

Assessment of Patient Satisfaction and Associated Factors among Patient Attending Clinical Laboratory at Worabe Comprehensive Specialized Hospital, Central Ethiopia

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Abstract

Background: Laboratory testing is essential for identifying complaints, monitoring condition progression, and evaluating treatment effectiveness. Clinical laboratory services are vital in diagnosis and patient management. Client satisfaction is crucial for healthcare effectiveness and improved patient outcomes, yet data on satisfaction with laboratory services at Worabe Comprehensive Specialized Hospital is lacking. This study aims to assess patient satisfaction with these services in 2023.

Method: An institution-based cross-sectional study involved 299 patients, selected through simple random sampling. Data were entered using Epi-Data and analyzed with SPSS version 21 for bivariate and multivariate analysis.

Results: Of the 299 participants, 150 (50.2%) were satisfied with the laboratory services. The overall satisfaction score was 3.7 out of 5 on a Likert scale. The highest satisfaction was reported for the cleanliness of the blood collection area and hospital (mean scores of 4.24 and 4.22). The lowest satisfaction concerned information provided before sample collection, timely receipt of test results, and clarity on when to expect results. Gender (AOR = 1.623) and marital status (AOR = 1.653) were significantly associated with satisfaction.

Conclusion: Patient satisfaction with laboratory services was generally low. Improvement in service provision and staff training is recommended.

Keywords: Patient Satisfaction, Clinical Laboratory Service, Worabe, Ethiopia

1. Background

Laboratory services in hospitals are crucial for detecting, diagnosing, and treating diseases. These clinical laboratory services provide physicians with vital diagnostic information for various conditions. Satisfaction is not simply a pre-existing condition to be measured but is a judgment formed by individuals based on their specific experiences. It is defined as the extent to which desired goals are met and serves as a key indicator of a healthcare facility's success [1]. Patient satisfaction reflects the level of contentment patients feel after using a service, highlighting the difference between the expected service and the actual experience from the patient's perspective [2]. Patient Satisfaction is a subjective, non-

quantitative state of mind that occurs when patients' expectations are met or exceeded [3].

Clinically, patient satisfaction is essential as satisfied patients are more likely to adhere to treatment, engage in their care, continue using medical services, remain with a healthcare provider, and maintain a specific health system [4]. Conversely, dissatisfied patients may experience worse outcomes due to missed appointments, disregarding advice, or failing to follow treatment plans. Customer satisfaction is crucial for improving service quality and is a key input for the International Organization for Standardization [5]. Laboratory procedures produce test results for

their customers, and failure to serve them well indicates that the laboratory is not fulfilling its primary function [6].

Patient satisfaction reflects the provider's ability to deliver care that meets patients' expectations and needs. A survey of laboratory services at university hospitals revealed that the highest dissatisfaction rates were related to computerized test requests, reporting turnaround times, and phlebotomy schedules [7]. Another survey at a tertiary care unit found that the mean satisfaction scores were 58.1 for physicians and nurses, and 70.5 for outpatients [8].

Several factors influence patient satisfaction with laboratory services, including access to the laboratory, environmental hygiene, waiting times, patient-provider communication, availability of requested tests, laboratory space, staff attitude and competence, patients' sociolect-demographic characteristics, physical health status, and patients' understanding and expectations of healthcare services. The hospital's physical appearance and overall environment also significantly impact client satisfaction. [9,10]. In sub-Saharan Africa, quality laboratory services remain a major public health challenge due to poorly designed laboratories, lack of national policy and strategy, insufficient funding, inadequately trained staff, outdated infrastructure and equipment, scarcity of reagents and consumables, limited quality control protocols, inadequate equipment maintenance, and a lack of government standards for laboratory testing [10,11].

A study of 34 health institutions in Ethiopia indicated widespread shortages of supplies and reagents, leading to the inability to perform even basic tests. Maintenance issues, weak referral systems, and the absence of a quality assurance network were also noted [10]. These challenges result in ineffective diagnostics and inappropriate treatments, increasing morbidity and mortality rates. Despite the significance of these issues, no study has yet examined patient satisfaction with clinical laboratory services at Worabe Hospital. This study aims to fill that knowledge gap by assessing the overall level of patient satisfaction and identifying factors that influence the quality of laboratory services.

2. Materials and Methods

2.1 Study Design, Geographic Region and Time Frame

A hospital-based cross-sectional descriptive study was conducted on patients who visit laboratories at WCSH, the primary hospitals serving a substantial population in the Central Ethiopia region, to evaluate patient satisfaction from March to August 2023. WCSH is situated in Worabe town, located in the Central Ethiopia regional state, Silte zone. The town is positioned 170 km from Addis Ababa and 120 km southeast from Wolkite town. As per the 2007 National Housing and Population Census, the anticipated population of Worabe town for the year 2014/15 was approximately 15,920, with an estimated 3249 households. According to the town administration report, the town comprises Six Kebeles [32]. The Zonal administration is bordered in the North by Gurage Zone, in the West by Hadia Zone, in the Southeast by Alaba Special Woreda, and in the East by Oromia Regional State. WCSH offers a range of health services for residents, including childbirth, antenatal

and postnatal care, as well as provision of antiretroviral therapy, laboratory services, Tuberculosis/HIV collaborative care, and other routine medical treatments for both outpatient and inpatient individuals.

2.2 Source and Study Population

Patients visiting laboratory of WCSH were the source of population. All patients visiting the clinical laboratory of WCSH during the study period would be study population.

2.3 Eligibility Criteria

patients aged 18 years and above, or their designated proxies for minors along with caregivers, who were availing laboratory services during the specified study period, were eligible for participation in the survey. Those individuals undergoing microbiology, clinical chemistry, hematology, serology, parasitology, and urine analysis tests were considered as respondents and included in the research. Exclusion criteria encompassed individuals with critical illnesses, mental disorders, or those incapable of providing responses without a designated caretaker present at the time of the study.

2.4 Sample Size Determination and Sampling Technique

The sample size was calculated using a single population proportion formula $[N = [Z\alpha/2]^2 P [1-P] / d^2]$ for estimating a single population proportion for a cross-sectional study. The proportion of patients' satisfaction is 77% from the previous study conducted in Jimma with 95% confidence level and with a margin of error of 5% and 10% non-respondent rate, sample size will be $[N] = [1.96]^2 \times 0.77[0.23] / [0.05]^2$. $[n]=272$. $N= 272$. Expected non-respondent rate = 10%. Thus, $n= 272 + [10\% \text{ of } 272] =299$. Convenience sampling technique was used to recruit these 299 study participants.

2.5 Operational Definition

2.5.1 Patient Satisfaction: Patient's satisfaction towards clinical laboratory service is measured by different parameters. The parameters include cleanliness of the hospital, cleanliness and comfort of waiting area, availability of laboratory staff on working hours, friendliness of staff, location of the laboratory in the hospital, latrine accessibility and availability, latrine cleanliness and comfort, the cost of laboratory service.

2.5.2 Satisfied: In overall satisfaction, patients are said to be satisfied when the result of their mean score is above or equal to the mean score.

2.5.3 Dissatisfied: In overall satisfaction patients are said to be dissatisfied when the result of their mean score is less than the mean score.

3. Data Collection Procedure

Data was collected from patients by conducting face-to-face interviews at the exit of the laboratory using a pre-tested and structured interviewer-administered questionnaire. The translated Patients' Satisfaction Questionnaire in 'Amharic' was used to guide the researcher. Standardized 5-point Likert scales ranging from very dissatisfied to very satisfied [1 to 5 points] were used to measure satisfaction status for all items. The standard questionnaire was pre-tested before the collection of entire data patients who receive

service from the laboratory were interviewed in WCSH. These patients were not included in the sample size. The questionnaire was prepared in English and translated to Amharic, then back to English to check for its consistency. The questionnaire consists of satisfaction indicators, sociolect-demographic characteristics of the patients and different laboratory services such as waiting time [turnaround time], availability of requested laboratory tests, the convenience of service hours, and type of laboratory visit, privacy, respect, courtesy, and confidentiality. Beside their sociolect-demographic characteristics, the study participant was asked to rate each aspect of the laboratory service on a five-point liker scale [1= Very Dissatisfied, 2= Dissatisfied, 3= Neutral, 4= Satisfied, 5= Very satisfied].

3.1 Data management and Quality Assurance

All questionnaires for the study were returned daily to us for data cleaning, data editing and data entry. The questionnaire was originally be prepared in English and its final version was translated into Amharic, and then back-translated to English to check its consistency. Moreover, the pretest of the questionnaire was carried out on 5% of total sample size and each data collector had an opportunity to be acquainted with the interview technique. Furthermore, intensive supervision was done by research advisors throughout the data collection period. The researcher collected the completed questionnaire and checked each for inconsistencies, error, and omissions. Double entry of the questionnaire was carried out to minimize entry errors.

3.2 Data Processing and Analysis

Quantitative data was entered, cleaned, coded, and data analysis was made using SPSS for windows version 21 & Epi information.

Associations of the variables were computed using the chi-square and were interpreted based on the finding of the response. Interpretation at $P < 0.05$ using 95% confidence intervals was done for statistical significance. Normality was checked for continuous variables using histogram. Socio-demographic and economic factors were treated as categorical variables and were presented as frequencies and percentage. A Chi-square test was applied to test the association between explanatory variable and outcome variable. Furthermore, both bivariate and multivariable logistic regression analyses were employed to identify the candidate variables and contributing factors of patient satisfaction respectively. Bivariate logistic regression analysis was used to identify the candidate variable between one explanatory variable and outcome variable at p values ≤ 0.25 . Multivariate logistic regression analysis was performed to predict factors which effect of patient satisfaction for the candidate variable, which had association during bivariate logistic regression. Those variables with a p -value less than 0.05 AOR at 95% confidence interval was considered statistically significant factors.

4. Result

4.1 Socio-Demographic Characteristics of the Participants

A total of 299 patients were enrolled in the study. The mean age of study participant was 34.79 ± 10.439 [[mean \pm SD]. Besides, [33.8%] of the participants were within the age group range of 29-40 years, more than half [56.2%] of the study participants were male and out of 299 participants [67.2%] of the participants were married. Regarding educational status of study participant, the majority 129[43.1%] are under secondary school and [7.4%] are only read and write.

Variables	Categories	Frequency (n=299) (%)
Age	18-28	98(32.8)
	29-40	101(33.8)
	41-49	75(25.1)
	>50	25(8.4)
Mean age+SD(yr.)	34.79+10.439	
Sex	Male	168(56.2)
	Female	131(43.8)
Level of education	Only read and write	22(7.4)
	Primary (1-8)	70(23.4)
	Secondary (9-12)	129(43.1)
	College and above	78(26.1)
Marital status	Single ¹	99(33.1)
	Married	200(66.9)
Monthly income	1000-2500	119(39.8)
	2500-3500	80(26.8)
	>3500	100(33.4)

Table 1: Socio-Demographic Characteristics of Hospital Laboratory Service Users at Worabe Comprehensive Specialized Hospital, Worabe, Ethiopia, July 2023

Single 1; includes divorced, separated and, widowed/widower

4.2 Patients' Satisfaction Level with Laboratory Service

The overall patient satisfaction on laboratory service was determined by taking mean score and above for 18 variables that were utilized to reflect satisfaction [displayed in Table 2]. Accordingly, of 299 respondents, just over half [50.2%] of them were satisfied and the rest were dissatisfied [49.8] with general clinical laboratory service provided at WCSH [Figure 1].

In Likert scale, the overall mean rate of satisfaction of patients

by laboratory services in WCSH was 3.49. The mean rate of satisfaction for different aspects of laboratory service ranged from 2.87 to 4.22. The lowest mean rating of satisfaction was given for information given before specimen collection outside laboratory room and test results received on time as told with mean ratings of 2.87 and 3.02, respectively. Highest mean rating of satisfaction was obtained for cleanliness of the hospital [4.22] and laboratory personnel's professional appearance [neatness, professional dressing] [4.21].

Variable	Very dissatisfied		Dissatisfied		Moderate satisfied		Satisfied		Very satisfied		Mean +SD
	NO	%	NO	%	NO	%	NO	%	NO	%	
Location of the laboratory in the hospital	17	5.7	27	9.0	9	3.0	16	54.5	83	27.8	3.90+1.083
Cleanliness of the hospital	4	1.3	8	2.7	4	1.3	18	62.2	97	32.4	4.22+0.721
Cleanness and comfort of waiting area	7	2.3	18	6.0	4	1.3	17	59.9	91	30.4	4.10+0.873
Adequacy of sitting arrangement in waiting area	13	4.3	47	15.7	11	3.7	15	51.8	73	24.4	3.76+1.117
Availability of laboratory staff on working hours	13	4.3	43	14.4	5	1.7	16	53.5	78	26.1	3.83+1.104
Welcoming approach or friendliness of Staff	21	7.0	32	10.7	10	3.3	16	54.5	73	24.4	3.79+1.39
Laboratory personnel's professional appearance	3	1.0	11	3.7	12	4.0	16	55.9	106	35.5	4.21+0.768

Respect and courtesy of the staff	16	5.4	50	16.7	6	2.0	13	2	44.1	95	31.8	3.80+1.206
Cleanliness of the blood drawing area	2	0.7	13	4.3	4	1.3	17	2	57.5	108	36.1	4.24+0.743
Ability of person drawing blood to put client at ease	5	1.7	33	11.0	10	3.3	16	5	55.2	86	28.8	3.98+0.957
Information given before specimen collection outside the laboratory room	54	18.1	98	32.8	12	4.0	10	4	34.8	31	10.4	2.87+1.342
Latrine accessibility and availability	28	9.4	34	11.4	45	15.1	12	9	43.1	63	21.1	3.55+1.210
Latrine cleanness and comfort	30	10.0	25	8.4	47	15.7	12	4	41.5	73	24.4	3.62+1.224
Completeness of information on how and when to receive laboratory results	28	9.4	70	23.4	8	2.7	14	9	49.8	44	14.7	3.37+1.250
Ability of the laboratory personnel to answer Questions	24	8.0	57	19.1	7	2.3	17	5	58.5	36	12.0	3.47+1.165
Maintaining privacy and confidentiality	9	3.0	9	3.0	73	24.4	12	6	42.	82	27.4	3.88+0.948

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The cost of laboratory service	13	4.3	31	10.4	102	34.1	11	6	38.8	37	12.4	3.44+0.983
Test results received on time as told	42	14.0	81	27.1	36	12.0	10	5	35.1	35	11.7	3.03+1.287

Table 2: Rate of patients' Satisfaction Determined by Mean Score of Responses to Different Satisfaction Questions by Patients of WCSH, Worabe, Ethiopia, July 2023

4.3 Factors Affecting the Level of Patients' Satisfaction Towards Clinical Laboratory Services

Several demographics and general services related factors such as: -age, sex, educational status, income, and marital status of respondent were tested using binary logistic regression for the

presence of association with laboratory service satisfaction. Variables like age, sex, and marital status of respondent were found to be significantly associated with patient satisfaction on clinical laboratory services. [Table-3]

Variables	Categories	Satisfaction level		Chi-square(p-value)
		Satisfied (%)	Dissatisfied (%)	
Age	18-28	53 (35.3)	46 (30.9)	8.498(0.037)*
	29-40	44 (29.3)	57 (38.3)	
	41-49	35 (23.3)	40 (26.8)	
	>50	6(4.0)	18 (12.0)	
Sex	Male	75 (50.0)	93 (62.4)	4.681(0.030)*
	Female	75 (50.0)	56 (37.6)	
Level of education	Only read and write	15 (10.0)	7 (4.7)	3.193(0.363)
	Primary (1-8)	33 (22.0)	37 (24.8)	
	Secondary (9-12)	64 (42.7)	65 (43.6)	
	College and above	38 (25.3)	40 (26.8)	
Marital status	Single	41 (27.3)	58 (38.9)	4.536(0.033)*
	Married	109 (72.7)	91 (61.1)	
Monthly income	1000-2500	61 (40.7)	58 (38.9)	3.832(0.147)
	2500-3500	34 (22.8)	46(30.7)	
	>3500	43(28.7)	57(58.3)	

N.B -P-value <0.05 and * indicates those with significant association

Table 3: Chi-Square Analysis for Predictors of Patients' Satisfaction Towards Clinical Laboratory Service in WCSH, Ethiopia, 2023 [n = 299]

These factors were further analyzed using multiple logistic regression using enter stepwise elimination method. The result of multivariate logistic regression analysis showed that females are 1.623 times satisfied than male [AOR=1.623, 95%CI: 1.020-2.581]. From patients receiving laboratory service married patients

are 3.3 times more likely satisfied than single [AOR=1.653, 95%CI: 1.012-2.701]. However, other factors such as level of education, age, and monthly income were not significantly associated with patient satisfaction towards clinical laboratory service [Table 3]

Variables	Categories	Satisfaction level		COR (95% CI)	P- value	AOR (95% CI)	P- value
		Satisfied No (%)	Dissatisfie d No (%)				
Age	18-28	53 (35.3)	46 (30.9)	1		1	
	29-40	44 (29.3)	57 (38.3)	0.67(0.384- 1.170)	0.159*	0.61(0.347- 1.089)	0.095
	41-49	35 (23.3)	40 (26.8)	0.76(0.416- 1.386)	0.370	0.66(0.361- 1.242)	0.203
	>50	6(4.0)	18 (12.0)	2.6(0.953-7.112)	0.062*	2.33(0.837- 6.506)	0.105
Sex	Male	75 (50.0)	93 (62.4)	1		1	
	Female	75 (50.0)	56 (37.6)	1.66(1.048- 2.633)	0.031*	1.62(1.020- 2.581)	0.041**
Level of education	Only read and write	15 (10.0)	7 (4.7)	1		1	
	Primary (1-8)	33 (22.0)	37 (24.8)	2.256(0.829- 6.138)	0.111*	0.379(0.132- 1.086)	0.071
	Secondary	64 (42.7)	65 (43.6)	0.939(0.492- 1.791)	0.848	0.447(0.165- 1.210)	0.113
	College and above	38 (25.3)	40 (26.8)	1.036(0.591- 1.819)	0.901	0.479(0.169- 1.359)	0.167
Marital status	Single	41 (27.3)	58 (38.9)	1		1	
	Married	109(72.7)	91 (61.1)	1.694(1.041- 2.758)	0.034*	1.653(1.012- 2.701)	0.045**
Monthly income	1000-2500	61 (40.7)	58 (38.9)	1		1	
	2500-3500	34 (22.8)	46(30.7)	1.286(0.727-	0.387	1.318(0741-	0.526

				2.276)		2.344)	
	>3500	43(28.7)	57(58.3)	0.717(0.420-1.224)	0.223*	1.628(0.866-3.063)	0.192

Key * = candidate variables at $p \leq 0.25$ in bi-variate logistic regression, ** predictor variables in multivariate logistic regression at $p < 0.05$ and 1 refers to reference group.

Table 4: Predictors of Satisfaction Towards Clinical Laboratory Service in WCSH, Ethiopia, 2023 [n = 299]

5. Discussion

Clinical laboratories cater to a diverse clientele including patients, physicians, public health agencies, and the broader community. Evaluating the satisfaction levels of patients can offer valuable insights into their concerns regarding the services provided, enabling us to address any issues that may arise. This study aimed to gauge patient satisfaction levels and identify potential factors associated with laboratory services at WCSH. The findings of this study indicated that the overall satisfaction rate among patients availing themselves of clinical laboratory services at WCSH in Worabe city stood at 50.2% [95% CI: 44.1-55.2]. This figure closely aligns with the results from a similar study conducted in Amhara North West Ethiopia, which reported a satisfaction rate of 52.6% pertaining to the quality of malaria diagnostic services. [24] which assessed satisfaction with malaria diagnostic services, and in Debre Markos Referral Hospital [48.3%] [25]. However, satisfaction levels at WCSH were slightly lower than those reported at Tikur Anbessa Hospital in Addis Ababa [59.7%] [26], ART clinics in Addis Ababa [85.5%], and three selected hospitals in Eastern Ethiopia [87.6%] [27]. This variation might be influenced by social desirability bias, as patients may have been hesitant to express dissatisfaction during interviews conducted within the hospital. Additionally, WCSH is a relatively new facility, and its services may not yet fully meet patient expectations. When comparing satisfaction rates using a 5-point Likert scale, the overall mean satisfaction score at WCSH was 3.7. Specifically, patients gave the lowest ratings to the timeliness of receiving test results [3.02 ± 1.287] and the information provided before specimen collection [2.87 ± 1.342]. On the other hand, the cleanliness of the waiting area, adequacy of seating, and cleanliness of the blood drawing area received the highest ratings. Interestingly, a study from Tikur Anbessa Specialized Hospital found that patients were most satisfied with the cost of laboratory services [4.12 ± 1.08], while cleanliness of the latrine was a common concern [26].

The satisfaction scores in this study ranged higher than those from a study at Nekemte Hospital, Western Ethiopia, where scores ranged from 2.15 to 3.82 [28]. However, they were lower compared to a study conducted at selected government hospitals in Eastern Ethiopia [29]. Notably, the highest satisfaction scores in this study were similar to those from Tikur Anbessa Specialized Hospital, where scores ranged from 3.05 [± 1.12] to 4.12 [± 1.08] out of five [26]. The variation in satisfaction levels might be due to better availability of clinical laboratory services, including a wider range of tests, and differences in sociolect-economic status across facilities. Patient satisfaction is a critical outcome measure

for healthcare services and serves as an essential tool for quality improvement in clinical laboratories. Identifying the factors associated with satisfaction can help healthcare managers design effective interventions. This study found significant associations between certain factors and patient satisfaction. For instance, females were 1.827 times more likely to be satisfied than males [AOR = 1.827, 95% CI: 1.137-2.935]. Additionally, patients aged over 50 years were 3.3 times more likely to be satisfied compared to younger age groups [AOR = 3.3, 95% CI: 1.144-9.657]. These findings align with a Tanzanian study that also found significant dissatisfaction with both public and private laboratory services [30].

Conversely, other sociolect-demographic factors, such as age group, sex, marital status, and occupation, did not show any statistically significant association with overall patient satisfaction in this study. These findings are consistent with studies conducted in Nekemte, Tikur Anbessa Specialized Hospital, and Eastern Ethiopia. [31]. However, the study did find that patients with a secondary education were less likely to be satisfied with laboratory services compared to those who could only read and write. This suggests that more educated patients may have higher expectations and be more aware of service quality issues. A similar observation was made in a Tanzanian study, where higher-educated patients were more likely to express dissatisfaction with aspects such as privacy, waiting time, and result notification [30]. In contrast, other studies, such as those by Mindaye T. and Taye B., reported no significant association between educational status and overall satisfaction, possibly due to differences in study focus, particularly those examining only ART patients [27].

6. Conclusion

There were differences in the levels of satisfaction of patients among the clinical laboratory services in the study hospital. Assessing patient satisfaction is effective and important ways for evaluating health services including clinical laboratory services. In this study the overall level of patients' satisfaction with laboratory service in WCSH was not satisfactory. There was a lower satisfaction rate observed with time spent waiting to get the laboratory result and information given before specimen collection outside laboratory room. More over cleanliness of the blood drawing area, cleanness and comfort of waiting area and cleanliness of the hospital have high patient satisfaction. Therefore; hospital administration and the laboratory department of each Hospitals should strive more to enhance patients' satisfaction.

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