



## Patients' satisfaction towards laboratory services at secondary level hospitals

Md. Pilot Hossen<sup>1\*</sup>, ANM Shamsul Islam<sup>1</sup>, Sabrin Shohid<sup>1</sup>, Rotna Rani Sen<sup>1</sup>, Most. Jobaida Manzil<sup>1</sup>, Mohibbul Haque<sup>3</sup>, Chaity Dey<sup>4</sup>, Most. Baby Naznin<sup>4</sup>, Deloara Begum<sup>5</sup>, Muhammad Tushar Bhuiya<sup>6</sup>, Nasreen Farhana<sup>2</sup>

<sup>1</sup>Department of Public Health and Hospital Administration, National Institute of Preventive and Social Medicine (NIPSOM) Mohakhali, Dhaka-1212

<sup>2</sup>Department of Microbiology and Mycology, National Institute of Preventive and Social Medicine (NIPSOM) Mohakhali, Dhaka-1212

<sup>3</sup>Department of Epidemiology, National Institute of Preventive and Social Medicine (NIPSOM), Mohakhali, Dhaka-1212

<sup>4</sup>Department of Maternal & Child Health, National Institute of Preventive and Social Medicine (NIPSOM), Mohakhali, Dhaka-1212

<sup>5</sup>Department of Nursing, Nursing Institute, Panchagarh

<sup>6</sup>Department of Nursing, Nursing Institute, Munshiganj

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#### Corresponding Author

M P Hossen

✉ pilot.hossen@gmail.com

### ABSTRACT

Laboratory services are a crucial component of a high-quality healthcare system to detect diseases of public health significance. Patient satisfaction with laboratory services is essential for providing proper treatment. Therefore, the aim of the study was to assess the level of patients' satisfaction with laboratory services at secondary-level hospitals. A cross-sectional study was conducted at Adhunik Sadar Hospitals (ASH) in Panchagarh and Thakurgaon, Bangladesh, with 296 respondents from January to December 2022 using a pretested semi-structured questionnaire. Respondents in this study ranged in age from 18 to 96 years (mean 41.26±SD16.84), more than half (54%) were female, 95% were Muslims, 45% were housewives, and the majority (84%) had attained the highest level of education up to secondary school. The levels of satisfaction with laboratory services were determined by various indicators. Overall results among the respondents, 64% were satisfied towards laboratory services at secondary-level hospitals. Regarding factors related to respondents' satisfaction with laboratory services, 97% were satisfied with measures taken to assure privacy and confidentiality, and 58% were satisfied with adequate information to collect specimens whereas 69% were very satisfied with turnaround time. There was a significant ( $p<0.05$ ) association between taking verbal consent prior to sample collection by lab personnel, waiting time for sample collection, adequate information of receiving reports, turnaround time, cleanliness of waiting area, adequacy of sitting facilities, cleanliness of washroom, respect to respondents, providing prompt services, and levels of patients' satisfaction towards laboratory services. This study demonstrated the necessity of improving the quality of laboratory services provided at secondary-level hospital laboratories in order to meet patients' expectations.

### INTRODUCTION

Hospitals are an important aspect of society, and laboratory services are the essential component of health-care systems for disease detection, diagnosis, and treatment (Al-Enezi et al., 2008). The function of laboratory diagnostics in the appropriate clinical management and control of major illnesses of public health relevance is critical (WHO, 2015). This requires the availability and proper use of high-quality diagnostic services at all levels, as well as the accuracy, dependability, and timeliness of test

results (Price and St John 2016; WHO, 2018). Despite of rapidly expanding access to health care, the quality of laboratory services in many resource-limited nations has remained inadequate (MoH, 2016; WHO, 2017). Whereas laboratories are frequently confronted with various obstacles like as insufficient infrastructure, a lack of quality and competency among health professionals, and a lack of standardized procedures, all of which impede the quality of treatment provided to patients (Girma et al., 2018).

However, the real influence on quality of treatment and patient satisfaction in local settings has received less attention (Almasabi et al., 2014; Girma et al., 2018). In wealthy nations, laboratories are required to undertake patient satisfaction surveys in order to keep their accreditation status; however, this is not frequent in poor countries. Quality health care is typically seen to have three interconnected dimensions: structural, process (inter-personal and technical), and result quality (Donabedian, 1981; WHO, 2008; Beattie et al., 2013). To promptly identify quality issues, it is essential to gain a comprehensive understanding of the various components involved.

Patient satisfaction, in addition to clinical health outcomes, is acknowledged as an important component of outcome quality indicators (Donabedian, 1988; Grossbart Agrawal, 2012). This involves evaluating quality from multiple perspectives to uncover potential problems efficiently (Mosadeghrad et al., 2012). In measuring quality performance, two unique methodologies have frequently been used: direct evaluations and client or patient satisfaction surveys. Objective key performance indicators are used to assess particular aspects of clinical practice to established defined standards (Chawla et al., 2010; WHO, 2015).

Now a days, hospital administrators are increasingly feeling the need to evaluate laboratory services in order to provide services that satisfy patients' expectations (Sharma et al., 2014). The difficulty in assessing patient satisfaction can be attributed to the fact that the term "patient satisfaction" has varied connotations for different people based on their beliefs, perceptions, health conditions, and past experiences (Batbaatar et al., 2015). Prior studies also have shown that patient satisfaction is strongly related to employee concerned, and the need to regularly evaluate laboratory services to assess patient satisfaction and make necessary improvements to enhance service quality (Osmangani, 2015; Singh et al., 2020). This conception has spread beyond hospital settings to other settings such as home health care.

A number of factors have been reported to influence patients' satisfaction with laboratory services in previous studies, including socio-demographic characteristics such as age, education, and severity of illness (Alealign and Belay 2019; Abera et al., 2017) and patients' visit-related experiences such as turnaround time of results (TAT) (Assefa and Mosse, 2011; Hailu et al., 2020), phlebotomy skills skills (Desalegn et al., 2017) and facility settings (Koné and Wodchis, 2013). However, patient's satisfaction on laboratory services has not yet exhaustively studied at secondary level hospitals in Bangladesh. Thus, the study was aimed to assess patients' satisfaction towards laboratory services among adult respondents attending outpatient departments and indoor wards at selected secondary level hospitals.

## MATERIALS AND METHODS

### Study design and place

The study was conducted employing a cross-sectional design with analytical analysis. The study was executed at two Adhunik Sadar Hospitals (ASHs) of Panchagarh (a 100-bed secondary level hospital) and Thakurgaon (a 250-bed secondary level hospital). Both ASHs were established in 1962 under the Rangpur division and provide both outdoor and indoor services. The study was conducted for a period of one year, commencing from 1<sup>st</sup> January to 31<sup>st</sup> December, 2022. The study population comprised patients from the aforementioned hospitals referred for laboratory investigations and received laboratory services while visiting outpatient departments or being admitted to indoor wards.

### Sample size and sampling technique

The sample size was determined with the following formula:

$$n = \frac{z^2 pq}{d^2}$$

A convenience sampling technique was applied to conduct this study in the OPD and indoor wards of the selected hospitals.

## Data collection

After preliminary observation and review of the literature and based on the specific objectives, a pre-tested semi-structured questionnaire was developed, pretested, edited, and completed in English and then translated into Bengali. The pretest was conducted at Munshiganj General Hospital, Munshiganj to assess the questionnaire's validity and appropriateness. The questionnaire was of three sections, including 54 questions, which were adapted to 57 questions after the pre-test. Section one had eight socio-demographic characteristics of the respondents; Section two included nine factors affecting overall respondents' satisfaction level assessments of 5-point Likert scale items, and Section three consisted of three items: information regarding basic laboratory services, physical facilities of the laboratory, and the approach of the laboratory personnel. Patients expressed their satisfaction level by selecting responses on a scale from 1 to 5, where 1 represented the lowest level of satisfaction (very dissatisfied) and 5 represented the highest level of satisfaction (very satisfied). The scale included options for being dissatisfied (2), neutral (3), and satisfied (4). The scores were compiled, and the mean score was calculated. The respondents' overall satisfaction level was categorized as either satisfied (with a score more than or equal to the mean score) or dissatisfied (with a score lower than the mean score) for both of the study places (Alelign and Belay, 2019).

The respondents who came to receive lab services from the OPD and indoor wards were interviewed face-to-face to obtain information that was needed. Throughout the data-collecting period, the researcher regularly confirmed the consistency and completeness of the data obtained.

## Data analysis

The data analysis started with descriptive and inferential analysis. A Chi-square ( $X^2$ ) and Fisher's exact test were conducted to assess the association of categorical data. Statistical significance was considered as a p-value less than 0.05.

## RESULTS

### Socio-demographic characters of the respondents

The respondents in this study had ages ranging from 18 to 96 years, with a mean age of  $41.26 \pm 16.84$  years, and the largest (67%) of them belonged to those below 47 years. Among the respondents, 54% were female, 95% identified as Muslims, 45% were housewives, and the majority (84%) had attained the highest level of education up to secondary school. Furthermore, three-fourths (75%) of the participants were from rural regions (Table 1).

**Table1:** Distribution of the respondents by their socio-demographic characteristics (n=296)

Variables	Category	Frequency (f)	Percent (%)
Age group	≤47 years	198	66.9
	≥47 years	98	33.1
	<b>Mean± SD</b>	<b>41.26±16.84</b>	
Sex	Female	160	54.1
	Male	136	45.9
Religion	Islam	281	94.9
	Hindu	15	5.1
Marital status	Married	289	97.6
	Unmarried	7	2.4
Level of education	Upto Secondary school	249	84.1
	Above Secondary school	47	15.9
Occupation	Housewife	134	45.3
	Employed	73	24.6
Place of residence	Rural	223	75.3
	Urban	73	24.7

### Factors affecting the level of the respondent's satisfaction towards laboratory services

More than half of the respondents were very satisfied regarding turnaround time (TAT) (69%) and respect from the laboratory personnel (52%), whereas the majority (97%) of them were satisfied with the measures taken to assure privacy and confidentiality (Table 2).

**Table 2:** Factors affecting the level of the respondents' satisfaction towards laboratory services (n=296)

Factors affecting satisfaction towards lab services	Level of satisfaction				
	Very dissatisfied f (%)	Dissatisfied f (%)	Neutral f (%)	Satisfied f (%)	Very satisfied f (%)
Cleanness of waiting area	0	7(2.4)	18(6.1)	253(85.5)	18(6.1)
Adequacy of sitting arrangement	1(0.3)	34(11.5)	12(4.1)	220(74.3)	29(9.8)
Measures taken to assure privacy	0	0	6(2.0)	286(96.6)	4(1.4)
Respect from the laboratory personnel	3(1.0)	6(2.0)	9(3.0)	124(41.9)	154(52.0)
Access to latrine	0	23(7.8)	54(18.2)	216(73.0)	3(1.0)
Adequate information to collect specimen	1(0.3)	2(0.7)	3(1.0)	173(58.4)	117(39.5)
Adequate information when and how to receive lab results	2(0.7)	2(0.7)	7(2.4)	273(92.2)	12(4.1)
Measures taken to assure confidentiality.	0	0	6(2.0)	286(96.6)	4(1.4)
Turnaround time (TAT)	4(1.4)	19(6.4)	18(6.1)	50(16.9)	205(69.3)

### Overall respondent's satisfaction with laboratory services

Among the respondents' overall satisfaction with laboratory services, more than half of them (57%) were satisfied ( $\geq$  mean) and 43% were dissatisfied ( $\leq$  mean) (Table 3)

**Table 3:** Overall respondents' satisfaction with laboratory services (n=296)

Overall satisfaction	Frequency (f)	Percent (%)
Satisfied	188	63.5
Dissatisfied	108	36.5
Total	296	100.0
Mean score	36.66	

### Indicators employed to respondents' satisfaction towards laboratory services

#### Information regarding basic laboratory services

In this study, all (100%) the respondents from ASH, Panchagarh and 78% from ASH, Thakurgaon said that laboratory staff did not wear fresh gloves before collecting clinical samples, and 97% said laboratory staff took verbal consent before sample collection. Of them, 91% waited less than 10 minutes for a sample collection by lab personnel (Table 4).

Almost all (99%) said laboratory staff ensured privacy before sample and felt safe and relaxed during collection of clinical samples, 92% of the

participant stated that blood was collected in a single prick during blood collection. Majority (98%) of the respondents confirmed laboratory personnel labeled clinical samples and 10% of them had reaction to venipuncture (swelling, itching), 97% said laboratory staff providing information of timing and method of receiving reports. Almost all (98 to 99%) responders claimed lab workers ensured privacy and test result confidentiality and all advised laboratory tests were available. Among 147 respondents, 1.4% of them said ASH, Panchagarh laboratory staff supplied an erroneous report of lab tests regarding incorrect report of lab tests, while none (0%) said ASH, Thakurgaon did. All (100%) respondents at ASH, Panchagarh said laboratory test prices were within their financial ability, whereas 1.3% of 149 respondents at ASH, Thakurgaon said they received support from the hospital's social services.

**Table 4:** Distribution of the respondents' statement about waiting time for sample collection (n-296)

Waiting time for sample collection	Frequency (f)	Percentage (%)
<10 minutes	269	90.9
11-20 minutes	17	5.7
21-30 minutes	7	2.4
> 30 minutes	3	1.0
Total	296	100.0

**Table 5:** Distribution of the respondents' comments about laboratory service (n-296)

Respondents' comments about Laboratory tests	ASH, Panchagarh (n <sub>1</sub> -17) (%)	ASH, Thakurgaon (n <sub>2</sub> -149) (%)
Respondents will come for same tests	Yes	144 (98.0)
	No	3 (2.0)
Respondents will come for different tests	Yes	145 (97.3)
	No	4 (2.7)
Respondents will be referring the laboratory for friends and relatives	Yes	144 (98.0)
	No	4 (2.7)

**Easiness to find laboratory location**

Among 296 respondents, 98% said that it was easy to find a laboratory location. According to 91% of the respondents, the waiting area was clean, and 76% respondents said that there were adequate seat facilities at ASH Panchagarh, and 87% respondents said the same at ASH Thakurgaon. Majority 87% from ASH, Panchagarh and 98.7% from ASH, Thakurgaon

of respondents said there was availability of place to put personal things at blood collection area space, and most (98%) of them said washroom was accessible and 77% from ASH, Panchagarh, and 68% at ASH, Thakurgaon said the washroom was clean.

**Approach of the laboratory personnel**

The presence of the laboratory personnel on work during their duty period was confirmed by 97% of respondents at ASH, Panchagarh and 100% at ASH, Thakurgaon. Out of the 296 respondents, majority (96%) said that laboratory personnel were friendly and cooperative. At ASH, Panchagarh, all (100%) respondents confirmed that laboratory personnel did not wear lab coats while working. On the other hand, at ASH, Thakurgaon, more than half (58%) of the respondents said that laboratory personnel did wear lab coats while work. Out of them, 95% said that laboratory staff had shown respect, 71% said that laboratory staff promptly addressed their inquiry, 92% expressed satisfaction with the promptness of the laboratory workers at ASH, Panchagarh, whereas 78% expressed satisfaction with the promptness of the laboratory people at ASH, Thakurgaon.

**Table: 6:** Association of socio-demographic characteristics and levels of patients' satisfaction towards laboratory services

Variables	Category	Level of satisfaction		X <sup>2</sup> test value	p-value
		Satisfied f (%)	Dissatisfied f (%)		
Level of education	No formal education	46(62.2)	286(37.8)	3.647 <sup>a</sup> (df=5)	0.601
	Primary schooling	52(68.4)	24(31.6)		
	SSC	59(59.6)	40(40.4)		
	HSC	12(75.0)	4(25.0)		
	Graduation	17(65.4)	9(34.6)		
	Postgraduation	2(40.0)	3(60.0)		
Occupational status	Farmer	32(72.7)	12(27.3)	6.219 <sup>a</sup> (df=4)	0.183
	Housewife	86(64.2)	48(35.8)		
	Business	14(70.0)	6(30.0)		
	Employed	45(61.6)	28(38.4)		
	Unemployed	11(44.0)	14(56.0)		
Place of residence	Rural	144(64.6)	79(35.4)	0.439 <sup>a</sup> (df=1)	0.508
	Urban	44(60.3)	29(39.7)		

There was a significant association observed between obtaining verbal consent, waiting time for clinical samples, providing information about the timing and method of receiving reports, turnaround time, cleanness of waiting area, adequacy of sitting facilities, cleanness of washroom, respect to the respondents by the lab personnel, providing prompt services, and the

level of patients' satisfaction with laboratory services ( $p < 0.05$ ) (Table 8; Table 9).

But there was no significant association found between the age, sex, religion, marital status, the level of education of the respondents, occupational status, place of residence and levels of satisfaction towards laboratory services ( $p > 0.05$ )

**Table 7:** Association of the basic laboratory services and the levels of patients' satisfaction towards laboratory services

Variables	Category	Level of satisfaction		$X^2$ test value	p-value
		Satisfied f (%)	Dissatisfied f (%)		
Verbal consent	Yes	188(65.3)	100(34.7)	14.313 <sup>a</sup> (df=1)	0.000
	No	0(0)	08(100.0)		
Waiting time for clinical samples	<10 minutes	174(64.7)	95(35.3)	8.515 <sup>a</sup> (df=3)	0.024
	11-20 minutes	12(70.6)	5(29.4)		
	21-30 minutes	2(28.6)	5(71.4)		
	>30 minutes	0(0)	3(100.0)		
Providing information about timing and method of receiving reports	Yes	187(65.2)	100(34.8)	10.999 <sup>a</sup> (df=1)	0.001
	No	1(11.1)	8(88.9)		
Turnaround time (TAT)	<30 minutes	38(3.1)	14(26.9)	15.776 <sup>a</sup> (df=2)	0.000
	1-2 hours	142(65.4)	75(34.6)		
	>2 hours	8(29.6)	19(70.4)		
	No	1(11.1)	8(88.9)		

**Table 8:** Association of physical facilities of the laboratory and the level of patients' satisfaction towards lab services

Variables	Category	Level of satisfaction		$X^2$ test value	p-value
		Satisfied f (%)	Dissatisfied f (%)		
Cleanness of waiting area	Yes	181(67.3)	88(32.7)	18.113 <sup>a</sup> (df=1)	0.000
	No	7(25.9)	20(74.1)		
Adequacy of sitting facilities	Adequate	170(70.5)	71(29.5)	28.433 <sup>a</sup> (df=2)	0.000
	Inadequate	17(31.5)	37(68.5)		
Cleanness of washroom	Yes	157(73.4)	57(26.6)	32.348 <sup>a</sup> (df=1)	0.000
	No	31(37.8)	51(62.2)		

**Table 9:** Significant associations of approach of the lab personnel and levels of patients' satisfaction ( $p < 0.000$ )

Variables	Category	Level of satisfaction		$X^2$ test value	p-value
		Satisfied f (%)	Dissatisfied f (%)		
Respect to the respondents by the lab personnel	Yes	186(66.0)	96(34.0)	15.367 <sup>a</sup> (df=1)	0.000
	No	2(14.3)	12(85.7)		
Providing prompt lab services	Yes	176(70.1)	75(29.9)	31.091 <sup>a</sup> (df=1)	0.000
	No	12(26.7)	33(73.3)		

## DISCUSSION

Patient satisfaction is a crucial and commonly used indicator for measuring the quality in any health care system. Patient satisfaction has positive effect on clinical improvement, patient adherence and retention, job satisfaction and appropriate clinical care by physicians. Therefore, a descriptive cross-sectional study was conducted from January to December 2022 to assess the level of patient satisfaction with laboratory services at two secondary-level hospitals located in the northern region of Bangladesh. This study reveals the level of patient satisfaction with laboratory services, as well as the respondents' socio-demographic factors and the association.

According to the present study, the respondents were aged 18 to 96 years, and maximum 24% were in the 18–27 age group. The mean age was 41.26 years, with a standard deviation of 16.84 years and the highest 72% of them were in the 18–27 age group. Exploratory research on service quality and patient satisfaction in pathology laboratory in Jaipur, India discovered that 15% of respondents were between the ages of 18 and 27, which was lower than the current study (Agarwal and Singh 2016). The majority of respondents (54%) which is consistent with earlier researches in India (Sodani and Sharma 2011; Agarwal and Singh 2016). According to the current survey, 33% of respondents had completed SSC. According to similar research conducted in Ethiopia, 39% of respondents have completed the SSC level of education (Abera et al., 2017). According to the findings, the majority of respondents (45%) were housewives. Another study in South West Ethiopia reported that housewives accounted for 42% of respondents, followed by employed (32.5%) (Bekele et al., 2016).

According to the present study, overall level of satisfaction with laboratory services was 63.5% were satisfied at secondary level hospitals. Islam and Jabbar (2008) discovered that 59.75% of respondents were satisfied with laboratory services in a study on patients' satisfaction with health care services provided at Dhaka Medical College Hospital's outpatient department, implying that On the other hand, Alelign and Belay (2019) did research in Ethiopia and reported that the overall

level of patient satisfaction with laboratory services was 48.3%, which was lower than our study one possible explanation for their low satisfaction rate is an overflow of patients to the laboratory, which serves as the sole referral hospital for the neighboring zones.

Other similar study related to predicting patient satisfaction from hospital laboratory services was reported conducted in Karachi, Pakistan (65.8%) (Raheem et al., 2014), in India (67.3%) (Sodani and Sharma, 2011), at Bulgaria (67 %) (Georgieva et al., 2014). A study by Bekele et al. (2016) showed that 63.3% of research participants were satisfied with medical laboratory services given in South West Ethiopia, which was higher than the current study. The Ethiopian Ministry of Health's concentration on laboratory services, laboratory worker dedication to delivering excellent laboratory services, and the change from manual laboratory procedures to automation may all contribute to improve patient satisfaction.

Other study related to predicting patient satisfaction from inpatient hospital laboratory services in India found that overall satisfaction from the laboratory services was 74% (Singh, et al., 2020) and in Korea, 70.5 % (Koh et al., 2014) which was also higher than present study. The main reason for this could be that where the study was carried out, hence may be having low expectations from the healthcare providers, therefore, the satisfaction was on the higher side in comparison to other studies.

According to the study, none of the laboratory personnel at ASH, Panchagarh worn new gloves before collecting clinical samples, whereas 22% indicated they did at ASH, Thakurgaon. Among those interviewed, 97% confirmed laboratory staff acquired verbal consent before collecting samples. Another research done in South West Ethiopia discovered that 57% of respondents reported laboratory workers obtained verbal consent before collecting samples (Bekele et al., 2016). The majority (91%) of respondents in this study waited less than ten minutes for sample collection by lab personnel. This finding however contrasts that observed in other study 40% of the patients found that the laboratory samples were collected within a short time (Aldebashi et al., 2011).

The blood-drawing area was clean, according to 95% of the responders. Another research in India found that 57% of respondents thought the blood collection facility was sterile (Singh et al., 2020). Another research done in Ethiopia found that 75.3% of those interviewed agreed (Abera et al., 2017). The study revealed that 99% respondents felt safe and relaxed. Another study conducted in India found that 80% respondents said they felt safe and relaxed while interacting with laboratory staff (Singh et al., 2020).

The current study shows that 92% respondents stated blood was collected in a single prick, but in another study at Ethiopia found that 67% respondents stated blood was collected in a single prick (Aleign and Belay, 2019). In this study, 98% of 296 respondents confirmed laboratory personnel labeled clinical samples. According to the survey, 10% of responders reacted to venipuncture (swelling, itching). Similar study conducted in India found that 11% of respondents reacted to venipuncture (Singh et al., 2020). The study revealed that among 296 respondents, 97% said laboratory staff provided information of timing and method of receiving reports. Other study in Ethiopia found that 80.3% responded said lab staff providing information of timing and method of receiving reports (Abera et al., 2017).

There was no significant association between socio-demographic characteristics such as the age of the respondents ( $p = 0.117$ ), sex ( $p = 0.173$ ), religion ( $p = 0.795$ ), marital status ( $0.104$ ), level of education ( $p = 0.601$ ), occupational status ( $p = 0.183$ ), place of residence ( $p = 0.508$ ) and level of satisfaction with laboratory services which was consistent to other study conducted at Nekemte Referral Hospital, Oromia, Ethiopia (Tadele et al., 2014). According to indicators employed to patients' satisfaction towards laboratory services (basic lab services), there was statistically significant association between taking verbal consent prior to sample collection by lab personnel ( $p = 0.00$ ), waiting time for sample collection ( $p = 0.024$ ), providing adequate information of receiving reports ( $p = 0.001$ ) and turnaround time ( $p = 0.000$ ) and levels of patients' satisfaction towards laboratory services. These findings are also consistent with the previous study (Adulkader and Triana, 2009; Singh et al., 2020) where the

most two important indicators- reliability and turnaround were found statistically significant with patients' satisfaction towards laboratory services. According to indicators employed to patients' satisfaction towards laboratory services (physical facilities of the lab), there was statistically significant association between cleanliness of waiting area ( $p = 0.000$ ) adequacy of sitting facilities ( $p = 0.000$ ), cleanliness of washroom ( $p = 0.000$ ) and levels of patients' satisfaction towards laboratory services. These findings are also consistent with the other study (Bekele et al., 2016).

According to indicators employed to patients' satisfaction towards laboratory services (approach of the lab personnel), there was statistically significant association between respect to the respondents by the lab personnel ( $p = 0.000$ ), providing prompt services by the lab personnel ( $p = 0.000$ ) and levels of patients' satisfaction towards laboratory services. These findings are also consistent with other study in South West Ethiopia where was statistically significant association between respect to the respondents by the lab personnel and patients' satisfaction towards laboratory services.

## CONCLUSION

The present study at two secondary-level hospitals in Bangladesh's north region found that more than sixty percent of the respondents were satisfied with laboratory services which was measured based on indicators of basic laboratory services, laboratory physical facilities, and laboratory personnel approach. However, there was statistically significant association between taking verbal consent prior to sample collection by lab personnel, waiting time for sample collection, providing adequate information of receiving reports, turnaround time, cleanliness of waiting area, adequacy of sitting facilities, cleanliness of washroom, respect to respondents, providing prompt services and levels of patients' satisfaction towards laboratory services but there was no statistically significant association with socio-demographic characteristics of the respondents.

The findings also provide baseline data for evaluating any effort aimed at improving



the laboratory service quality. As a consequence, all responsible personnel at each level should address the identified gaps and enhance the standards of care in each laboratory at a secondary-level hospital to meet patients' expectations.

### Recommendation

To fulfill the expectations of all patients and give feedback for continual quality improvement, administrators at hospitals ought to train their staff to be courteous and competent and perform frequently received satisfaction surveys. Hospital administrators must emphasize the importance of maintaining the cleanliness of laboratory facilities, including the washrooms. They should pay special attention to the interruption of the supply of personal protective equipment (gloves, masks, lab coats, and so on) and proper use by laboratory personnel for the safety of laboratory workers and patients.

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