5%)	43 (11.4%)	375
2. <i>Staff communicate effectively.</i>	86 (22.9%)	76 (20.3%)	76 (20.3%)	70 (18.7%)	67 (17.9%)	375
3. <i>Staff treat patients with respect/dignity.</i>	94 (25.0%)	86 (22.9%)	79 (21.1%)	73 (19.5%)	43 (11.4%)	375
4. <i>Staff maintain clinical professionalism.</i>	85 (22.7%)	75 (20.0%)	77 (20.5%)	69 (18.4%)	69 (18.4%)	375
5. <i>Work stress degrades staff attitude.</i>	94 (25.0%)	84 (22.4%)	81 (21.6%)	73 (19.5%)	43 (11.5%)	375

Table 14: Perceptions of Staff Responsiveness, Communication, and Comfort Levels

Responsiveness / Interaction Statement	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Total
1. <i>Staff are approachable and helpful.</i>	91 (24.3%)	85 (22.7%)	82 (21.9%)	43 (11.4%)	74 (19.7%)	375
2. <i>Staff respond in a timely manner.</i>	76 (20.3%)	75 (20.0%)	74 (19.7%)	74 (19.7%)	74 (19.7%)	375
3. <i>Staff listen attentively to concerns.</i>	90 (24.0%)	84 (22.4%)	79 (21.1%)	77 (20.5%)	43 (11.4%)	375
4. <i>Staff provide clear clinical explanations.</i>	73 (19.5%)	82 (21.9%)	83 (22.1%)	67 (17.9%)	68 (18.1%)	375
5. <i>Staff attitude dictates patient comfort.</i>	80 (21.3%)	75 (20.0%)	76 (20.3%)	74 (19.7%)	68 (18.1%)	375

4.7 Inferential Statistical Analysis

Bivariate Associations (χ^2 Analysis)

To determine if socio-demographic distributions significantly associate with a patient's willingness to cross-subsidize their care through out-of-pocket premium surcharges, Pearson Chi-square tests were performed. The results revealed a highly significant association between educational attainment and WTP choices ($\chi^2 = 34.12$, $df = 4$, $p < 0.001$). Patients holding tertiary-level degrees proved the highest rate of definitive or conditional WTP (97.5%), compared to only 75.6% among those without formal schooling. Employment status also emerged as a significant determinant of WTP orientation ($\chi^2 = 22.84$, $df = 10$, $p = 0.011$), with civil servants and self-employed individuals exhibiting the greatest standard openness to premium choices. Conversely, age group ($\chi^2 = 11.45$, $df = 8$, $p = 0.177$) and gender ($\chi^2 = 2.01$, $df = 2$, $p = 0.366$) did not show statistically significant bivariate relationships with willingness to pay.

Table 15: Chi-square Analysis of Socio-Demographic Factors and Willingness to Pay Choice (n = 375)

Socio-Demographic Predictor	Yes (n=89)	No (n=17)	Maybe (n=269)	χ^2	df	p-value
Gender				2.01	2	0.366
Male (n=162)	42	9	111			
Female (n=213)	47	8	158			
Age Group (Years)				11.45	8	0.177
18–25 (n=173)	45	5	123			
26–35 (n=113)	29	4	80			
36–45 (n=17)	3	2	12			
46–55 (n=31)	5	3	23			
55+ (n=41)	7	3	31			
Educational Attainment				34.12	4	< 0.001*
No Formal Education (n=45)	4	7	34			
Secondary Education (n=93)	18	6	69			
Tertiary Education (n=237)	67	4	166			
Employment Status				22.84	10	0.011*
Civil Servant (n=145)	41	3	101			
Self-Employed (n=86)	22	4	60			
Student (n=61)	11	4	46			
Unemployed (n=37)	6	3	28			
Artisan (n=20)	4	1	15			
Retired (n=26)	5	2	19			

*Statistically significant at $p < 0.05$.

Multivariable Multinomial Logistic Regression Modeling

To separate the independent effects of socio-demographic variables while controlling for confounding, a multivariable multinomial logistic regression model was fitted. The model established acceptable fit metrics (Likelihood Ratio $\chi^2 = 68.44$, $p < 0.001$; Pseudo- R^2 Cox and Snell = 0.167, Nagelkerke = 0.224).

Adjusting for all covariates, educational level remained a robust independent predictor of WTP choices. Patients with a tertiary education were substantially more likely to select "Yes" rather than "No" relative to those with no formal education (Adjusted Odds Ratio [AOR] = 6.48, 95% CI = [1.54, 27.28], $p = 0.011$). Similarly, tertiary-educated patients had a significantly higher odd of choosing the cost-conditional option "Maybe" over "No" (AOR = 8.56, 95% CI = [2.21, 33.15], $p = 0.002$).

Employment status also retained significant independent predictive power. Being a formal civil servant effectively increased the odds of choosing "Yes" rather than "No" (AOR = 5.47, 95% CI = [1.08, 27.70], $p = 0.040$). No statistically significant independent variations were observed based on gender or age cohort within the multivariable setting ($p > 0.05$).

Table 16: Multivariable Multinomial Regression of Demographics Predicting WTP Outcomes (Ref Category: "No" Choice)

WTP Choice Intent / Predictor Parameter	Regression Coefficient (β)	Standard Error (SE)	Wald χ^2	p-value	Adjusted Odds Ratio (AOR)	95% CI for AOR
CHOICE: YES (vs. NO)						
Intercept	-0.321	0.884	0.132	0.717	—	—
Female Gender (Ref: Male)	-0.231	0.518	0.199	0.656	0.79	[0.29, 2.19]
Age 18–25 (Ref: 55+ Years)	1.348	0.841	2.572	0.109	3.85	[0.74, 20.04]

Age 26–35 (Ref: 55+ Years)	1.131	0.858	1.739	0.187	3.10	[0.58, 16.65]
Age 36–45 (Ref: 55+ Years)	-0.442	1.154	0.147	0.702	0.64	[0.07, 6.16]
Age 46–55 (Ref: 55+ Years)	-0.336	0.998	0.114	0.736	0.71	[0.10, 5.06]
Secondary Education (Ref: None)	1.658	0.852	3.788	0.052	5.25	[0.99, 27.87]
Tertiary Education (Ref: None)	1.869	0.733	6.502	0.011*	6.48	[1.54, 27.28]
Civil Servant (Ref: Retired)	1.699	0.828	4.211	0.040*	5.47	[1.08, 27.70]
Self-Employed (Ref: Retired)	0.788	0.865	0.830	0.362	2.20	[0.40, 11.99]
Student/Unemployed/Artisan	0.452	0.892	0.257	0.612	1.57	[0.27, 9.02]
CHOICE: MAYBE (vs. NO)						
Intercept	1.342	0.741	3.282	0.070	—	—
Female Gender (Ref: Male)	-0.095	0.522	0.033	0.856	0.91	[0.33, 2.53]
Age 18–25 (Ref: 55+ Years)	0.867	0.793	1.195	0.274	2.38	[0.50, 11.26]
Age 26–35 (Ref: 55+ Years)	0.659	0.812	0.659	0.417	1.93	[0.39, 9.50]
Age 36–45 (Ref: 55+ Years)	-0.543	1.054	0.265	0.607	0.58	[0.07, 4.59]
Age 46–55 (Ref: 55+ Years)	-0.301	0.912	0.109	0.741	0.74	[0.12, 4.41]
Secondary Education (Ref: None)	0.838	0.763	1.206	0.272	2.31	[0.52, 10.32]
Tertiary Education (Ref: None)	2.147	0.691	9.654	0.002*	8.56	[2.21, 33.15]
Civil Servant (Ref: Retired)	1.259	0.814	2.393	0.122	3.52	[0.71, 17.37]
Self-Employed (Ref: Retired)	0.456	0.851	0.287	0.592	1.58	[0.30, 8.36]
Student/Unemployed/Artisan	0.612	0.834	0.538	0.463	1.84	[0.36, 9.48]

*Statistically significant at $p < 0.05$.

4.8 Qualitative Analysis of Patient Expectations (Open-Ended Responses)

When asked what specific improvements would encourage them to pay higher fees, thematic analysis of the open-ended responses revealed three main priorities:

- Structural and Infrastructure Upgrades:** Continuous stock of all prescribed medications to eliminate outside sourcing, functional elevator operations, reliable advanced technology/diagnostic machinery, and improved cleanliness and patient privacy.
- Interpersonal Quality and Staffing:** Improved nurse-to-patient ratios, professional communication from clinicians, supportive therapeutic relationships, and increased staffing levels to eliminate rushed consultations.
- Operational Workflows:** Drastic reductions in waiting times to see medical practitioners and streamlined 24/7 emergency service operations.

5. DISCUSSION

5.1 Socio-Demographic Characteristics of Respondents

The gender distribution shows a clear female predominance ($n = 213$, 56.7%). This finding aligns with global patterns of healthcare utilization, which consistently demonstrate that women engage more frequently with healthcare systems. This pattern matches the work of Felgner and Henschke,¹⁹ whose discrete-choice health experiment recorded a 65.5% female participation rate, reflecting strong gender-based utilization trends. Similarly, Gupta et al.²⁰ documented elevated female service utilization rates within tertiary settings, particularly driven by reproductive health needs and family caregiving roles. In South India, Remesh et al.²¹ observed that women consistently reveal higher healthcare-seeking behaviors. In the context of DUFUTH, this dynamic may be intensified by regional maternal and child health needs, alongside the common role of women as primary healthcare decision-makers for their families.

The age distribution data revealed that young adults form the largest consumer block, with those aged 18–35 years accounting for 76.2% of the sample. This age profile reflects a highly active population segment facing acute illnesses, physical trauma, and reproductive health needs. However, the drop-off in representation among older adults (only 11% for ages 55+) raises important equity concerns regarding healthcare access. Older demographics typically present with a higher chronic disease burden but face greater access barriers in user-fee-funded systems. As noted by Amaghionyeodiwe,²² rigid user charges in public facilities frequently reduce healthcare demand among vulnerable populations, particularly the elderly. This drop-off may also indicate that older adults delay seeking care due to financial constraints, or bypass tertiary centers entirely in favor of local primary care options, matching trends observed by Basu et al.²³ among low-income chronic disease patients.

5.2 Reasons for Choosing DUFUTH

Perceived quality of care was the primary motivator for facility selection, cited by 38.1% of respondents, outranking geographic proximity (30.1%) and general affordability (19.2%). This trend reinforces findings by Hsu et al.,³³ who established that healthcare

consumers frequently prioritize perceived quality over cost considerations when addressing health needs. This behavior explains why patients are willing to incur significant out-of-pocket expenses even when cheaper public alternatives are available.

From an institutional theory perspective, when basic public health services fail to meet quality standards, patients adapt by using out-of-pocket spending to secure better care. The 30.1% of respondents choosing the facility based on proximity highlights the role of geographic access, particularly for rural populations. This aligns with observations by Kamath et al.²⁴ that rural populations face compounding financial burdens when traveling to access high-quality providers. Furthermore, the 12.6% referral rate indicates that while DUFUTH fulfills its function as a tertiary referral center for Ebonyi State, a large proportion of patients bypass primary and secondary tiers to access the facility directly.

5.3 Impact of Waiting Times

Prolonged waiting times emerged as a major deterrent to service utilization, with 51.8% of participants agreeing that long delays discourage them from using DUFUTH. This finding is supported by objective wait times, as 69.4% of respondents reported spending over 3 hours waiting at the facility, with 14.7% waiting more than 6 hours. These findings are consistent with Mehta et al.,²⁵ who observed that each additional hour of wait time reduces patient satisfaction scores by roughly 15% on standardized scales. Das²⁶ similarly documented that long wait times in government facilities compromise patient trust and lower perceived quality, with average delays frequently exceeding 3 hours in outpatient units.

The qualitative findings reinforce this point, as participants repeatedly identified "shorter waiting times to see a doctor" as a key prerequisite for their willingness to pay extra. From an institutional theory perspective, excessive wait times indicate a breakdown in operational workflow and resource allocation. When public systems fail to provide timely care, patients may look for informal workarounds or turn to costlier private alternatives to save time, a pattern previously documented by Stepurko et al.²⁷

5.4 Specific Improvements and Premium Service Options

Participants expressed a clear willingness to pay extra for advanced medical equipment (25.3%), cleaner facilities (22.1%), and better communication (22.1%). The strong focus on advanced equipment matches the qualitative feedback, where patients explicitly requested "advanced technology" and "modern facilities." This reflects an awareness among patients that modern diagnostic and treatment technology improves clinical outcomes. Verma et al.²⁸ observed that patients value access to advanced diagnostic infrastructure and are often willing to incur out-of-pocket expenses to secure it.

The conditional interest in a "premium service" option (71.7% answered "maybe, depending on cost") indicates that while patients are open to faster, differentiated care models, they remain highly price-sensitive. This response matches the Patient-Chosen Gap Payment model reviewed by Epstein et al.,²⁹ where participants acknowledged the value of premium options for improving care quality but emphasized the need for transparency and cost controls.

The demand for better communication (22.1%) and cleaner environments (22.1%) highlights the value patients place on non-technical dimensions of care. This aligns with findings by Hsu et al.³³ that reliability and assurance are core drivers of service quality perceptions. Qualitative remarks regarding the "nurse-to-patient relationship" and "therapeutic communication" reinforce the conclusion that interpersonal care is central to patient satisfaction, matching observations by Gage et al.³⁰ that higher out-of-pocket payments are tolerated when accompanied by thorough clinical communication and counseling.

However, as Pallegedara and Grimm³¹ warn, rising out-of-pocket costs due to public sector quality issues can create financial barriers for lower-income groups, risking a two-tiered system. Finally, the feedback linking negative staff attitudes to "work-related stress" matches observations by Das²⁶ and Mehta et al.²⁵ that understaffing and high workloads directly compromise provider empathy, underscoring the need for administrative strategies to address staff burnout.

5.5 Econometric Interpretation of WTP Determinants

By implementing multivariable inferential modeling, this study isolates how social and financial status shape a patient's willingness to pay out-of-pocket for healthcare quality updates. The robust independent effect of advanced education on WTP choices (AOR = 8.56 for *Maybe* vs *No*) aligns with the human capital theory of health economics.³⁶ Education improves health literacy and shifts individuals toward long-term valuations of health outcomes, making them more likely to accept cost trade-offs for superior quality. Furthermore, the significant positive predictive power of formal employment (such as civil service status) highlights how steady liquidity structures drive healthcare procurement behavior. This dynamic supports the framework described by Pallegedara and Grimm,³¹ where income stability determines an individual's ability to navigate user-fee architectures.

Particularly, once model controls were introduced for socioeconomic positioning, biological gender and age group lost independent predictive power. This statistical stabilization suggests that observed variations in health-seeking intents are driven by underlying economic capacity and education, rather than demographic traits. These results emphasize that any hospital-level financing frameworks or premium tiers introduced at DUFUTH must account for these economic differences to avoid worsening inequalities in healthcare access.

6. CONCLUSION

This study establishes that patient waiting times, staff attitudes, and physical infrastructure are core determinants that actively shape patient satisfaction and influence their willingness to pay out-of-pocket for healthcare services. The findings reveal a clear operational bottleneck at DUFUTH: over two-thirds of the patients' experience waiting times exceeding three hours, creating a major deterrent to facility utilization. Despite these delays, a strong majority of patients express a clear willingness to pay premium surcharges for targeted quality improvements, specifically prioritizing the procurement of advanced diagnostic equipment, the modernization of facility infrastructure, and the implementation of structured communication training for clinical staff.

Significantly, while there is substantial interest in the introduction of accelerated "premium service" conduits, patients remain highly sensitive to pricing. Therefore, DUFUTH management must urgently investigate the operational root causes of extended facility delays and implement workflow adjustments. Any future premium fee models must include clear affordability safeguards to generate revenue without compromising healthcare equity for lower-income patients.

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