

# Quality of Tuberculosis Care among Public Health Facilities of Benishangul Gumuz Region, Western Ethiopia

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**BACK GROUND:** Delivering quality of care for patients with TB is paramount the most important intervention for the prevention and control of the disease. But, mostly the whether health care facilities are providing quality of care is not well known. The objective of the study was to assess the quality of care among public health facilities of Benishangul gumuz region, North West Ethiopia. **METHODS:** Facility based cross-sectional study was conducted from March to April 2017 in 11 public health facilities in Benishangul gumuz region. Facility audit was carried out to assess Structural, Process and outcome aspect of TB quality delivery services was assessed through interview, observation and document review. Fifty patients who were on intensive phase during data collection period in the study facilities were interviewed and records of 384 patients registered for the last two years preceding the survey was reviewed. Data were entered and analyzed using SPSS 20.0 for windows statistical software. **RESULTS:** Lack of separate TB units, unavailability of daily TB care, lack monthly supervision, lack of supervisory feedback, shortage of AFB test lack of system for identifying coughing patients, lack of arrangement of TB examination room and unavailability of water in dispensing units were the major problems observed structural components of TB care ranging from 9.1 % to 45.5% of health facilities. Most of the process items were always registered. However contact name were not recorded in 15.9% and contact address not recorded 17.4% cases cases which is very important to trace defaulters earlier. HIV test were not offered to 12.2% of the cases. **CONCLUSION:** The overall quality

of TB service was found to be fair. Absence of separate TB units in five health centers and absence of DOT in three health centers and absence of water in dispensing units, absence of contact name recording, absence of contact address recording not offering HIV test to cases were some of the constraints from structural and process aspects of quality. About 91% and 6% of TB patients were identified as having favorable and unfavorable treatment outcome respectively. Even though majority of patients were satisfied with satisfaction items, still higher proportion; 22%, 10%, 8% of patients were dissatisfied to adequacy of explanation about treatment, competence of providers and time spent in waiting room and presence of TB treatment providers respectively.

**KEYWORDS:** Quality, Tuberculosis care, in Benishangul Gumuz region.

## BACK GROUND

In recent years, national health programs have expanded their focus to include not only improving access to care, but also improving the quality of care received by patients and communities. As part of quality assurance for many clinical diseases, including tuberculosis (TB), international and national evidence-based standards and guidelines have been developed. Having explicit standards and guidelines helps ensure high-quality care, better health outcomes, and cost effective treatments. Quality of TB care can mean

different things when viewed from different perspectives, including: the patient, the service provider, or the facility management [1].

The scale of the response to today's global tuberculosis (TB) epidemic demands urgent and effective action now. This curable disease known to humanity for thousands of years is now the top infectious disease killer on the planet, with 4,400 victims every single day. TB and HIV/AIDS are "partners in crime", often affecting the same persons, and reducing their hope for life, especially when they have resistant forms of TB. The World Health Organization (WHO) Stop TB Strategy set targets to half the world prevalence and reverse the incidence of TB by 2015 and to eliminate TB as a public health threat by 2050. Extreme poverty, HIV epidemic, and the emergence of drug resistance have made TB control incredibly difficult in many settings [2].

In 2000, to drive progress against TB, the UN Millennium Development Goals committed to halting and beginning to reverse the global TB epidemic by 2015. The world met that goal, and TB programmes saved some 49 million deaths globally between 2000 and 2015, but important diagnostic and treatment gaps persist [3].

Worldwide, the rate of decline in TB incidence remained at only 1.5% from 2014 to 2015 an unacceptably slow rate of decline for a preventable and curable disease. This needs to accelerate to a 4–5% annual decline by 2020 to reach the first milestones of the End TB Strategy. In 2015, there were an estimated 480 000 new cases of multidrug-resistant TB (MDR-TB) and an additional 100 000 people with rifampicin-resistant TB (RR-TB) who were also newly eligible for MDR-TB treatment. The Sustainable Development Goals (SDGs) for 2030 were adopted by the United Nations in 2015. One of the targets is to end the global TB epidemic. The WHO End TB Strategy, approved by the World Health Assembly in 2014, calls for a 90% reduction in TB deaths and an 80% reduction in

the TB incidence rate by 2030, compared with 2015[4].

In 2015, there were an estimated 10.4 million new (incident) TB cases worldwide, of which 5.9 million (56%) were among men, 3.5 million (34%) among women and 1.0 million (10%) among children. People living with HIV accounted for 1.2 million (11%) of all new TB cases. There were an estimated 1.4 million TB deaths in 2015, and an additional 0.4 million deaths resulting from TB disease among people living with HIV.<sup>3</sup> Although the number of TB deaths fell by 22% between 2000 and 2015, TB remained one of the top 10 causes of death worldwide in 2015

[4].

In 2015, of the estimated 580 000 people newly eligible for MDR-TB treatment, only 125 000 (20%) were enrolled. Five countries accounted for more than 60% of the gap: India, China, the Russian Federation, Indonesia and Nigeria. Globally, the MDR-TB treatment success rate was 52% in 2013 [5].

For the first time in history, ambitious strategy that aims to end TB, defined as achieving an incidence rate of 10 new people with TB per 100 000 population per year has been developed by WHO. To end TB, we need to bring about a paradigm shift in TB care and prevention. The current 1.5% annual decline in global TB incidence is unacceptable, and it is feasible to accelerate that decline to 10% per year. The Global Plan introduces three peoplecentered targets called the 90-(90)-90 targets: reach 90% of all people who need treatment, including 90% of people in key populations, and achieve at least 90% treatment success[4].

Efforts to control tuberculosis began in early 1960's. In 1992, DOTS strategy was introduced nationwide and currently provided in almost all public hospital and health center as well as in private and NGO health facility especially focusing to reach people with tuberculosis through health extension workers throughout urban and rural communities. However, the

numbers of tuberculosis cases remain high in the country; the burden of HIV/AIDS has complicated its management and the spread of drug resistance tuberculosis is becoming a challenge for tuberculosis control. Directly Observed Treatment Short Course (DOTS) has been expanded throughout the country. However, there is still much to be desired in ensuring high quality DOTS and its enhancement [6]. Ethiopia is one of the 22 high-burden countries that account for about 80% of the world's TB cases. Based on the Global TB report 2013, there were an estimated 247 per 100,000 population's incident cases of TB in Ethiopia. According to the same report the prevalence of TB was estimated to be 224 per 100,000 populations. There were an estimated 18 per 100,000 deaths due to TB, excluding HIV related deaths in Ethiopia during the same period [7].

Substandard TB care results in poor treatment outcomes, persistent infectiousness as well as possible emergence and spread of drug resistant strains challenged TB prevention and control. Therefore, the quality of the services provided determines the likely success of the TB control programme. Quality of care plays an important role in the status of tuberculosis (TB) control, by influencing timely diagnosis, treatment adherence, and treatment completion. Donabedian developed the structures, process, and

outcomes model as a framework for assessing the quality of health care services. Structure consists of physical health facility, medical equipment, and staff characteristics. Processes of care involve interactions between users and the health care structures, the actual delivery, and process of care. Outcomes are consequences of care. This study is aimed at establishing the quality of TB service care in Benishangul Gumuz region health facilities using Donabedian structure, process, and outcomes model of health care. 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 [8].

#### SIGNIFICANCY OF THE STUDY

Quality of care plays an important role in the status of tuberculosis (TB) control, by influencing timely diagnosis, treatment adherence, and treatment completion. Comprehensive strengthening of the health system focusing on quality of support supervisions, patient follow up, promoting infection control measures and increasing health staffing levels at health facilities is crucial. This study was intended to produce valuable results for decision makers, for planners, for health care providers and other stakeholders. It will also serve as the base line data for further research for interested researchers.

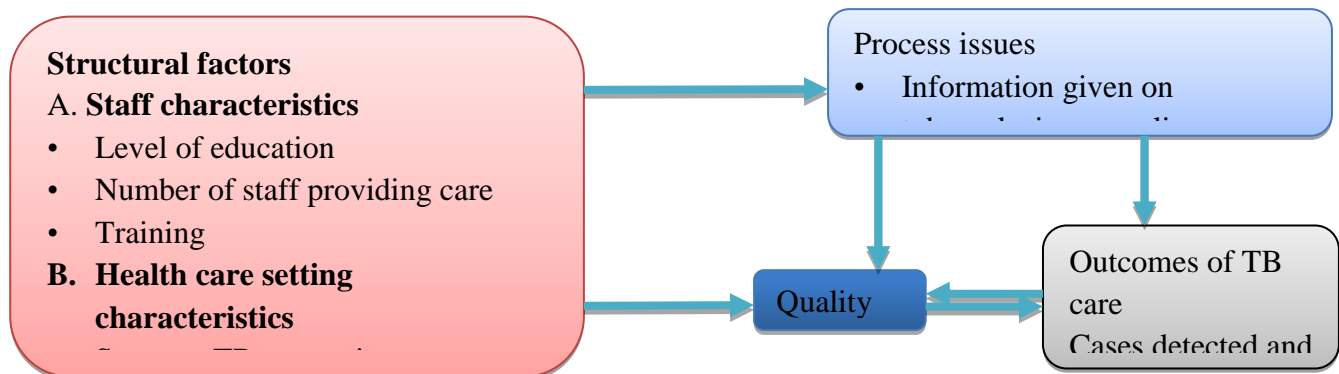


Figure 1: Conceptual frame work for quality of TB service in government health facilities of Benishangul Gumuz region: adopted from previous published study and made suitable after reviewing different literatures

**OBJECTIVES:** To assess quality of tuberculosis care among Public health facilities of Benishangul Gumuz Region, North Western Ethiopia.

## **METHODS AND MATERIALS**

### **Study area and period**

Benishangul-gumuz regional state is one of the nine regional states of federal democratic republic of Ethiopia. Assosa the capital of the region is located in the North western part of the country about 662 kms away from the capital Addis Ababa. The region shares boundaries with Sudan in the west, Amhara region in the north and northeast, Oromia in the southeast and in the south. As per the 2007 census, the projected total population of the region is 936,549. The region has three administrative zones comprising 19 woredas, one city administration and one special woreda. There are two governmental general hospitals and 34 health centers providing tuberculosis treatment in the region. According to 2008 E.C Benishangul Gumuz regional Health Bureau report, the estimated TB case detection rate were 51% which is far from the national target 72%. The treatment success rate and cure rate were estimated to be 92% and 76% respectively. Regarding treatment outcome rate, lost to follow up (0.9%), treatment failure (0.9%), and death (2.6%), and not evaluated (3.6%) [9].

The study was conducted in the Benishangul Gumuz region from March to April, 2017.

### **Study design**

Retrospective study involving both quantitative and qualitative methods was conducted to assess quality of TB treatment.

### **Source population**

The source population includes all hospitals, health centers, tuberculosis out and inpatients, tuberculosis care providers and tuberculosis patient records in Benishangul Gumuz Regional State.

### **Study/sampled population**

The study population included all tuberculosis

patients aged 15 years and above for interview, records of randomly selected tuberculosis patient who were completed their treatment in the fiscal year 2008 and 2007 was used for document review, 11 tuberculosis care providers and or head of study facilities were included.

### **Sample size determination**

With the purpose of assessing recent practices, patients who had completed their treatment in the previous two years from September 1/2007 E.C to August 30/2008 E.C in TB clinic was included for record review. The sample size for record review was determined by single population proportion formula based on the assumption that 50% of the patient record is complete, marginal error of 5% and CI 95% which yields a sample of 384. For exit interview, all TB patients on intensive phase of treatment were interviewed since they are available on daily basis for medication in the health facilities. TB control activities in the selected public health facilities were observed; TB focal persons in TB clinics were interviewed.

### **Eligibility criteria**

#### **Inclusion criteria**

TB patients aged 15 years and above who were available at health care facility and on treatment for more than two weeks were included in the study for interview.

#### **Exclusion criteria**

One patient who was too weak to be interviewed was excluded and three transfer ins patients less than two weeks and four patients who visited the health facilities for the first time during data collection were excluded.

### **Data collection and tools**

Data was obtained using interview questionnaire, an observation guide and check lists for record review.

### **Data quality control**

Data quality was maintained using different strategies;

the questionnaire that has been adopted from similar studies of published journal was made suitable for this particular study and used. The questionnaire was translated from English to Amharic language and then back translated to English to check for consistence. Data collectors who can hear and speak the respective local languages of the study sites were used. Pre-testing of the questionnaire was done on 5 TB patients at Abrhamo health center. Training for data collectors and supervisors was given. Intensive supervision was undertaken during data collection for checking the completeness of the filled questionnaire.

#### Data processing and analysis

Data was entered into SPSS Version 20.0 statistical software. Univariate analysis was done to describe the socio-demographic characteristics of the study participants and outcome variables.

## RESULTS

### Socio-demographic Characteristics

Exit interview of clients at TB service delivery outlet was carried out to assess TB care with response rate of 100%. All 50 TB patients on intensive phase of treatment were interviewed for the study. Majority 18(36%) of the respondents were in age group 15 to 24years. Thirty two (64%) of the respondents were male, 27 (54%) were married, 15 (30%) were not able to read and write, 21(42%) were Amhara by ethnicity, 18 (36%) were farmer by occupation and 35 (70%) of them have income of less than 1500 Ethiopian birr (Table 1).

**Table 1: Sociodemographic characteristics of TB patients in public health facilities of Benishangul Gumuz region, North West Ethiopia, 2017.**

Variables	Frequency	%
<b>Age</b>		
15-24	18	36.0
25-34	16	32.0
35-44	10	20.0
>=45	6	12.0
<b>Sex</b>		
Female	18	36.0
Male	32	64.0
<b>Marital status</b>		
Single	16	32.0
Married	27	54.0
Divorced	6	12.0
Widowed	1	2.0
<b>Educational status</b>		
Unable to read & write	15	30.0
Able to read and write	6	12.0
Primary [1-8]	11	22.0
Secondary [9-12]	11	22.0
College and above	7	14.0
<b>Occupation</b>		
Farmers	18	36.0
Daily laborer	9	18.0
Student	8	16.0
Civil servant	6	12.0
House wife	5	10.0
Unemployed	1	2.0
Others	3	6.0
<b>Residence</b>		
Urban	31	62.0
Rural	19	38.0
<b>Income</b>		
1-1500EB	35	70.0
> 1500	15	30.0
<b>Treatment duration</b>		
On first month	27	54.0
On second month	23	46.0

All fifty TB patients in the study area who were on intensive phase were interviewed. Sixteen percent and 12% of patients were smokers and chewer respectively. Even though all TB patients should be counseled for HIV only 74% of them were not counseled for HIV.

**Table 2: Description of respondents attributes in TB control activities in public health facilities of Benishangul Gumuz region, North West Ethiopia, 2017.**

Variables	Number	Percent
Smoking		
Yes	8	16.0
No	42	84.0
Chewing		
Yes	6	12.0
No	44	88.0
HIV counseling done		
Yes	37	74.0
No	13	26.0
HIV test done		
Yes	41	82.0
No	9	18.0
Health education given		
Yes	26	52.0
No	24	48.0
DOT program available		
Yes	37	74.0
No	13	26.0
Waiting time to receive results		
Within 24 hours	35	70.0
After 24 hours	15	30.0
Waiting time to receive treatment		
Immediately	42	84.0
After one day	8	16.0

2017.

#### Source of information

Referred by health workers	31	62.0
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Recommended by somebody who ever used	10	20.0
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From media	1	2.0
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Others	8	16.0
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#### Information given on how stop spread of TB

Yes	34	68.0
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No	16	32.0
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#### Information given as Tb can be cured

Yes	43	86.0
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No	7	14.0
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#### Information given on the side effect of TB drugs

Yes	38	72.0
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No	14	28.0
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#### Information given on sputum follow up test

Yes	37	74.0
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No	13	26.0
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#### Information given about link b/n Tb and HIV

Yes	31	62.0
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No	19	38.0
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#### Health facility Assessment

This assessment study included nine health centers and two hospitals. All health facilities, 11(100%) have trained TB care provider. Six out of 11 health facilities have separate TB units. Daily outpatient TB care services were available in 8(72.7%). Regarding monthly supervision of TB clinics 9(81.8%) of them were supervised and 7(63.6%) were received supervisory feedback in past 6 months prior to this study.

All the health facilities 11(100.0%) under the study had standard drug, regular drug supply, all lab

equipment's and reagents, functional weighting scale, TB register and HIV test. Seven (63.6%) TB focal persons had never participated on regional or district quarterly evaluation of TB. Only one (9.1%) of health facility had water in dispensing units. Regarding to TB units only 6 (54.5%) out of 11 health facilities, had separate TB units and 8 (72.7%) were providing daily TB care. All health facilities had standard diagnostic and treatment protocols as well as regular drug supply. All health facilities had weighting scale in use and 10 of them had adequate laboratory equipment's and reagents. Regarding the arrangement of TB examination room, 7 (63.6%) of them had well ventilated and allow direct sunlight while three of them had not. Only one (9.1%) health facility had water in dispensing units during data collection.

**Patients' Unit TB Registry Record**

A total 384 records of TB patients reviewed. All of them were found to have a registered sex. Almost all were found to have recorded unit TB registration number 382 (99.5%), patient name 380 (99%), patient

Variables	No	%
Medical record number	Recorded 333	86.7
	Not recorded 51	13.3
TB unit register	Recorded 382	99.5
	Not recorded 2	.5
Patient name	Recorded 380	99.0
	Not recorded 4	1.0
Patient address	Recorded 382	99.5
	Not recorded 2	.5
Sex	Recorded 384	100.0
Contact name	Recorded 323	84.1
	Not recorded 61	15.9
Contact address	Recorded 317	82.6
	Not recorded 67	17.4
Age of patients	Recorded 381	99.2
	Not recorded 2	.5
Smear results	Recorded 258	67.2
	Not recorded 121	31.5
	not done 5	1.3
Laboratory number	Recorded 72	18.8
	Not recorded 312	81.3

address 382 (99.5%), and age 381(99.2%). Three hundred seventy eight (98.4%) of patients weight were recorded. One hundred thirty eight (35.9 %) patients were classified as Pulmonary negative, 129 (33.6%) pulmonary positive and 117 (30.5%) were classified as EPTB.

HIV test offering were recorded in 337 (87.8%) and 24 (7.1%) recorded HIV positive while 313 (92.9%) were HIV negative. Initial diagnostic AFB test was done for 212 (55.2% patients. Regarding the treatment outcome of the patients 112(29.2%) cured, 238(62%) treatment complete, and 21(5.5%) were died.

**Table 4: Descriptions of patients' unit TB registry record in Benishangul Gumuz region, 2017.**

Variables	No	%
Medical record number	Recorded 333	86.7
	Not recorded 51	13.3
TB unit register	Recorded 382	99.5
	Not recorded 2	.5
Patient name	Recorded 380	99.0
	Not recorded 4	1.0
Patient address	Recorded 382	99.5
	Not recorded 2	.5
Sex	Recorded 384	100.0
Contact name	Recorded 323	84.1
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Smear results	Recorded 258	67.2
	Not recorded 121	31.5
	not done 5	1.3
Laboratory number	Recorded 72	18.8
	Not recorded 312	81.3

Weight	Recorded	378	98.4
	Not recorded	6	1.6
TB category	P/positive	129	33.6
	P/negative	138	35.9
	EPTB	117	30.5
Dose in intensive	Recorded	383	99.7
	Not recorded	1	0.3
Date treatment started	Recorded	382	99.5
	Not recorded	2	0.5
HIV test offered	Yes	337	87.8
	No	47	12.2
HIV test result	Positive	24	7.1
	Negative	313	92.9
Initial AFB test done	Yes	212	55.2
	No	161	41.9
Second month AFB test done	Yes	129	33.6
	No	248	64.6
Third month AFB test done	Yes	95	24.7
	No	273	71.1
Fifth month FB test done	Yes	125	32.6
	No	251	65.4
Seventh month AFB test done	Yes	103	26.8
	No	212	55.2
Continuation phase drug	Recorded	345	89.8
	Not recorded	39	10.2
Treatment outcomes	Cured	112	29.2
	Completed	238	62
	Died	21	5.5
	Failure	1	0.3
	Defaulter	1	0.3
	Not recorded	11	2.9

### Treatment outcome

Regarding to the treatment outcome of patients who had completed their treatment in the last two years preceding this study as assessed and 112(29.2%) were cured,238 (61.9%) were completed treatment, 21(5.5%) were died, 1(0.26%) treatment failure, 1(0.26%) defaulted and 11(2.86%) were not recorded (Table 4).

### Treatment outcome

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### Table 5: TB patients' satisfaction level with different components of services in public health facilities of BenishangulGumuz Region, 2017.

### Discussion

This study assessed the quality of TB care based on structure, process and outcome of TB care in public health care facilities of Benishangul Gumuz Regional state to help service providers and other stake holders to improve the quality of services delivery system for patients which further reduces the burden of the disease in the region. It has also an important role for different further studies as a base line data in the region. Record accessibility and incompleteness were the major limitation of this study since it was based on record review.

The study identified structural, process and out come constraints in delivering quality of TB care in the study area.



**Table 5: TB patients' satisfaction level with different components of services in public health facilities of BenishangulGumuz Region, 2017.**

S/no	Variables	Satisfied	Neutral	Dissatisfied
1.	Availability of laboratory services	49 (98%)	1(2%)	0
2.	Availability of anti TB drugs	48 (96%)	2(4%)	0
3.	Presence of TB treatment providers	46 (92%)	0	4(8%)
4.	Convenience of health facility to home	44 (88%)	2(4%)	4(8%)
5.	Easy of getting TB clinic	45 (90%)	1(2%)	4(8%)
6.	convenience of TB unit working hours	45 (90%)	2(4%)	3(6%)
7.	Time spent in waiting room	35 (70%)	10(20%)	5 (10%)
8.	Friendliness of the providers	40 (80%)	9(18%)	1 (2%)
9.	Attention and respect of providers to privacy	45 (90%)	3(6%)	2 (4%)
10.	Competence of providers	44 (88%)	1(2%)	5(10%)
11.	Daily visiting of health facility for treatment	42 (84%)	3(6%)	5(10%)
12.	Adequacy of explanation about treatment	35 (70%)	4(8%)	11(22%)

**Structural quality:** Lack of separate TB units, unavailability of daily TB care, lack of monthly supervision, lack of supervisory feedback, shortage of AFB test lack of system for identifying coughing patients, lack of arrangement of TB examination room and unavailability of water in dispensing units were the major problems observed structural components of TB care ranging from 9.1 % to 45.5% of health facilities. A study conducted in Southern Africa revealed higher score which ranges from 75% to 81% with respect to availability of essential TB drugs and diagnostic tests availability of NTP guidelines copy. Another study conducted in Jimma zone showed that 44% to 66% which is also higher than this study.

**Process quality:** Most of the process items were always registered. However contact

name were not recorded in 15.9% and contact address not recorded 17.4% cases cases which is very important to trace defaulters earlier. HIV test were not offered to 12.2% of the cases which is very important for better treatment outcome of the patient by identifying HIV positive cases and through the provision of ART and other prophylaxis.

## Conclusion and

### Recommendation Conclusion

The overall quality of TB service was found to be fair. But there were identified problems in the provision of quality TB care. Absence of separate TB units in five health centers and absence of DOT in three health centers and absence of water in dispensing units were some of the constraints from structural aspects of quality. Absence of contact name recording in 15.9% and absence of contact address recording 17.4% and not offering

HIV test to 12.2% of the cases were some of the constraints from process aspects of quality. About 91% and 6% of TB patients were identified as having favorable and unfavorable treatment outcome respectively. Even though majority of patients were satisfied with satisfaction items, still higher proportion; 22%, 10%, 8% of patients were dissatisfied to adequacy of explanation about treatment, competence of providers and time spent in waiting room and presence of TB treatment providers respectively.

### Recommendation

Based on the findings the following recommendation has been forwarded

- ⊙ There should be separate TB units at all health facilities providing TB care
- ⊙ DOT should be implemented at all health care facilities
- ⊙ Water must be available for patients at all the dispensing units
- ⊙ TB care providers should record contact name and contact address on the TB register for tracing defaulters
- ⊙ HIV test should be offered to all TB patients at all health facilities
- ⊙ Quality of TB care must be improved through the provision of standard TB care that can reduce significantly TB related death and defaulters.

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### ACRYNOMS

**AFB:** Acid Fast Bacilli

**CPT:** Cotrimoxazole Preventive Therapy

**DOTS:** Direct Observed Therapy Short-Course

**DR-TB:** Drug Resistant Tuberculosis

**EPTB:** Extra Pulmonary Tuberculosis

**FMOH:** Federal Democratic Republic of Ethiopia

**HIV:** Human Immune Deficiency Virus

**MDR-TB:** Multi-drug resistant Tuberculosis

**NTP:** National Tuberculosis program

**PI:** Principal Investigator

**RR-TB:** Rifampicin Resistance Tuberculosis

**SD:** Standard Deviation

**SDGs:** Sustainable Development Goals

**SPSS:** Statistical Package for Social Science

**TB:** Tuberculosis

**TBL:** Tuberculosis Leprosy

**UN:** United Nation

**WHO:** World Health Organization

**XDR TB:** Extremely Drug Resistant Tuberculosis

**X-pert MTB/RIF: Gene expert****Myco-bacterium Tuberculosis/****Rifampicin****References**

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