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ORIGINAL RESEARCH

Patients' Satisfaction with the Quality of Medical Laboratory Services in a Nigerian Private Tertiary Health Facility

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Abstract

Background: Hospital laboratory services are indispensable for disease detection, diagnostic confirmation, and therapeutic decision-making. Lack of national policy and strategy, poor access to laboratory services, unhygienic laboratory environment, long waiting time, poor patient-provider communication, non-availability of requested tests, poor attitude of laboratory staff, and lack of properly designed laboratories are factors that affect patients' satisfaction with laboratory services. There is limited data on patients' satisfaction with medical laboratory services in Ogun State and Nigeria at large.

Objective: To assess patients' satisfaction with the quality of medical laboratory services and associated factors in a private tertiary health facility in Ogun State, Nigerian.

Methods: The study was carried out at Babcock University Teaching Hospital in Ilishan-Remo, Ogun State, Nigeria. The study was descriptive and cross-sectional in design. The study population was adult patients accessing medical services at the Babcock University Teaching Hospital laboratory. Patients' satisfaction with medical laboratory services was assessed using the Patient Satisfaction Questionnaire (PSQ-18).

Results: The highest mean satisfaction score was recorded for technical quality (4.07 ± 0.46), followed by overall satisfaction (3.99 ± 0.40), while the lowest mean scores were observed for both communication (3.69 ± 0.83) and accessibility of care (3.69 ± 0.44), respectively. General satisfaction was significantly associated with waiting time ($p < 0.01$) and cost of laboratory services ($p = 0.046$), while satisfaction with finance was significantly associated with age ($p = 0.021$), education ($p = 0.04$), occupation ($p = 0.005$), and cost of laboratory services ($p = 0.022$).

Conclusion: Hospital management should make efforts to improve the accessibility of laboratory services and the communication skills of laboratory staff.

Keywords: Client satisfaction, Health System Research, Hospital Waiting Time, Laboratory services, Quality of Care.

Introduction

Patient satisfaction is the evaluation of the extent to which patients are satisfied with health services. [1-3] It is an expression of the gap between the expected and perceived characteristics of services rendered. [1-3] Satisfied patients are more likely to comply with treatment, participate actively in their own care, and keep seeking medical attention. [1-4] Patient satisfaction is a component of quality of care. [4-6] It serves an essential function in highlighting the strengths and weaknesses of health systems and offers valuable feedback for improving the quality of care in health facilities. [4-7] Hospital laboratory services are indispensable for disease detection, diagnostic confirmation, and therapeutic decision-making. [4-6] Medical laboratories are essential components of an effective healthcare system as laboratory results play a crucial role in informing and guiding medical decision-making. This helps ensure optimal outcomes of care for patients. However, in sub-Saharan Africa, limited access to quality diagnostic testing and its undervaluation often lead to frequent misdiagnoses. As such, evaluating patients' satisfaction with laboratory services serves as a crucial indicator for enhancing the quality of the sparse laboratory services. [7-9] Patients' satisfaction with clinical laboratory services is significant in providing an acceptable quality of care and obtaining feedback. Studies on patients' satisfaction with quality of care help assess the strengths and drawbacks of laboratory services in hospitals. [4-6]

Several studies in sub-Saharan Africa identified numerous factors that affect patients' satisfaction with the quality of laboratory services. These factors include access to the laboratory, hygiene of the environment, waiting time, patient-provider communication, availability of requested tests, availability of space in the laboratory, attitude, and competence of

laboratory staff, lack of properly designed laboratories, lack of national policy and strategy for laboratory services, insufficient funding, inadequately trained laboratory staff, and inadequate laboratory infrastructure. [9-11]

Most existing studies on patient satisfaction with laboratory services in sub-Saharan Africa are from the Eastern part of Africa, with limited studies from Nigeria. These studies concentrated on public health facilities. Although these studies covered diverse geographical contexts (allowing for contextual comparison), employed validated frameworks for quality assessments, and assessed key quality indicators, they did not capture the private health hospitals. This leaves a critical gap in evidence from private health facilities despite their central role in healthcare delivery. [9-11] Private hospitals have assumed a significant role in healthcare delivery in Nigeria, mainly as a response to the persistent challenges within the public health system. Public health facilities have been burdened by inadequate public health infrastructure, inefficiencies in service provision, and the growing demand for high-quality healthcare. [10] This study addressed a critical gap by providing crucial evidence that can guide quality improvement and regulation in private health facilities. The study focused on general satisfaction, interpersonal manner, communication, satisfaction with finance, technical quality, and accessibility of services. These domains cut across clinical competence and patient-centred care. This study assessed patients' satisfaction with the quality of medical laboratory services and associated factors in a private tertiary health facility in Ogun State, Nigeria.

Methods

Study area

The study was conducted at the Babcock University Teaching Hospital Laboratory, Ilishan-Remo in Ogun State, Nigeria. Babcock University Teaching Hospital is a privately owned teaching hospital. The Seventh-Day Adventist Church in Nigeria owns the hospital which was established in 2013. It is located in Ilishan-Remo in the Ikenne Local Government Area (LGA) of Ogun State. The hospital is a 240-bed health facility. The hospital offers the following services: emergency clinical services, medical and surgical services, obstetric services, laboratory services, and physiotherapy services.

Study design

The study design is descriptive and cross-sectional. Patients' satisfaction with medical laboratory services was assessed using semi-structured questionnaires.

Ethical consideration

Ethical clearance was obtained from the Ogun State Health Research Ethics Committee (OGHREC), Abeokuta, Ogun State (reference number OGHREC/467/2025/540/APP). Written informed consents were obtained from the patients.

Study population

The study population included adults accessing the medical laboratory services at the Babcock University Teaching Hospital laboratory.

Inclusion criteria

Patients aged 18 years old and above, accessing medical laboratory services at the Babcock University Teaching Hospital laboratory in the last six months were recruited for the study.

Exclusion criteria

Critically ill patients.

Sample size determination

The sample size was determined using the Cochran's formula based on a previously

reported proportion of a population that expressed satisfaction in a similar study (91.4%),^[12] a standard normal value corresponding to the desired confidence level (1.96) and a margin of error of 0.05. The calculated sample size was increased to 135 to include a 10% non-response rate.

Sampling technique

A systematic random sampling technique was used to select patients for the study. The sampling interval was calculated by dividing the number of patients accessing medical laboratory services in the Babcock University Teaching Hospital laboratory in a month by the required sample size. The average number of patients accessing medical laboratory services at the Babcock University Teaching Hospital laboratory in a month was 280, hence every second patient attending the laboratory who met the inclusion criteria was enrolled for the study.

Data collection tool

Patient's satisfaction with medical laboratory services was assessed using the PSQ 18 Questionnaire.^[13] All items were scored so that high scores reflected satisfaction with medical laboratory services, while low scores reflected dissatisfaction. Pre-coded responses: 1 - strongly agreed, 2 - agreed, 3 - did not know, 4 - disagreed, and 5 - strongly disagreed were used for negatively worded questions, while re-coded responses (reversed scores) were used for positively worded questions.^[13] The scores in each sub-scale were added, and the mean score was calculated.

Pretesting of the Data Collection Tool

The questionnaire was pretested on 14 patients accessing medical laboratory services at the Federal Medical Centre, Abeokuta, Ogun State. The questionnaires were administered by the researcher with the assistance of four research assistants.

Data collection method

Data collection was interviewer-based and conducted by research assistants as exit interviews. Confidentiality was guaranteed, and verbal consents were obtained from patients.

Statistical analysis

Data analysis was done using the International Business Machines Corporation (IBM) Statistical Package for the Social Sciences (SPSS) Statistics version 25 software. Descriptive statistics was deployed, and the results were summarised as frequencies, proportions, means and standard deviations. Chi-square was used to test for associations between categorical variables, and the level of significance was set at 5% (0.05). Logistic regression analysis was used to predict dependent variables from the independent variables.

Results

A total of 135 respondents participated in the study, as shown in Table I. The respondents had a mean age of 45.97 ± 19.08 years. More than half were females (52.6%), and the majority were married (63.7%). Over half had attained tertiary education (56.3%), while more than one-third were professionals or semi-skilled workers (36.3%). Over one-fifth earned ₦200,000 or more monthly (20.7%), and the majority belonged to the Yoruba ethnic group (74.9%).

In Table II, over half of the respondents expressed satisfaction with the cost of laboratory services, 90% reported waiting less than 30 minutes at the laboratory, and 37% indicated waiting between 1 and 2 hours to receive their results.

Table III shows that the highest mean satisfaction score was recorded for technical quality (4.07 ± 0.46), followed by overall satisfaction (3.99 ± 0.40) and interpersonal manner (3.76 ± 0.63). The lowest mean scores were observed for both

communication (3.69 ± 0.83) and accessibility of care (3.69 ± 0.44).

Waiting time and the cost of laboratory services were significantly associated with general satisfaction with laboratory services. In contrast, age, education, occupation, and the cost of laboratory services were significantly associated with finance (Table IV). Logistic regression analysis identified age as the only predictor of the client's satisfaction (Table V).

Discussion

The mean age of respondents in this study was 45.97 ± 19.08 years, indicating that both younger and older adults accessed private laboratory services. In contrast, Umoke *et al.*^[1] and Hailu *et al.*^[8] reported that the majority of the respondents from public hospitals in Ebonyi State (Nigeria) and Ethiopia were below 40 years. This variation may be explained by the fact that private facilities often attract older clients with stable income, chronic health conditions such as hypertension and diabetes, and insurance coverage. In contrast, younger clients are more likely to be seen in public hospitals.

The gender distribution in this study revealed a modest female majority. This finding is consistent with the findings of Abera *et al.*^[11] and Hailu *et al.*^[8] who reported a higher proportion of female respondents than males in Ethiopia. However, Cynthia noted a more balanced gender distribution in Cameroon.^[13] Female predominance is frequently linked to women's increased usage of healthcare services due to reproductive health demands and care-seeking behaviour. The majority of the respondents were married, which is comparable with the findings of Abrar *et al.*^[14] who found married individuals to be the majority. This development may be explained by married people's increased health awareness and financial capacity to acquire healthcare services.

Table Ia: Sociodemographic characteristics

Variable	Frequency (n=135)	Percentage
Age (years)		
<30	32	23.7
30-39	28	20.7
40-49	17	12.6
50-59	22	16.3
≥60	36	26.7
Mean age	45.97±19.08	
Sex		
Female	71	52.6
Male	64	47.4
Marital status		
Married	86	63.7
Single	32	23.7
Separated	3	2.2
Widow	14	10.4

In this study, more than half of the respondents had attained tertiary education, while over one-third were professionals or semi-skilled workers. Opurum reported an even higher proportion, with 81.8% having a tertiary education and 78.2% being employed in a study conducted in Port Harcourt, Nigeria. [15] Similarly, Owusu found that 83.9% of respondents were employed, with 38.5% having a tertiary education in Ghana,[16] unlike Atnafu who reported that 30.4% of participants were housewives and 47.8% were unable to read or write in their study at Debre Markos Referral Hospital, Northwest Ethiopia. [17] The higher education levels of respondents observed in the present study may be due to the profile of private hospital users, who are typically more educated, more aware of service quality, and more willing to pay for better healthcare services. The difference reflects the socioeconomic stratification of patients, as private facilities generally attract middle to high-income earners in formal professions. At the same time, public hospitals serve a broader population, including those in informal employment.

Table Ib: Sociodemographic characteristics

Variable	Frequency (n=135)	Percentage
Education		
No formal education	1	0.7
Primary	10	7.4
Secondary	48	35.6
Tertiary	76	56.3
Occupation		
Professional	49	36.3
Skilled	13	9.6
Semi-skilled	49	36.3
Unemployed	24	17.8
Monthly income (Naira)		
<50,000	16	11.9
50,000-99,000	29	21.5
100,000-149,000	22	16.3
150,000-199,000	16	11.9
≥200,000	28	20.7
Unemployed	24	17.8
Ethnicity		
Yoruba	101	74.9
Igbo	28	20.7
Hausa	Nil	Nil
Others	6	4.4

In the present study, more than a fifth of the respondents earned at least ₦200,000 monthly. In contrast, Umoke *et al.*[1] showed that respondents in public hospitals generally had lower earnings. This underscores the socioeconomic divide in healthcare access, with higher-income individuals more likely to patronise private facilities, raising concerns about equity in service utilisation. Ethnicity was predominantly Yoruba, reflecting the local catchment of the private facility studied. By contrast, Cynthia reported samples that reflected the dominant ethnic groups of their study settings. [13] This difference can be attributed to the tendency of private facilities to serve more localised populations, whereas public tertiary hospitals often draw

referrals from wider and more diverse geographical areas.

The high frequency of satisfaction with technical quality in the present study is consistent with the findings of Abera *et al.*^[11] and Hailu *et al.*^[8] both of whom reported strong adherence to diagnostic standards. In contrast, the relatively lower satisfaction observed in communication and interpersonal manner mirrors the results of Abrar *et al.*^[12] and Khalid,^[5] who similarly identified gaps in patient interaction. In many public facilities, these challenges are linked to high workload. In contrast, in private facilities, they may reflect insufficient emphasis on soft skills in laboratory training and limited patient engagement practices. Satisfaction with finance was higher than that reported by Umoke *et al.*^[1] and Uneke *et al.*,^[12] a difference that may be attributed to the higher socioeconomic profile of patients in private facilities. Nevertheless, affordability remains a concern, reinforcing the need to expand insurance coverage. Waiting time in this study was shorter than that reported by Jegede^[6] and Hailu *et al.*^[8] who found lengthy delays in public facilities. This highlights the efficiency advantage of private laboratories, which often benefit from lighter workloads and greater resource flexibility. However, the finding that 37% of respondents still experienced delays of 1–2 hours in receiving results suggests that workflow bottlenecks persist. Accessibility remained low despite the private setting, similar to the findings of Cynthia.^[13] This shows that financial barriers may limit access for many patients. Overall, the study demonstrates both similarities (such as technical competence and communication gaps) and differences (such as waiting time and affordability) when compared with previous research, underscoring the importance of examining private facilities as a distinct context.

The present study found that waiting time and the cost of laboratory services were significantly associated with overall satisfaction. In contrast,

age, education, occupation, and cost of services were significantly associated with satisfaction regarding financial aspects.

Table II: Cost of laboratory services and waiting time

Variable	Frequency (n = 135)	Percentage
Cost of laboratory services		
Very high	8	5.9
High	41	30.4
Satisfactory	80	59.3
Not sure	6	4.4
Waiting time at the reception in the lab (hours)		
<0.5h	122	90.4
1-2h	8	5.9
3-4h	2	1.5
>4h	3	2.2
Waiting time before results are released (hours)		
<0.5h	48	35.6
1-2h	50	37.0
3-4h	15	11.1
>4h	5	3.7
Not sure	17	12.6

Notably, age emerged as the only independent predictor of financial satisfaction, with older patients more likely to report higher satisfaction. These findings are consistent with several previous studies. Almatrafi *et al.*^[18] reported that age, gender, and education were statistically significant, although only age and gender were actual predictors of satisfaction. Similarly, Abera *et al.*^[11] identified significant associations between age, education, and waiting time for specimen collection, which aligns with the present study's finding that waiting time and education influence satisfaction. In addition, Hailu *et al.*^[8] emphasised education and distance to health facilities as significant determinants, further underscoring the role of socioeconomic and

accessibility factors in patient satisfaction. Conversely, some studies highlighted service-related rather than sociodemographic predictors. Hossen *et al.*^[19] found no significant association between sociodemographic variables (such as age, sex, marital status, education, and

occupation) and satisfaction, but reported strong links with waiting time, turnaround time, obtaining verbal consent, and provision of adequate information. This is consistent with the present study's emphasis on waiting time as a critical determinant.

Table III: Satisfaction rating of laboratory services.

Variable	Satisfied (%)	Not Satisfied (%)	Mean±SD
General Satisfaction	87.4	12.6	3.99±0.40
Technical Quality	67.4	32.6	4.07±0.46
Interpersonal Manner	68.9	31.1	3.76±0.63
Finance	71.9	28.1	3.74±0.53
Communication	78.5	21.5	3.69±0.83
Accessibility and convenience	54.1	45.9	3.69±0.44

Table IV: Association between socio-demographics, general satisfaction, and finance

Variable	χ^2	<i>p-value</i>	Df
General satisfaction			
Age	5.6	0.231	4
Sex	1.145	0.285	1
Education	3.782	0.286	3
Occupation	3.651	0.302	3
Monthly income	1.841	0.934	6
Ethnicity	1.061	0.588	2
Waiting time before patients are attended to at the lab	19.666	0	3
Cost of laboratory services	8.022	0.046	3
Satisfaction with finance			
Age	11.56	0.021	4
Education	13.364	0.04	3
Occupation	12.864	0.005	3
Monthly Income	4.706	0.582	6
Cost of lab services	9.646	0.022	3

Contrasting findings include those of Abebe, who reported that the type of facility was the sole determinant of satisfaction, with patients more likely to be satisfied in health centres (75.2%) than in hospitals (68.6%). This suggests that institutional and structural differences play a role beyond individual-level factors such as age or education. The variation across studies may be

explained by several factors, such as contextual differences (urban vs. rural settings, tertiary vs. secondary facilities, public vs. private health systems) and sociocultural norms (older patients in some societies may express higher satisfaction due to lower expectations or greater respect for healthcare providers. ^[14,17]

Table V: Logistic regression analysis

Variable	B	S.E	Wald	p-value	df	Exp(B)	95% CI Lower	95% CI Upper
General satisfaction								
Cost of laboratory services								
Very high	0.062	1.164	0.003	0.958	1	1.064	0.109	10.41
High	1.962	1.063	3.406	0.065	1	7.112	0.885	57.13
Satisfactory	1.438	0.939	2.345	0.126	1	4.211	0.669	26.51
Waiting time								
Waiting time at the reception in the lab	-0.373	0.307	1.475	0.224	1	0.689	0.378	1.257
Satisfaction with finance								
Age	0.034	0.016	4.338	0.037	1	1.034	1.002	1.068
Cost of laboratory services								
Very high	0.987	1.398	0.498	0.48	1	2.682	0.173	41.54
High	1.09	1.044	1.091	0.296	1	2.975	0.385	23.02
Satisfactory	1.848	1.021	3.276	0.07	1	6.344	0.858	46.9

B – Regression Coefficient, S.E – Standard Error of the Mean, Exp(B) – Odds Ratio, CI – Confidence Interval

In addition, methodological differences (sample size, study design, and satisfaction measurement tool) and health system capacity and resources could account for these inconsistencies.^[10]

Conclusion

Patients accessing laboratory services at a privately-owned Teaching Hospital reported high frequency of satisfaction with technical quality and short waiting times, but relatively lower satisfaction with communication, interpersonal manner, affordability, and accessibility. These findings demonstrate that while private laboratories deliver efficient and technically sound services, they still face challenges in providing fully patient-centred care. There is a need for insurance integration, regulatory oversight, and capacity building. The facility should be incorporated into the National Health Insurance Scheme (NHIS) to improve affordability and reduce inequities. The hospital should establish and enforce quality standards that cover both technical and interpersonal

aspects of laboratory services, and lastly, strengthen training for laboratory personnel.

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