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Health care providers' satisfaction with the clinical laboratory service of Nekemte Referral Hospital, Western Ethiopia

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The objective of this study was to assess health care providers' satisfaction with the service provided by the clinical laboratory personnel at Nekemte Referral Hospital, Western Ethiopia to determine the level of satisfaction of health care providers on clinical laboratory services. A cross sectional study was conducted from March to April, 2014 at Nekemte Referral Hospital. The data was collected from 105 randomly selected health professionals. The collected data was analysed using Statistical Package for Social Sciences (SPSS) version 20 statistical software. Bivariate and multivariate logistic regression analyses were used to assess the association between treatment outcomes and predictor variables. The overall satisfaction for all health care professionals on clinical laboratory services was 62.86%, while specific professional level of satisfaction was 51.2% for nurses, 65.0% for physicians, 75.0% for health officer (Assistant physician) and 85.7% for midwifes. Lack of adequacy of laboratory materials, absence of a timely report of critical values, lack of getting urgent results on time, and inadequacy of test menu on laboratory request forms were areas mentioned as sources of dissatisfaction. The overall degree of customers' satisfaction with laboratory services was good. But the study showed room for improvement. In addition to taking intervention, the root causes of dissatisfaction need to be investigated and means of improving the satisfaction level should be designed and implemented.

Key words: Satisfaction, health care providers, clinical laboratory services, Nekemte Referral Hospital.

INTRODUCTION

Clinical laboratories are part of the health institution team which produces important information for patient care (Salkie, 1994; Hassemer, 2003). Laboratory services are given in all health care level, except in health posts in Ethiopia (Tegbaru et al., 2004).

Client satisfaction reflects provider's ability to successfully deliver care or laboratory services that meets clients' expectations and needs (Sitzia and Wood,

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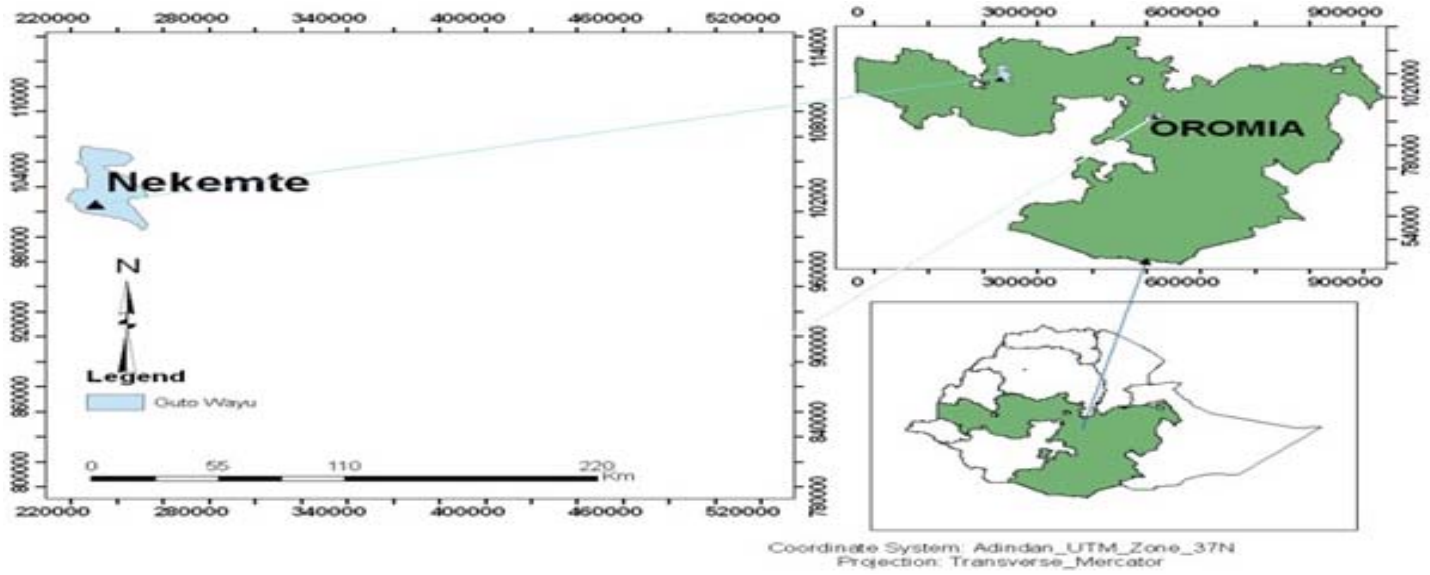

Figure 1. Map of the study area. Source: Nekemte LED strategy, 2010.

1997; Thiedke, 2007). A number of factors have been shown to influence clients' satisfaction with health care services including clients' socio-demographic characters, physical appearance of the hospital, general environment of the premises, clients' personal understanding and expectations from various health care services (Muula et al., 2007; Tsasis et al., 2002; Muhondwa et al., 2008).

Assessing customer satisfaction with laboratory services is considered as an important component of laboratory quality assurance program and is required for accreditation in United State by the College of American Pathologists (CAP) and The Joint Commission on Accreditation for Healthcare Organizations (Laboratory General Checklist 2006; Comprehensive Accreditation Manual for Laboratory and Point-of-Care Testing (2005, 2006). The implementation of quality standards, such as ISO 15189 (ISO, 2003) and ISO 17025 (ISO/IEC, 2005), and the use of management systems like Balanced Scorecard (Salkie 1994) in clinical laboratories have also further emphasized the customer perspective in the improvement of laboratory service. Health care providers are the primary customers of laboratory services, and their feedback provides laboratory managers with opportunities to identify areas for improvement.

Some previous studies have assessed the laboratories quality in Ethiopia based on patients satisfactions (Teklemariam et al., 2013; Addis et al., 2013; Mindaye and Taye, 2012). Periodic reassessment of group performance provides an opportunity to identify and characterize industry changes in service performance and customer attitudes. However, customer's satisfaction by healthcare provides' on clinical laboratory services has not yet been studied in Ethiopia. Therefore, this study assessed health care providers' satisfaction with the clinical laboratory service at Nekmete Referral Hospital, Western Ethiopia.

METHODOLOGY

Study design and setting

A cross sectional study was conducted in Nekemte Referral Hospital from April to May, 2014. The Nekemte Referral Hospital was constructed in 1932 by Sweden Missionary and intended to serve 2.1 million peoples annually. The hospital is the only referral hospital in the western part of Ethiopia and services as referral center for the patients from other hospitals, health centers and private practitioners. The hospital offers comprehensive general and referral health care service for western part of Ethiopia, and currently staffed by senior physicians, general practitioners, laboratory technologists or technicians, pharmacists, dentist, nurses, midwifes, heath officer and other health professionals. The hospital is located at Nekemte Town. Nekemte is a historic town of 328 km away from Addis Ababa, capital city of Ethiopia (Figure 1). The town has a total population of about 110,688 according to the 2012 census.

Study subject, sample size and sampling procedure

The study population was all health professionals who work in Nekemte Referral Hospital. The hospital had 164 health care providers during data collection. All (105) health professionals who work in Nekemte Referral Hospital for the last six months or longer, willing to participant in the study, and on duty during the study period were included in the study.

Methods of data collection and measurement

A self-administered pre-tested questionnaire was given to health care providers' and then collected at the end of each day. The questionnaire contained the socio-demographic characteristic,

courtesy of the laboratory staff, critical value notification, courier service, reliability of test results, and others.

Data quality assurance

The structured questionnaires were validated by pre-testing at Nekemte Health Center using 5% of the total population. Based on the pretest finding, some modifications were made to the questionnaire and terminologies. The data were collected by trained data collector under supervision of investigators to ensure the completeness of data and monitored the overall quality of the data collection.

Data processing and statistical analysis

The collected data were coded, entered and checked for missing values and outliers, and analyzed using SPSS version 20.0 statistical software. A 5 point Likert scale rating of very dissatisfied (1-point), dissatisfied (2-points), neutral (3-points), satisfied (4-points) and very satisfied (5-point) were used. To identify associated factors, first a bivariate logistic regression was performed for each independent variable with the outcome of interest (general/overall satisfaction). Finally, multivariable logistic regression was done to determine independent predictors of overall satisfaction. A two sided test was used and $p < 0.05$ was considered statistically significant. Very dissatisfied, dissatisfied and neutral responses were considered as dissatisfied, whereas satisfied and very satisfied were considered as satisfied. The percentage satisfaction or dissatisfaction was calculated by dividing the number of satisfied or dissatisfied responses by the total number responses, respectively.

The overall rate of satisfaction by Likert scale was calculated as: (No. of very satisfied rating × 5) + (No. of satisfied rating × 4) + (No. of neutral rating × 3) + (No. of dissatisfied rating × 2) + (No. of very dissatisfied rating × 1) divided by the total number of ratings (1–5) for the specific laboratory service. While the percentage of very dissatisfied, dissatisfied, neutral, satisfied and very satisfied rating was calculated by dividing the number of very dissatisfied, dissatisfied, neutral, satisfied and very satisfied rating by the total number of ratings (1–5) for specific laboratory service, respectively.

Ethical consideration

The study was ethically approved from Wollega University Ethical Review Committee and Official permission to conduct the study was obtained from the Nekemte Referral Hospital. After the purpose of the study explained to the clients, written and signed informed consent was obtained; the survey was conducted. The obtained data from each client were kept confidential.

RESULTS

Socio demographic character of the study participants

A total of 105 health professionals were enrolled in the study making the response rate to be 64%, of which 54 (51.4%) were male and 51 (48.6%) were female. The health professionals had a mean, standard deviation and median age of 33.5, 8.20 and 31.00, respectively. Majority of the respondent were between the 20 and 29 (43.8%) age groups followed with 30 and 39 (33.3%). Concerning professionals of the study participants, 41.0 were nurse, 19.0% were physician, 19.0% were health officer and 13.3% were midwifes. Majority of the respondents had 6 to 10 year (44.8%) of work experiences while 32.4% had less than or equal to five year. Regarding their working unit/ward, 29 (27.6%) worked at outpatient department (OPD) and 72.4% worked in other unites of the institution, namely, antenatal care and postnatal care center, gynecology, neonatology ward, pediatrics ward, tuberculosis ward, medical ward, surgical ward, antiretroviral treatment unit, emergency ward, voluntary HIV/AIDS counseling and testing center (Table 1).

Magnitude of satisfaction and its association with socio-demographic variables

The overall satisfaction for all professional on clinical laboratory services was 62.86%, while 30% of the respondents were neutral and 8% were dissatisfied (Figure 2). The professional specific level of satisfaction was 51.2% for nurses, 65.0% for physicians, 75.0% for health officer and 85.7% for midwifery. Female (50.8%) were more satisfied than male (39.1%). In addition, more experienced and older professional were more satisfied than their counterpart (Table 2).

In bivariate analysis, age range between 20 and 29 years, being midwifery professional and having equal or less than 5 years work experiences were significantly more satisfied with the clinical laboratory services. However, controlling the confounding factors, professional in age range between 20 and 29 years were [AOR = 8.611 (2.35 to 31.54)] less likely to be satisfied with the services of clinical laboratory (Table 2).

Degree of satisfaction of health professionals on the clinical laboratory services

Table 3 showed the rates of satisfaction for the different aspects of the laboratory service using Likert scale. The overall mean rate of satisfaction was 3.58. The higher satisfaction was observed on the location of the laboratory in the hospital, cleanness of room, staff courtesy and improvement of laboratory service with mean rating of 3.82, 3.84, 3.81 3.76 and 3.76, respectively. However, they were less satisfied with critical value notification, adequacy of laboratory of materials, getting urgent/STAT results on time and adequacy of test menu on laboratory request format with the main rating of 3.36, 3.46, 3.33 and 3.27, respectively.

Concerning department specific satisfaction of health professionals, they were relatively more satisfied with the department of anti-retroviral treatment laboratory (ART) services with mean satisfaction rate of 3.65 followed with

Table 1. Socio demographic characteristics of the health care providers' in Nekemte Referal Hospital Western Ethiopia, 2014.

Variable		Frequency	Percentage
Sex	Male	54	51.4
	Female	51	48.6
Age	20-29	46	43.8
	30-39	35	33.3
	≥40	24	22.9
Department	OPD	29	27.6
	Other	76	72.4
Profession	Nurse	43	41.0
	Midwifery	14	13.3
	Health officer (HO)	20	19.0
	Physician	20	19.0
	Other**	8	7.6
Experience	≤5 years	34	32.4
	6-10 years	47	44.8
	≥11 years	24	22.9

**Other: dentists, clinical pharmacist.

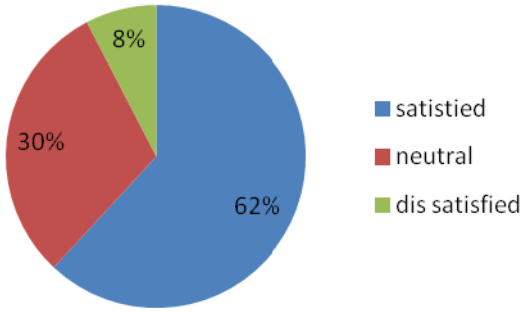

Figure 2. The general level of satisfaction on laboratory services at Nekemte Referral Hospital Western Ethiopia, from April to May, 2014.

hematology and serology laboratories department services with mean satisfaction of 3.61 and 3.6, respectively. They were comparably less satisfied with the services of clinical chemistry and bacteriology departments (Table 4).

DISCUSSION

Measurement of customer satisfaction brings customer preferences into the quality assessment process and corrects false assumptions about particular aspects of service, which customers value most. Today, assessing customer satisfaction with laboratory services is considered as an important component for improving the identified areas. The health care providers are the primary customers of clinical laboratory and their satisfaction is considered an important factor that indicates the quality of health care system.

In present study, the overall level of satisfaction of health care providers' on clinical laboratory services was 62.8%. The finding was lower than studies conducted in selected government hospitals in Eastern Ethiopia (80%) (Teklemariam et al., 2013). The observed difference is caused by institutional services difference. The professional specific satisfaction was 51.2, 85.7, 75 and 65% for nurse, midwifes, health officer and physician, respectively. This result is similar for nurse satisfaction but higher for physician satisfaction with the study conducted in Gondar University Hospital, Northwest Ethiopia where 51.1% of nurses and 51.5% of physicians were satisfied (Addis et al., 2013).

In this study, professional between 20 and 29 years age ranges had statistically significant difference with the satisfaction of clinical laboratory services in which 39.1% are satisfied with the services. This lower satisfaction in this age group partly observed because of lower experiences of the age group which was shown by having less than or equal to five years experiences had negative association with the level of satisfaction in Bivariate analysis in the study.

The overall mean rate of satisfaction among clinical service providers was 3.58 which is not far from the

Table 2. Univariate and multivariate analysis to assess predicator socio-demographic variables for satisfaction of health care providers' on the clinical laboratory services at Nekemte Referal Hospital Western Ethiopia, 2014.

Variable		General satisfaction		Total (%)	COR (95% CI)	AOR (95%CI)
		Satisfied (%)	Dissatisfied (%)			
Sex	Male	32 (39.1)	22 (60.9)	54 (43.8)	1.26 (0.57-0.77)	-
	Female	33 (50.8)	18 (45.0)	51 (48.6)	1	-
Age	20-29	18 (39.1)	28 (60.9)	46 (43.8)	4.813 (1.45-0.90)*	8.61 (2.35-1.54)*
	30-39	27 (77.1)	8 (22.9)	35 (33.3)	1.96 (0.618-6.226)	1.687 (0.42-6.74)
	≥40	20 (83.3)	4 (16.7)	24 (22.9)	1	1
Department	OPD	19 (65.5)	10 (34.5)	29 (27.6)	0.807 (0.33-1.97)	-
	Other	46 (60.5)	30 (39.5)	76 (72.4)	1	-
Profession	Nurse	22 (51.2)	21 (48.8)	43 (41.0)	0.573 (0.12-2.702)	0.87 (0.158-4.82)
	Midwifery	12 (85.7)	2 (14.3)	14 (13.3)	0.10 (0.013-0.79)*	0.129 (0.014-0.17)
	Health officer (HO)	15 (75.0)	5 (25.0)	20 (19.0)	0.20 (0.035-1.15)	0.31 (0.04-0.115)
	Physician	13 (65.0)	7 (35.0)	20 (19.0)	0.323 (0.059-1.77)	0.68 (0.103-0.56)
	Other**	3 (37.5)	5 (62.5)	8 (7.6)	1	1
Experience	≤5 years	15 (44.1)	19 (55.9)	34 (32.4)	4.813 (1.45-5.90)*	0.714 (0.12-0.36)
	6-10 years	31 (66.0)	16 (34.0)	47 (44.8)	1.96 (0.618-6.226)	0.86 (0.186-4.01)
	≥11 years	19 (79.2)	5 (20.8)	24 (22.9)	1	1

*Statistical significance (P<0.05), 1: Reference group, COR: Crude odd ratio, 95% CI: 95% confidence interval.

studies conducted in selected government hospitals in Eastern Ethiopia (3.49 ± 1.27) (Teklemariam et al., 2013), and specialized hospital in Alexandria, Egypt (3.46 ± 0.49) (Elhoseeny and Mohammad, 2013). However, this result is lower than 3 studies in the USA which measure the physician satisfaction and reported a mean satisfaction score between 4.0 and 4.1 (Elhoseeny and Mohammad, 2013; Howanitz, 2002; Jones and Bekeris, 2009). This could be due to differences in the physical arrangements of the laboratories, available resources and quality and expectation of the clinical laboratory services in different countries.

The higher satisfaction was observed on the staff courtesy (71.42%) which is consistent with the study conducted in specialized hospital in Alexandria, Egypt (Elhoseeny and Mohammad, 2013). Also higher satisfaction was observed in location of the laboratory in the hospital (74.28%), cleanness of room (71.43%), and improvement of laboratory service (66.6%). This is observed because of the hospital is under World Health Organization Regional Office for Africa (WHO-AFRO) Stepwise Laboratory (Quality) Improvement Process Towards Accreditation (SLIPTA) to strengthen laboratory systems of its member states which is a framework for improving quality of public health laboratories in developing countries to achieve ISO 15189 standards.

The lowest rate of satisfaction was observed on critical value notification, getting urgent/STAT results on time and adequacy of test menu on laboratory request format which is almost similar with the finding from studies conducted in selected government hospitals in Eastern Ethiopia (Teklemariam et al., 2013), Gondar University Hospital, Northwest Ethiopia (Addis et al., 2013), Tanzania (Mfinanga et al., 2008), and specialized hospital in Alexandria, Egypt (Elhoseeny and Mohammad, 2013). This implies the need for improving laboratory services in terms of quality management system to ensure proper reporting and critical value notification.

The higher satisfaction was observed in the department of anti-retroviral treatment laboratory (ART) services. This finding is similar with a report from selected government hospitals in Eastern Ethiopia study. The underlying reasons for the higher satisfaction were the attention given from the Ethiopian government and many donors. The government gives more emphasis on the monitoring, reporting, together with the fact that the implementation of policies and guidelines are functional for ART services and donors are investing large amount of resources and giving technical supports to the program (Mindaye and Taye 2012).

Lower satisfaction was observed with the clinical chemistry and bacteriology departments services in the present study. This result may be partly explained by inadequacy of clinical chemistry materials and lack of culture and sensitivity test facility for bacteriology, which

Table 3. Rate of health care providers' satisfaction by different measuring item of laboratory services at Nekemte Referral Hospital Western Ethiopia, 2014.

Variable	Level of satisfaction, No. (%)					Mean satisfaction score	Satisfaction percentage
	Very dissatisfied	Dissatisfied	Neutral	Satisfied	Very satisfied		
Location of the laboratory in the hospital	3 (2.9)	6 (5.7)	18 (17.1)	58 (55.2)	20 (19.0)	3.82	74.28
Avoiding of missing result	1 (1.0)	14 (13.3)	31 (29.5)	50 (47.6)	9 (8.6)	3.49	56.19
Respect	0	10 (9.5)	31 (29.5)	43 (41.0)	21 (20)	3.71	60.95
Cleanness of room	2 (1.9)	3 (2.9)	25 (23.8)	55 (52.4)	20 (19)	3.84	71.43
Staff courtesy	0	8 (7.6)	22 (21.0)	57 (54.3)	18 (17.1)	3.81	71.42
Getting urgent/STAT results on time	2 (1.9)	19 (18.1)	35 (33.3)	40 (38.1)	9 (8.6)	3.33	46.66
Adequacy of test menu on laboratory request format	2 (1.9)	24 (22.9)	31 (29.5)	39 (37.1)	9 (8.6)	3.27	45.71
Availability of laboratory staff on working hours	0 (0)	16 (15.2)	25 (23.8)	43 (41.0)	21 (20)	3.66	60.95
Adequacy of laboratory valuable of materials	2 (1.9)	18 (17.1)	34 (32.4)	32 (30.5)	19 (18.1)	3.46	48.57
Quality/reliability of laboratory test results	4 (3.8)	8 (7.6)	30 (28.6)	52 (49.5)	11 (10.5)	3.55	60
Reporting of complete test result	2 (1.9)	11 (10.5)	32 (30.5)	48 (45.7)	12 (11.4)	3.54	57.14
Critical value notification	1 (1.0)	18 (17.1)	37 (35.2)	40 (38.1)	9 (8.6)	3.36	46.66
Improvement of laboratory service	3 (2.9)	5 (4.8)	27 (25.7)	49 (46.7)	21 (20.0)	3.76	66.66
*General satisfaction on the overall laboratory services	3 (2.9)	4 (3.8)	32 (30.5)	40 (38.1)	26 (24.7)	3.78	62.86

*It was calculated from single question.

Table 4. Rate of health care providers' satisfaction by department laboratory services at Nekemte Referral Hospital Western Ethiopia, 2014.

Variable	Level of satisfaction, No. (%)					Mean Satisfaction score	Satisfaction percentage
	Very dissatisfied	Dissatisfied	Neutral	Satisfied	Very satisfied		
Satisfaction in hematology laboratory department	2 (1.9)	6 (5.9)	36 (34.3)	48 (45.7)	13 (12.4)	3.61	58.09
Satisfaction in serology laboratory department	1 (1.0)	10 (9.5)	35 (33.3)	43 (41.0)	16 (15.23)	3.6	56.19
Satisfaction in bacteriology laboratory department	1 (1.0)	13 (12.4)	36 (34.3)	38 (36.2)	17 (15.3)	3.54	52.38
Satisfaction in clinical chemistry laboratory department	1 (1.0)	13 (12.4)	36 (34.3)	38 (36.2)	17 (16.2)	3.54	52.38
Satisfaction in urine and parasitology laboratory department	3 (2.9)	15 (14.3)	30 (28.6)	41 (39.0)	16 (15.2)	3.49	54.28
Satisfaction in ART laboratory department	3 (2.9)	7 (6.7)	31 (29.5)	47 (44.8)	17 (16.2)	3.65	60.95

is the most important method for monitoring drug resistance profile, which was only available in 1 (2.9%) of the hospitals assessed in Ethiopia (Tegbaru et al., 2004). This may lead to prescription of drugs without knowing their status, which makes them not effective against the etiologies. Furthermore, it will increase drug resistance in the country for different pathogenic microbes. These, elucidation are supported by low

satisfaction on the adequacy of available laboratory material in the study institution in this study.

Conclusion

The overall degree of customers' satisfaction with laboratory services was good. This study showed wide room for improvement on critical value notification, adequacy of laboratory materials, getting urgent/STAT results on time and adequacy of test menu on laboratory request format which were the cause of dissatisfaction. Thus, improvement strategies for the satisfaction level should be designed and implemented by the hospital administrations and the laboratory departments' head.

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Conflict of interests

All authors declare that they have no conflict of interests associated with the publication of this manuscript.

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