

Research Article

Customer Satisfaction Survey as Quality Indicator on Laboratory Medicine Accreditation: The Case of EPHI National HIV Molecular Reference Laboratory

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Abstract

Background: Customer satisfaction is the international standard requirements for medical laboratory quality and technical competence, and it is the basis to measure quality service delivery in the laboratory. Such information however is scanty in Ethiopia and thus, we assessed the effect of customer satisfaction towards clause numbers 4.14.3 and 4.14.7.

Methods: A facility based customer satisfaction survey was carried out bi-annually from January 2016 to December 2017 at EPHI. Relevant data were collected using pre-tested structured tools. The degree of satisfaction was graded using a 5-point Likert scale. The target for satisfaction level was set at $\geq 80\%$.

Results: Clinician's satisfaction was 85.7% and 91.9%, while patient's satisfaction was 95.0% and 88.4%, and laboratory professional's satisfaction was 75.7% and 80.6% in the first and second round survey respectively. The lower mean rating values of satisfaction for referring lab professionals were observed in providing advice during sample collection, transportation and storage (3.52 points), and turnaround time (3.4 points). Whereas the lowest mean rating score for clinician was seen on sample transport system from health facilities to the reference laboratory (2.91 points), and communication on rejected samples including reason for rejection (2.96 points). Interestingly, the pooled average rate of patient's satisfaction was 4.62 points out of 5.

Conclusion: The observed level of satisfaction in the second round for clinicians, patients and lab professionals met the target set for satisfaction as a quality indicator in the laboratory. Nonetheless, still continual monitoring and maintenance of quality service in the laboratory is very crucial in accreditation.

Keywords: Customer satisfaction; Quality indicator; Lab medicine; Accreditation; HIV molecular; Ethiopia

Abbreviations

EPHI: Ethiopian Public Health Institute; EQA: External Quality Assessment; FMOH: Federal Ministry of Health; HIV: Human Immunodeficiency Virus; ISO: International Organization for Standardization; IRB: Institutional Review Board; NHIVRL: National HIV Reference Laboratory; PDCA: Plan-Do-Check-Act; QIs: Quality Indicators; TAT: Turnaround Time

Introduction

Laboratory medicine plays a fundamental role in clinical decision-making and extremely important for diagnosis, monitoring and evaluation of patient outcome [1] and crucial to perform the procedures in the laboratory in the best possible way to achieve the highest level of accuracy and reliability [2]. The laboratory might

encounter errors from pre-analytical to post analytical process while minimizing the error rate is very crucial through identifying adverse events and complying with the International Standard for Accreditation of Clinical Laboratories, [ISO 15189:2012]. This medical laboratory standard increases the recognition of laboratory quality, and great-full if all laboratories in the country is accredited [3]. This standard requires the laboratory to establish Quality Indicators (QIs) as stated in clause number (4.14) particularly sub-clause (4.14.7) to monitor and evaluate performance throughout critical aspects of pre-examination, examination and post examination processes. On this regard, the Ethiopian Public Health Institute (EPHI), National HIV Reference Molecular Laboratory (NHIVRL) established different QIs which include equipment down time, stock out, specimen rejection, turnaround time, service interruption, External Quality Assessment (EQA) and customer satisfaction as the major laboratory medicine accreditation components. These quality indicators/components are endorsed primarily by the top management and recommended to monitor the entire accreditation processes monthly and bi-annually as stated in the quality policy manual. The recommendations also included the summary of findings to be presented to all staff members in a timely manner among others.

Quality laboratory reports are always maintained when quality systems are established [4]. Such quality systems establishment and continual implementation will evidently in turn lead to customer satisfaction [5]. Customer satisfaction is a major component of a quality management system, and a significant focus on the International Organization for Standardization [6], and very crucial

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to ensure attitude and expectations of customers on health care [7]. And also essential to generate sources of information for identifying gaps and developing an effective action plan for quality improvement in healthcare organizations [8]. Such information which is essential however is lacking in our settings and therefore, we assessed the effect of customer satisfaction as a quality indicator in medical laboratory services of the national reference laboratory to generate evidence based information for some programmatic initiatives.

Materials and Methods

Ethical clearance

This study was ethically cleared by the Scientific and Ethical Review Office of Ethiopian Public Health Institute (EPHI-IRB) under the protocol number of EPHI-IRB-057-2017 for the main project [9]. All participants were verbally communicated the aim of the study and agreed. Confidentiality was maintained throughout the study and access to the data was limited to authorized and responsible bodies only. A debriefing was also made and proper actions were taken at the spot.

Study settings and period

The study was conducted at the Ethiopian Public Health Institute (EPHI), National HIV Molecular reference laboratory, Addis Ababa, Ethiopia through biannual customer satisfaction survey and retrospective record review of routine laboratory activities from January 2016 to December 2017. The entire study period took into account the inception of document preparation, baseline assessment as well as the final accreditation. The institute is the technical wing of the Federal Ministry of Health (FMOH) with a history of more than ten decades of research undertakings and various laboratory referral services from the different part of the country. The National HIV molecular reference laboratory is among the units within the institute that receives specimen for viral load testing and early infant diagnosis from more than 70 health facilities in Ethiopia and served as backup and/ or reference laboratory for other regional laboratories providing similar activities. One of the flagships of the institute is to deliver quality laboratory services for clients as well as complying with international standard of medical laboratories, accreditation with fulfillment of the requirements of ISO 15189:2012.

The institute's policy primarily is to do customer satisfaction survey bi-annually through pre-tested structured questionnaire among patients, laboratory professionals and physicians. In addition, staff satisfaction is also monitored using the staff suggestion box. Other than this, registration book is also used to receive any satisfaction and dissatisfaction from any visitors, students and trainees attending this reference laboratory to assess the level of satisfaction at large from different segment of the population served by the institute. The target set for the satisfaction level for all categories of participants are $\geq 80\%$ achievement.

Laboratory testing, Data collection procedure and analysis

An advanced laboratory molecular technique using Abbott m2000rt/SP and Roche instruments is used for testing HIV viral load and early infant diagnosis at EPHI, NHIVRL. The staffs at NHIVRL are all well- trained by experts in the country and overseas on the diagnostic methods and accreditation procedures/activities.

To assess the customer satisfaction, two rounds survey was employed and accordingly data were collected from referring high client load private and government health facilities. The first survey

was conducted in August 2016 among clinicians (n=42), laboratory professionals (n=37) and patients (n=39).

Prior to the second round survey, different manuals and procedures were distributed to participants with several relevant awareness creation activities based on the identified gaps in the first round survey to ensure some improvements in the second round survey which was conducted in February 2017 among similar participants namely lab professionals (n=36), clinicians (n=37) and patients (n=43).

To measure the satisfaction level of laboratory professionals, obtaining advice on sample collection, transportation and storage, Turnaround Time (TAT) from specimen referral to result delivery on molecular laboratory testing, responsiveness and cooperation to solve problems, availability of staff to attend questions and queries, courtesy when speaking face to face and via phone were inquired and recorded in the pre-tested tool for data collection.

While for measuring satisfaction of physicians, TAT for HIV viral load testing and early infant diagnosis, processing of urgent request, communication on rejected samples and reason for rejection, communication of changes that affect testing (sample type, reagent stock outs, instrument out of service, etc.), courtesy when speaking face to face and *via* phone with reference laboratories, explanation of tests, test results and result interpretation when asked, availability of staffs in the reference laboratory to attend questions and queries, sample transport system from referring health facilities and the information about result reports that aid for interpretation were the important variables investigated. Appropriateness of result delivery time, response on questions and queries, and overall comment on laboratory service were among the important variables collected from patients to assess their level of satisfaction in the local language.

The collected information for degree of satisfaction were graded using a 5-point Likert scale ranging from excellent (5 points) to poor (1 point) for each item based on previously published articles [9]. The collected data were then coded and entered into excel spreadsheet. The overall rate of satisfaction was calculated as $(\text{No. of excellent rating} \times 5) + (\text{No. of very good rating} \times 4) + (\text{No. of good rating} \times 3) + (\text{No. of fair rating} \times 2) + (\text{No. of poor rating} \times 1)$ divided by the total number of responses for each specific item inquired [10]. The percentage of satisfaction was simply expressed by dividing number of satisfied participants from the total respondents.

Results

The first round referring laboratory professional satisfaction showed 75.7% (28/37) on the laboratory service delivered at the reference laboratory. This satisfaction rate is lower than the target established in the laboratory (i.e. $\geq 80\%$) and captured through improvement plan format (PDCA) for the regular follow-up. The second round referring laboratory satisfaction showed improved 80.6% (29/36). The lower mean rating value of lab professional satisfaction was reported for TAT (3.4 points) in both rounds. The highest satisfaction was observed in courtesy when speaking *via* phone with average rating value of 3.78 points (Table 1).

The clinician satisfaction was 85.7% (36/42) in the first round and 91.9% (34/37) in the second round survey. The highest average rating value of satisfaction among clinicians were observed in courtesy when speaking *via* phone, availability of staffs in the reference laboratory to attend questions and queries, the information about result reports that aid for the interpretation (3.5 points each). In contrary, the lowest

average value of satisfaction was observed in communication on rejected samples and reason for rejection (2.96 points) and sample transport system for referring health facilities (2.91 points) (Table 2).

Regarding patient satisfaction, almost all patients (95.0%, 37/39) and 88.4% (38/43) were satisfied in the first and second round survey, respectively. The average rating value of satisfaction for patients were consultation of health professionals during collecting blood (4.75 points), enough explanation on examination and collected specimen (4.56 points), appropriateness of result delivery time (4.45 points), response on questions and queries (4.64 points), and overall comment on laboratory service (4.7 points) (Table 3).

The report from open-ended questions indicated that the service given in the facility was excellent as of five patient respondents, and four patient respondents add up courtesy of professionals to patients was excellent. However, five patient respondents said that TAT should be improved and two patients responded that notification should be conducted for any service interruption.

In addition to the survey feedback, periodic review of staff suggestion and complaint receiving and resolution record provided an input to ensure customer satisfaction.

Discussion

During this journey of the customer satisfaction surveys as a quality indicator for laboratory medicine accreditation in Ethiopia, the findings of the first round laboratory professional satisfaction was below the target set for satisfaction (75.7%) which has improved in the second round and met the target set for satisfaction (80.6%). The improvement observed in this regard is attributed to the different manuals distributed and relevant awareness creation activities made by the principal author and the team from the national HIV molecular laboratory. Contrary to the laboratory professionals, the findings observed for the clinician satisfaction was above the target set for satisfaction in both rounds and was distributed as 85.7% (36/42) in the first round and 91.9% (34/37) in the second round survey. Similarly, the satisfaction score obtained for patients as well was encouraging in that almost all patients had a score of (95.0%, 37/39) in the first round

Table 1: Mean rating score for laboratory professionals satisfaction in round one and round two surveys at EPHI national HIV molecular reference laboratory from January 2016 to December 2017.

SN	Item	Degree of satisfaction										Mean rating value		Pooled average rating value
		Excellent		Very good		Good		Fair		Poor		R1	R2	
		R1	R2	R1	R2	R1	R2	R1	R2	R1	R2			
1	Obtaining advice on sample collection, transportation and storage	5	5	15	19	9	9	5	0	3	3	3.4	3.64	3.52
2	TAT for molecular tests	1	1	20	16	9	16	7	3	0	0	3.4	3.4	3.4
3	Responsive and cooperation to solve problems	9	1	21	15	4	14	1	2	2	4	3.9	3.2	3.55
4	Availability of staff to attend questions and queries	15	14	12	6	5	6	4	1	1	6	3.97	3.33	3.65
5	Courtesy when speaking face to face	18	2	7	19	2	10	4	4	6	1	3.73	3.47	3.6
6	Courtesy when speaking via phone	18	3	12	17	4	8	3	6	0	2	4.2	3.36	3.78

R1=round one; R2=round two

Table 2: Mean rating score for clinician satisfaction in round one and round two surveys at EPHI national HIV molecular reference laboratory from January 2016 to December 2017.

SN	Item	Degree of satisfaction										Mean rating value		Pooled average rating value
		Excellent		Very good		Good		Fair		Poor		R1	R2	
		R1	R2	R1	R2	R1	R2	R1	R2	R1	R2			
1	TAT for HIV viral load testing	2	2	21	18	13	9	6	0	0	0	3.45	2.95	3.2
2	TAT for HIV early infant diagnosis	10	3	12	19	14	6	6	0	0	1	3.48	2.97	3.23
3	Processing of urgent requests	0	0	24	20	11	7	5	0	2	3	3.36	2.81	3.09
4	Communication on rejected samples and reason for rejection	2	0	13	20	18	7	6	1	3	1	3.1	2.81	2.96
5	Communication of changes that affect testing (sample type, reagent stock outs, instrument out of service, etc.)	4	1	21	25	12	3	2	1	3	1	3.5	3.2	3.35
6	Courtesy when speaking face to face	2	14	24	12	11	2	2	0	3	2	3.5	3.4	3.45
7	Courtesy when speaking via phone	11	16	17	8	10	2	1	0	3	2	3.76	3.24	3.5
8	Explanation of tests, test results and result interpretation when asked	7	16	15	7	15	3	2	0	3	3	3.5	3.24	3.37
9	Availability of staffs in the reference laboratory to attend questions and queries	6	14	19	14	11	1	3	0	3	0	3.5	3.5	3.5
10	Sample transport system from referring health facilities	4	5	5	22	6	2	23	0	4	0	2.6	3.22	2.91
11	The information regarding result reports that aid for interpretation	8	8	17	19	15	2	0	0	2	0	3.7	3.3	3.5

R1=round one; R2=round two

Table 3: Mean rating score for patient satisfaction on the service delivered at EPHI national HIV molecular reference laboratory from January 2016 to December 2017 (two round surveys).

SN	Item	Degree of satisfaction										Mean rating value		Pooled average rating value
		Excellent		Very good		Good		Fair		Poor		R1	R2	
		R1	R2	R1	R2	R1	R2	R1	R2	R1	R2			
1	Consultation of health professionals during collecting blood	33	33	6	8	0	1	0	0	0	0	4.85	4.65	4.75
2	Enough explanation on examination and collected specimen	26	21	13	20	0	2	0	0	0	0	4.67	4.44	4.56
3	Appropriateness of result delivery time	28	20	6	19	5	3	0	0	0	0	4.59	4.3	4.45
4	Response on questions and queries	33	27	6	13	0	1	0	0	0	0	4.85	4.42	4.64
5	Over all comment on laboratory service	35	26	4	16	0	0	0	0	0	0	4.9	4.5	4.7

R1=round one; R2=round two

and 88.4% (38/43) in the second round survey.

We could not compare this finding with other studies since such work has not been done in our setting. Nevertheless, when compared with some pocket studies that have employed different design and settings, the current finding for clinician satisfaction was higher than the study conducted in North West Ethiopia (51.5%) [11], Nekemte Ethiopia (50.7%) [12], and Korea (58.1%) [13]. Furthermore, the reported Health care worker satisfaction in laboratory service in Ethiopia was 60.0% [14] and 80.0% [15], which are below the target accepted for satisfaction. When looked at the staff courtesy or polite communication with laboratory professionals [16,17], greater clinician satisfaction was observed, which was concordant with the current study with the average rating of satisfaction was 3.5 points out of maximum five points.

Other studies performed to rule out patient satisfaction using different methodologies, indicated 63.3% [18], 48.3% [19], 59.7% [20], 55.9% [14], and 87.6% [15] of patients satisfied in medical laboratory services and almost half (52.6 %) of patient participants were satisfied in malaria diagnosis serve [9]. Another study also indicated a high rate of patient satisfaction in staff courtesy [21,22] which is a good inference since lower satisfaction indices are related to poor communication between the involved clients [16]. However, lower satisfaction rate was reported in the Turnaround Time (TAT) for the service delivered in the laboratory [23], which is concordant with the current finding in our study due the nature of this study compared with those previous studies which used different study design, sample size, study setting and the participants.

In summary, the role of quality service is crucial to meet the needs and expectations of customers [24], that lends to accreditation process. Furthermore, reliable and accurate laboratory result enhances clinician and patient satisfaction [1,5,24], other dimensions believed as primary customers of laboratory services [17], which play a role for the improvement of the quality of health care services [8]. It appears that based on the target for satisfaction level set for greater achievement, our finding is very encouraging when compared with the Nigerian study, which documented client satisfaction of 59.0% in 2012 and 78.0% in 2013 which was below the benchmark of $\geq 80.0\%$ [25].

Strength and Limitations

This study is first of its kind in Ethiopia and was conducted from the real picture of day-to-day activities to meet international standard (ISO 15189:2012) with different ups and downs to congregate accreditation and has generated useful benchmark for future studies. The limitation is, however, we limited our study to some facilities and few participants due to budgetary constraints and thus would be difficult to generalize satisfaction rate of customers for the nation.

Conclusion

Measurement of customer satisfaction is very crucial for monitoring of quality service in the laboratory and it is among the requirements of the international standard to fulfill the quality system in the facility. The current customer satisfaction survey revealed that there is continual improvement in the EPHI national HIV molecular reference laboratory to meet the requirements of the standard medical laboratory accreditation. Nonetheless, still continual monitoring and maintenance of quality service in the laboratory is very crucial in maintaining the observed level of satisfaction as part of the accreditation process.

Author's Contribution

Bogale AL designed the study, collected data, analysis and wrote the manuscript, and revised the manuscript for the intellectual content. Baye AY collected data, participated in the analysis and drafting the manuscript.

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