

Assessment of the quality of directly observed treatment short-course of tuberculosis in Bahir Dar city administration, North West Ethiopia

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Abstract: The impacts of tuberculosis is not reduced globally, even though WHO recommends on the growing adherence, the use of DOTS and other interventions in many countries. Providing quality of care for tuberculosis patients is crucial in prevention and control of the disease. The aim of this study is to assess the quality of directly observed Treatment Short Course (DOTS) of Tuberculosis at Government health institutions in Bahir Dar city. Institution based cross-sectional study was conducted from June 30 to August 30/2013 in seven public health institutions in Bahir Dar City Administration. Multistage sampling technique was employed to select health institutions and patients; primary data were collected by interviewing Tuberculosis cases and reviewing their records. The data were coded and entered into Epi Info 3.5.1 and exported in to SPSS version 16 for analysis, and findings at 95%CI and p value of less than 0.05 were reported as statistically significant. Result: The results of this study showed that Input, process and output quality parameters were 50.2%, 40.2%, and 53.8% respectively, with the overall quality of 47.8%. Variables such as location of health institution, patient privacy, and marital status of patients were significantly associate with quality of DOTS. [AOR=2.14, (95%CI, 1.10-4.15)], [AOR=3.57(95% CI 1.80-7.07)], ([AOR =0.24 (95% CI 0.08-0.77)] respectively. Conclusion and recommendation: Input, process and output qualities of a program were poor in relative to the 100% WHO requirement and these would have inevitably decreased the total quality of DOTS. Success of tuberculosis therapy could be ensured through strict adherence to all the elements of DOTS strategy Thus, Bahir Dar City Administrative health office should train laboratory Professionals on AFB, construct waiting room, and to have regular supervision which may improve those problems seen at each level.

Keywords: Quality, DOTS, Bahir Dar City Administration, Ethiopia

1. Introduction

Tuberculosis (TB) is an infectious disease caused by *Mycobacterium tuberculosis*, a rod-shaped bacillus called “acid-fast” due to its staining characteristics in laboratory. It typically affects the lungs (PTB) but can affect other parts of the body as well (EPTB). The disease is spread via droplet infection when people with pulmonary TB expel the bacilli while coughing, sneezing, talking, etc. Though it affects peoples of all ages and sexes, poverty malnutrition, overcrowding and more recently HIV/AIDS have been known for decades to make some groups more vulnerable to

develop the disease. The TB programme emphasizes the need to increase the access of quality DOTS by expanding its diagnostic and treatment services in line with the increasing number of public and private health facilities. (1,2).

DOTS is internationally recommended public health strategy. It has been started in Ethiopia in 1993 GC with its gradual expansion to all parts of the country. It is the most effective approach available for controlling TB. Its strategy for TB control consists of five main elements listed as:

political commitment to sustained TB control, case detection by sputum smear microscopy, standard short-course chemotherapy, a system to ensure regular drug supplies, and a standard recording and reporting system. As it has been recommended by WHO, DOTS strategy is very important to improve the adherence of people to tuberculosis treatment through health workers, family members, or community members and important in Preventing spread of drug resistance, reducing burden of TB among PLHA and general population as well as reducing HIV incidence among TB patients. Patients with tuberculosis (TB) have free access to diagnostic and treatment services in all public health institutions. (3).

Quality which is used by advocates of total quality management is doing the right thing, right, right way. It has different dimensions like technical performance, effectiveness of care, efficiency of service delivery, safety, access to services, interpersonal relations, continuity of services, physical infrastructure and comfort and choices. Quality is also expressed as the degree to which health services for individuals and populations increases the likelihood of desired health outcomes and is consistent with professional knowledge. The ultimate goal of quality assessment in health care program is to assess whether a program possesses the right things (input), is doing the right things (processes) and it leads to the right things (outcome) to happen (4, 5).

In spite of the fact that TB is preventable, treatable and curable, it is estimated that one third of the world's population is infected by TB and about 8.4 million people developed active TB and 2.3million of them died from the disease each year which accounted for 2.5% of the global burden of disease and 25% of all avoidable infectious cause of death. It continued to be the leading cause of death globally despite the availability of reliable diagnostic approach and availability of effective drugs for over decades. (6).

The emergence of MDR TB in many parts of the world, including Ethiopia, is posing serious threat to the control of TB. Drug-resistant TB is a man-made problem, largely being the consequence of human error as a result of individual or combination of factors related to: management of drug supply, patient management, prescription of chemotherapy (inappropriate treatment, incorrect use of anti-TB drugs, or use of poor quality drugs), patient adherence and Poor infection control practice has been identified as a major contributing factor. More recently the emergence of XDR-TB has added to the complexity of TB care and treatment. There were about 310 000 cases of MDR-TB among notified TB patients with pulmonary TB in the world in 2011. At the end of February 2012, a total of 424 cases of MDR-TB patients were enrolled on treatment in Ethiopia. It is estimated that about 9% of MDR-TB cases had XDR-TB (7).Therefore, this study was intended to assess the quality of care delivered for tuberculosis patients in seven public health facilities in Bahir Dar City Administrative, Amhara regional state since only few studies were undertaken in the country.

2. Methods

Institution based cross-sectional study was conducted in Bahir Dar City Administration from June 30 to August 30/2013. It is the capital city of Amhara Regional state, which situated 565 km from Addis Ababa to the Northwest of Ethiopia. It has 17 kebeles and The City population was 277566 as per the 2007 census. There are one referral Government Hospital, 2 private general hospitals, ten health centres, fourteen private medium and higher clinics.

2.1. Sampling

Seven randomly selected public health facilities were included in the study from the total of 11 public health facilities within the Zone that were engaged in both diagnosis and treatment of tuberculosis patients. From each health facilities one health professional who works at TB clinic was included in addition, 260 randomly selected TB cases whose age 15 and above and took treatment for two weeks and above were included in the study.

The sample size was determined using a single population proportion formula assuming p (0.34), since similar studies were conducted previously in Jimma Zone, Oromia regional state(19), Considering 5% margin of error (d) and confidence level of 95% ($z_{\alpha/2} = 1.96$). Based on the above information a sample size was 345. Then correction formula was used since the total population was less than 10000 ,which was (292) and then sample size was multiplied by a factor of 1.5 to correct the design effect for the multi stage sampling and adding 10% non response rate, the final sample size was 260

2.2. Data Collection and Management

Data was collected using a structured questionnaire and checklist through interview and observation. The questionnaire was adopted from reports and instruments of other published journal articles, from Donabedian's quality assessment model in Health care, and FMOH's-TLCP manual. A questionnaire and checklist were prepared in English and translated into Amharic language and was translated back to English by Linguistic graduates and Health professionals to ensure consistency. The prepared questionnaire was pre-tested prior to the actual data collection in Shimbet health center, Bahir Dar City. Four supervisor and 7 data collectors, who have DOTS training was selected and trained for one day by principal investigator. The data was edited, coded, and entered using Epi data version 3.5.1 and exported to SPSS version 16. Using SPSS version 16, descriptive analysis (Mean, \pm SD, median and percentile for continuous variables and frequencies for categorical variables) was conducted.

Bivariate and multivariate analyses were computed whether there is association between quality of DOTS and selected independent variables, respectively. Factors associated with quality of DOTS at bivariate were identified, and the variables with P value of 0.20 and less

were taken to multivariate analysis and the model was built with backward elimination. Finally, the *P* -values less than 0.05 were considered statistically significant.

2.3. Ethical Considerations

Ethical clearance was obtained from ethical review committee of Bahir Dar University and communicated with regional health bureau before the time of data collection. Letter of permission was obtained from the health bureau and Bahir Dar City Administrative. The confidentiality of information was maintained by excluding personal identifiers and interview privately; data were collected after securing informed consent from every participant.

3. Results

3.1. Socio Demographic Characteristics of TB Patients

In the current study, from the total 260 study participants, 251 responded to the questionnaire, giving a response rate of 96.5%. Among the study participants, 149 (59.4%) were in the age group of 15-34. one hundred forty two (56.6 %) were male; 128(51 %) were married; 155(61.8%) were living in urban;220 (87.6%) were orthodox christian;117 (46.6%) were not able to read and write and 100 (39.8%) were farmers by occupation ,and 189(75.3%) of the study participants monthly income was less than or equal to 500.00Birr (Table 1)

Table 1. Socio-demographic and economic characteristics of TB patients in Bahir Dar Administrative Zone, August 2013.

Variable n=251	Age category	Frequency	Percent
Age	15-24years	63	25.1
	25-34years	86	34.3
	35-44years	58	23.1
	≥45 years	44	17.5

Variable n=251	Age category	Frequency	Percent
Sex	Male	142	56.6
	Female	109	43.4
	Single	94	37.5
Marital Status	Married	128	51.0
	Divorced	20	8.0
	Widowed	9	3.6
Residence	Urban	155	61.8
	Rural	96	38.2
Religion	Orthodox	220	87.6
	Muslim	23	9.2
	Protestant	8	3.2
Educational Status	Not able to read &write	117	46.6
	Primary	45	17.9
	Secondary	50	19.9
	College and above	39	15.5
	Government employee	37	14.7
Occupation	Private employee	32	12.7
	Farmer	100	39.8
	Merchant	73	29.1
	Other	9	3.6
	≤500	189	75.3
Income	501-1000	38	15.1
	≥1001	24	9.6

3.2. Structural Attributes Quality of DOTS

From the total 7 health institutions observed to assess the input, all health institutions have at least one DOTS trained health professionals, laboratory professionals trained on AFB except ZH. All health institutions have the latest version of TB manual and on use it, The latest versions of TB register were available and in use in the five healthy facilities only. Flow charts for TB diagnosis were available and in use in three facilities only. All health institutions have all anti TB drugs, but laboratory reagents were not available in one ZC. Regarding supervision of TB clinics only 2(28.6%) of them were supervised. (Table 2)

Table 2. The Structural attributes of quality of DOTS at different health institutions in Bahir Dar city Administration zone, August, 2013.

Variables		Name of health institutions						
		FHRH	BHC	HHC	AHC	TAHC	MHC	ZHC
Health professionals working in TB clinic	MD	4	0	0	0	0	0	0
	HO	0	02	02	02	01	01	01
	Nurse	10	04	04	03	02	02	01
	Lab.	4	02	02	02	01	02	0
Trained in dots	Pharm	0	0	0	0	0	0	0
		14	6	6	05	03	03	02
	availability & use TB manual	√	√	√	√	√	√	√
		No						
Availability and use of lab manual	Yes	√	√	√	√	√	√	
	No							√
availability& use TB register	Yes	√		√	√			√
	No		√			√	√	
Availability and use Flow chart for TB Dx	Yes	√	√		√			√
	No			√		√	√	√
Weight scale availability and use	Yes	√	√	√	√		√	√
	No					√		
All anti TB drugs availability and use	Yes	√	√	√	√	√	√	√
	No							
All Lab equipments and reagents	Yes	√	√	√	√	√	√	
	No							√
Drugs and supplies for TB Received from	ZHB							

Variables		Name of health institutions						
		FHRH	BHC	HHC	AHC	TAHC	MHC	ZHC
Use of FIFO/LIFO	RHB	√	√	√	√	√	√	√
	Yes	√	√	√	√	√	√	√
Determination of drug need	No							
	Quantification	√	√	√	√	√	√	√
Regular supervision	Guess							
	Yes	√	√					
Schedule for supervision	no			√	√	√	√	√
	Yes	√	√					
	No			√	√	√	√	√

3.3. Process Attributes of Quality of DOTS

Regarding to provider patient interaction, 251 patients were observed while they were receiving their drugs, and the results showed that 184 (73.3 %) patients were greeted by provider. one hundred eighty seven (74.5 %) patients participated in part of decision making processes of service delivery ; 202 (80.5%) patients were advised how to take drugs, 51 (41.6 %) patients were told when the next follow up will be ,150(59.8%) were advised on the need to comply with treatment, 52 (20.7%) patients were asked by the provider and 49(19.5%)asked providers about TB drug treatment conditions. Regarding to the facility level ,169 (67.3%) patients were given treatment while providers having tables and chair, almost all patients wait stand to receive treatment and 232(92.4%) of patients bring water to swallow drug in the TB clinic (Table 3)

Table 3. Provider-patient interaction and pattern of services provision in Bahir Dar City Administrative Zone, August 2013.

Variable		Frequency	Percent
Patients greeted by health professionals	No	67	26.7
	Yes	184	73.3
Patients participated in decision making	No	64	25.5
	Yes	187	74.5
HW properly explained about how to take drugs	No	49	19.5
	Yes	202	80.5
Health workers advised patients when to return for follow up	No	54	21.5
	Yes	197	78.5
Health worker advised patients on the need to comply with Rx	No	101	40.2
	Yes	150	59.8
Health worker explained patients when follow up AFB done	No	70	58.4
	Yes	50	41.6
Health worker advised patients to bring person with S/S of TB	No	50	41.6
	Yes	70	58.4
Provider ask pt for any concern regarding TB treatment	No	199	79.3
	Yes	52	20.7
Patients who asked health professional for any concerns:	No	202	80.5
	Yes	49	19.5
Availability of water in TB unit	No	19	7.6
	Yes	232	92.4
Provider having chair and table, while treating patients	No	82	32.7
	Yes	169	67.3

3.4. Respondents Attribute in TB Control Activities

According to the exit interviewed of patient this study revealed that 63 (25%) TB patients were incurring during treatment process. 45 (17.8 %) of them incurred for transportation; 9 (3.6 %) of them incurred for provider and laboratory services and the remaining 9(3.6%) incurred for

food and reception. Main means of transportation of TB patients were walking 182 (72.5%), and vehicles (bus and Bajaj), 69(27.5%). This study revealed that the minimum and maximum time for walking according to the patient report was 10 and 240 minutes, while the mean time-taken to reach the health institutions from patients home was 50.14 minutes walking with (SD ±37.37), and the minimum and maximum waiting times were 1 and 60 minutes respectively. Regarding the mean waiting time of TB patients with health care providers while discussing or taking their drugs was, 14.44 minutes with the (SD ±9.04). No patient has been experienced shortage of drugs (Table 4)

Table 4. Description of respondents attributes in TB control activities in Bahir Dar City Administrative zone, August, 2013

Variable(n=251)		Frequency	Percent
Cost incur during treatment	No	188	74.9
	Yes	63	25.1
Cost incurred for	Transportation	45	17.8
	Food and Reception	9	3.6
Provider fee	0	0	
	Lab services	9	3.6
	less than 10 minute	60	23.9
Waiting time	10-20 minute	151	60.2
	21-60 minutes	40	15.9
	≤30 minutes	109	43.4
Time taken to reach the HF	31-60minut	96	38.2
	61-90minute	14	5.6
Main Means of transportation	91minute and above	32	12.7
	Walking	182	72.5
	Vehicle	69	27.5

3.5. Patients' Unit TB Registry Record

Record of TB patients who were in intensive and continuation phases was reviewed. All of them were found to have a registered unit TB registration number, almost all 249 (99.2%) of the patients sex and age were recorded; 248(98.8%) of patients weight were recorded; more than half patients were classified as EPTB 131 (52.2%), the rest 73 (29.1%) and 47(18.7) were Pulmonary negative and pulmonary positive respectively. Initial diagnostic AFB test was done for 120 (47.8% patients, of which 47(18.7%) were positive and 73(29.1%) was negative for AFB microscopy. The category of most patients 222(88.4%) were new, 17(6.8%), and 5(2%), were transfer in and relapse respectively. The treatment outcome of the patients were 20(8%) cured, 28(11.2%), treatment complete, 8(3.2%), defaulter; 4(1.6%), and 1(0.4%) were died and treatment failure respectively. The completion of the information in

the register were 234(93.2%) complete and 17 (6.8%) incomplete. (Table 5)

Table 5. Descriptions of patients' unit TB registry record in Bahir Dar City Administrative zone, August 2013

Variable (n=251) Category	Frequency	%	
Patients TB unit number	Recorded	251	100
	Not recorded	0	0
Sex of the patient	Recorded	249	99.2
	Not recorded	2	0.8
Age of the patient	Recorded	249	99.2
	Not recorded	2	0.8
Weight of the patient	Recorded	248	98.8
	Not recorded	3	1.2
Initial diagnostic AFB tests done	Positive	47	18.7
	Negative	73	29.1
	Not recorded	1	0.4
Classification of the patient	PTB+	47	18.7
	PTB-	73	29.1
	EPTB	131	52.2
	New	222	88.4
Category of patients	Relapse	5	2.0
	Failure	1	.4
	Defaulter	2	.8
	transfer in	17	6.8
Drug and its dose given during intensive phase	Others	4	1.6
	Recorded	237	94.4
	Not recorded	2	.8
Result of 2 nd month follow up AFB microscopy	Positive	1	.4
	Negative	34	13.5
	Not done	5	2.0
	Unrecorded	1	.4
Weight of the pt on the second month	Recorded	93	37.1
	Not recorded	0	100
	Cured	20	8.0
Treatment outcome of the patients	Treatment.com	28	11.2
	Died	4	1.6
	T. Failure	1	.4
	Defaulter	8	3.2
Completeness of information on TB registry	Complete	234	93.2
	Incomplete	17	6.8

3.6. Patient Satisfaction as an Outcome Indicator for Quality of DOTS

Satisfaction: Twelve satisfaction questions were used to assess satisfaction of clients in the service they received, cronbach's alpha was tested and the result showed that that its alpha value of 0.781. The contribution of each item was also analyzed and the value revealed that corrected item total correlation of each item was above the cut of point (0.2)

According to the satisfaction of clients with the different aspects of services provided the finding of this study declared that: 143(57%) were satisfied; in adequacy and appropriateness of working hours; with respect to waiting time 141(56.2%) were satisfied; almost half of the respondents 125(49.8%), were satisfied by the time spent to them by care providers; Satisfaction with regard to cleanliness and Comfortableness of waiting area were 111(44.2%) and 112(44.6%) respectively; satisfaction with cleanliness of TB room and equipments /instruments where TB pts get service were 125 (49.8%) and 129(51.34%) respectively. Meanwhile relatively higher study participants, 201(80.1%) and 173(68.9%) were satisfied with the respect offered by health professionals and measures taken to assure privacy respectively. (Table 6)

Table 6. patient's satisfaction level in the given service in Bahir Dar City Administrative Zone, August, 2013

Variables N=251	Satisfied		Not satisfied	
	NO	%	NO	%
Satisfaction with adequacy and appropriateness of working hours	143	57	108	43
Satisfaction with the waiting time	141	56.2	110	43.8
Satisfaction with the time spent by health worker	125	49.8	126	50.2
Satisfaction with Cleanliness of waiting area	111	44.2	140	55.8
Satisfaction the overall comfort of the waiting area	112	44.6	139	55.4
Satisfaction with the cleanliness of the place where pts received service	125	49.8	126	.50.2
Satisfaction with the cleanliness of instrument / equipment used by the health professional	129	51.4	122	48.6
Satisfaction of pts with the respect offered by Health professionals	201	80.1	50	19.9
Satisfaction with measures taken to assure privacy	173	68.9	78	31.9
Satisfaction with the completeness of the information given to pt	197	78.5	54	21.5
Satisfaction with the effectiveness of the service pts received	209	83.3	42	16.7
Satisfaction of pts with the service provided	175	69.7	76	30.3
Overall satisfaction	135	53.8	116	46.2

3.7. Logistic Regression (Backward) Analysis between Quality of DOTS and Other Variables

According to multivariate analysis marital status of TB pts those who were divorced and widowed were found to have 4.14 times quality of DOTS services compared to single clients; [AOR =0.24 (95% CI 0.08-0.77)]. Regarding

to the site(location) of health institutions ;those urban health institution were found to give 2.14 times more quality of DOTS service compared with those rural health institutions [AOR=2.14,(95% CI, 1.10-4.15)]. Considering TB patients privacy those patients who got service as having privacy were found to have 3.57 times quality DOTS service compared with those patients who did not deserve it

[AOR=3.57(95% CI 1.80-7.07)] (table 7).

Table 7. logistic regression (backward) analysis between quality of DOTS and other variables, in Bahir Dar City Administrative August 2013

Variable	Quality of DOTS		COR (95% CI)	AOR (95% CI)	p-value
	Yes	No			
Age					
15-24yrs	30	33	1.95 (1.15-4.35)	0.86 (0.31-2.35)	0.76
25-34yrs	49	37	2.84 (1.32-6.09)	1.70 (0.71-4.11)	0.24
35-44yrs	27	31	1.87 (1.87-1.21)	1.51 (0.62-3.71)	0.36
> 45yrs*	14	30			
Marital status					
Single	56	38			
Married	55	73	0.51(0.30-0.88)	0.72(0.40-1.32)	0.28
Divorced and Widowed	9	20	0.29(0.10-0.82)	0.24(0.08-0.77)	0.02
Residence					
Urban	86	69	2.27(1.35-3.84)	1.081 (0.41-2.87)	0.88
Rural	34	62			
Educational Status					
Illiterate	48	69	0.48(0.23-1.01)	0.78(0.25-2.42)	0.67
Primary	23	22	0.73(0.306-1.73)	0.801(0.247-2.595)	0.71
Secondary	26	24	0.75(0.32-1.76)	0.65(0.20-2.09)	0.47
College & above	23	16			
Occupation					
Government	19	18	0.22 (0.040-1.24)	0.23(0.04-1.48)	0.12
Non government	14	18	0.17 (0.033-0.85)	0.17 (0.03-1.06)	0.06
Farmer	37	63	0.41(0.080-2.11)	0.29 (0.049-1.70)	0.17
Merchant	43	30			
Income					
≤ 500	89	100	0.55(0.22-1.28)	0.71(0.227-2.20)	0.55
501-1000	16	22	0.44(0.15-1.24)	0.53(0.163-1.73)	0.29
1000 & above	15	9			
Distance					
≤ 30 minutes	65	44	3.78(0.47-0.81)	1.31(0.42-4.05)	0.64
30-60 minutes	42	54	1.99(0.83-4.74)	1.12(0.36-3.45)	0.85
61-90 minutes	4	10	1.02(0.25-4.11)	1.08(0.25-4.75)	0.91
≥ 90 minutes	9	23			
Health institution site					
Urban	99	73	3.75(2.1-6.71)	2.14(1.10-4.15)	0.025*
Rural	21	58			
Pts attend in privacy					
No	69	112			
Yes	51	18	0.22(0.12-0.40)	3.57(1.80-7.07)	0.00 *

4. Discussion

According to this study quality of DOTS was assessed by different quality parameters in structural, process and as an outcome, thus the overall quality of TB care indicated that 52.2% of the patients received poor quality of care. The result of our study was better than study in Jima in which 66.0% of patients received poor quality of care (19). The probable reason could be time gap between the studies. However, study in Egypt was slightly better than ours, in which 49.8% patients received poor quality of care. (12). Geographical difference and health care delivery system might be the possible reasons for the differences.

With regard to marital status, patients who were divorced and widowed were found to have 4.15 times quality of DOTS services compared to single clients. The possible reason might be due to that they may have their own children to assist in taking their own drugs as well as personal

maturity might play its own role.

According to our study structural attribute pertaining to quality assessment showed that all health institutions had trained health professionals in DOTS assigned as full time staff 100%; all anti TB drugs were available for a minimum stock for 3 months (100%); but trained laboratory professionals on AFB, and AFB laboratory reagents were not available In 14.3% of seven health institution included in the study.

However, the study done in Jima revealed that all health institutions providing DOTS service had 100% trained laboratory professionals on AFB and all the essential anti TB drugs. Another study conducted in Tigray also showed that all health facilities had TB drugs supply without interruption. The discrepancy might be related to the fact that our study included health centres that were recently upgraded from health post to health center and were in transition period so that all preparations including training of manpower. (17,19)

According to this study access to the TB clinic was found to be 44.2%. In addition waiting room availability, only one (14.2%) health institution had it. The result of this study was not in agreement with the National TLCP standard for TB service access to be in walking distance of ≤ 30 minutes and requirement of every TB clinic to have waiting room.(8)

Majority 85.7% of health facilities in this study had equipment and materials required for TB control activity as per the national TLCP standard. But, latest version of TLCP registration book, and weight scale, and TB diagnosis flow charts were not available in 14.3% of the health facilities. However the study done in Tigray region revealed that all health institutions had standard TB registration book and other necessary materials.(16). The possible reason for this discrepancy might be lack of emphasis by different authorities and concerned bodies in the region as registration books are distributed across all the regions in the country from Federal Ministry of health. The relation between location of health institutions and quality of DOTS was also assessed and the result showed that the odds of quality of DOTS service in urban health institutions were about two folds more likely than rural health facilities. The probable reason for this could be in urban health institutions professionals working in TB clinic might be more stable than professionals in rural area with high turnover striving to live in urban area to take the advantage of living in area of better infrastructure. The other possible reason might also be related to the better infrastructure of urban health institutes.

Provider- Patient interaction had pivotal role in quality of DOTS service. Patient- provider interaction with reference to DOTS service among many includes greeting politely, involving patients in decision making, providing advice and others play important role. Our observational result showed that while 73.3% of patients were greeted politely by their health care providers, three fourth and six in ten of the patients were participated in parts of decision making and were advised to comply with their treatment respectively. These interactions were inadequate to provide quality services as a witness studies conducted in West Africa, western and Eastern Europe showed that inadequate communications between providers and patients could lead to rejection of public health facilities and acting as a barrier for TB control activities and its quality of services. (13)

According to this study most of the process indicators (96%) were registered. However sex, age, initial diagnosis of AFB and weight of patients; 0.8%, 0.8%, 0.4% and 1.2% respectively were not recorded. This result was better than the study conducted in the SNNPRS, which showed that Tuberculosis registries were incomplete in many cases where; 26.8% TB patients were not registered, and all progress records were missing in 5.4 % of patients. Even though the percentage of not recorded is very small in this study, minor errors in patient registration process may have negative impact in quality of patient care. The possible reason for this might be due to lack of adequate follow up of trained health professionals working in TB clinic (14)

In current study, small proportion of patients were

classified as pulmonary positive 18.7%, making most of the rest pulmonary negative 29.1% and EPTB 52.2%; which was opposite to the usual expectations in Ethiopia, where it is expected that; from all new cases of TB, 80% and 20% would have been pulmonary positive and extra-pulmonary respectively; and from those cases with pulmonary TB 80% would be Pulmonary positive and 20% pulmonary negative (3). This might be due to the current HIV/AIDS pandemic where relatively higher proportion pulmonary negative and EPTB cases are frequently reported.

The finding of this study indicated that there was weak supervision patterns as only 2.9% of health institutions were supervised in the last six months and the supervision pattern was also unplanned, inconsistent and lack feedback. This was against WHO and national recommendations where they recommend strong supportive supervision as part of program communication and quality improvement. (6, 8)

Regarding TB patients privacy during TB treatment, patients who got service with privacy were found to had 3.6 times quality DOTS service compared with the counterparts of patients who got service without privacy. The possible reason for this could be most of the patients had TB co-infection with HIV which may need attention for patient privacy. Also, every patient needs a separate place to be advised and counseled for provider initiative HIV counseling and testing.

The majority of respondents, 83.3%, were satisfied in the effectiveness of the treatment provided and 69.7% were satisfied with the overall services they received but dissatisfaction in cleanliness of waiting area, comfortableness of waiting area, waiting time, and adequacy of working hours, in 55.8%, 55.4%, 43.8%, 43%, respectively. Different literatures showed that these were among the major areas of dissatisfaction which can lead to service rejections by the patients and defaulting, treatment failure and drug resistances. (17, 19)

5. Conclusion

Input and process quality parameters which were the main determinants of output quality of a program were poor in relative to the 100% requirement of world health organization. Thus, Overall quality DOTS was remained low. Availability of AFB trained laboratory professionals, laboratory reagent, use of registration books, flow chart for TB diagnosis, and availability of waiting room for TB patients and accessibility of service were graded poor in quality. Provider- patient interaction, keeping privacy, and supervision of TB clinic were poor. Additionally there was long waiting time observed which can lead to patients' dissatisfaction and failure to adhere to treatment which in turn can lead to service rejection and program failure. Patients were dissatisfied regarding in cleanliness, comfortableness of waiting area, duration of waiting time, and adequacy of working hours of TB clinic.

It is recommended that: The respective health institutions need to provide periodic refreshments on job trainings and

develop mechanisms to improve the qualities of staffing. The regional health Bureau, Zonal health office, and health institutions need to facilitate accessibility, and construct TB clinic with standards like having proper waiting room. Regular supervision and follow up of TB programme with proper schedule and feedback need to be practiced by each health institution, zonal health office, and Regional health Bureau as their own concerns. Health professional working in TB clinic should treat TB patients by keeping their own privacy and health professionals working in rural health institutions should be stable and provide quality service

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