Assessment of Patients' Knowledge, Attitude, and Practice Regarding Pulmonary Tuberculosis in Eastern Amhara Regional State, Ethiopia: Cross-Sectional Study

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Abstract. Tuberculosis (TB) is a major public health problem in Ethiopia and the Amhara region. Assessment of knowledge, attitude, and health-seeking practice in this region is essential to plan, implement, and evaluate advocacy, communication, and social mobilization work. This may improve the case detection rate. The aim of this study was to assess the knowledge, attitude, and practice of patients toward TB in the Eastern Amhara region of Ethiopia. A cross-sectional survey was conducted among suspected and confirmed TB patients who were 18 years of age and older. For this purpose, 422 participants were enrolled. A structured and pre-validated questionnaire was used to collect data. In addition χ^2 and multivariate logistic regression analysis was used to see an association with different variables. The mean and median knowledge score of respondents about pulmonary TB was 6.81 and 7, respectively. The majority of respondents had several misconceptions in all aspects of the most infectious form of TB. About half of the respondents did not know the current free cost of TB diagnosis and treatment. The 69.9% of respondents claimed that cost is the main reason for not getting care. The majority of respondents had several misconceptions about TB. The TB control program needs to consider advocacy, communication, and social mobilization for addressing the gap in the study sites.

BACKGROUND

Even though tuberculosis (TB) is a treatable and preventable disease, it is the second most common cause of death attributable to infectious disease.¹ Globally 9.4 million incidents and 14 million prevalent cases occurred in 2010.² Africa, more specifically sub-Saharan Africa, faces the worst TB epidemic.¹

Ethiopia ranks seventh among the world's 22 high burden countries, which have an incidence and prevalence rate of 300 and 470 cases per 100,000 populations, respectively. In Ethiopia the case detection was 50% for all forms of TB. Among all new TB cases, 30% were smear positive^{3–5}; the directly observed treatment short course (DOTS) detection rate remains low at 34%. Among these 22% are in the Amhara region.^{3–5}

The DOTS effectiveness might be determined by the patients' health-seeking behaviors, which is related to patients' demographic characteristics, knowledge of TB, health education, and traditional beliefs. These are believed to have a crucial impact on treatment compliance and treatment success rate.^{6,7}

Studies showed that a low knowledge score was more likely to be observed among the illiterate, females, rural residences, low income, and youngest age group. They also showed that less than half of the respondents were aware of the diagnosis and free treatment of TB, which could act as barriers to TB diagnosis and significantly affect the case notification rate.^{8–13} Furthermore, it has been proven that the disease had a significant impact on social relations. This occurs when there is stigma, discrimination, and several misconceptions that could contribute to poor adherence and treatment compliance.^{14–16}

Ethiopia has a population of 73,918,505, among this population 9.04% (6,689,533) reside in the Eastern Amhara region.¹⁷ Moreover, 85% of the population resides in rural areas that are far from health infrastructures, so assessment of knowledge, attitude, and practice (KAP) of patients toward TB, especially

in those regions like Amhara that have a low case detection (22%), were very important to gather information for planning public health programs, problem identification, and planning intervention based on the gaps.¹⁸ Therefore, the objective of this study is to assess patients' knowledge, attitude, and health-seeking practice and associated factors toward pulmonary tuberculosis.

MATERIAL AND METHODS

A facility based cross-sectional descriptive study was conducted among suspected pulmonary TB cases at the out-patient department and retreatment cases at DOTS (age ≥ 18 years). A total of 48 public facilities were listed based on the regular presence of DOTS, acid fast bacilli, and patient flow. A stratified random sampling method was used to create different strata according to their capacity (hospital, health center). A separate sample unit was selected from each stratum. Finally, individual units were selected by a simple random sampling method and a total of 43 sites were included in the study. A single proportion formula was used to determine the sample size.

We used a questionnaire that consisted of both closed- and open-ended questions. Though the questionnaire was prepared in English, it was translated into an Amharic version (the local language). On-site training was given for interviewers and supervisors for 2 days. Cross-checking was conducted in sample facilities for consistency. Verbal consent was obtained from each respondent. The questions on the questionnaires included information on the socio-demographic characteristics of the respondent, knowledge, attitudes, and health-seeking practice toward TB. Before the administration of the questionnaire the subjects were informed about the objectives of the study and 10% of the target population was asked to answer the questionnaires for validation. For each TB knowledge question, a score of one was given for a correct answer, whereas a zero score was given for incorrect and do not know responses. Questions on the knowledge part were rated and a total score was obtained. The median score was then computed. Therefore,

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those with a total score equal to or below the median were classified as having poor knowledge, whereas those above the median were considered having good knowledge.

Statistical analysis. Data entry and cleaning was done by a trained encoder using SPSS (Statistical Package for Social Science version 16; SPSS, Inc., Chicago, IL). The $P < 0.05$ was statistically significant. Multivariate analysis using the logistic regression model was computed.

Ethical clearance. The research proposal was reviewed by the School of Medical Laboratory Sciences and cleared by the Institutional Review Board of the Faculty of Medicine, Addis Ababa University. Informed consent was obtained from each study subject. No name and other identifier were used in the questionnaire.

RESULTS

Socio-demographic characteristics. A total of 422 (230 smear-positive and 192 smear-negative TB) respondents were enrolled in this study. Of these, 221 (52.4%) were male. The mean age of the respondents was 34 years. About 61.8% (261) were residing in rural areas and farming was the means of livelihood for most 207 (49.1%) study subjects (Table 1).

Clinical symptoms and contact history. The majority of patients came with a combination of symptoms. The most frequently reported symptoms were chronic cough 199 (86.5%), production of sputum 180 (78.3%), night sweat 148 (64.3%), fatigue/tiredness 146 (63.3%), shortness of breath 130 (56.5%), and unexplained weight loss 115 (50%). Of the study participants, 25 (10.9%) had a contact history with known positive pulmonary tuberculosis (PTB) cases and 21 (9.1%) with suspected TB case.

Tuberculosis awareness and sources of information. Most study subjects 281 (66.6%) heard about PTB from health professionals, whereas 160 (37.9%) from person to person communication, 101 (23.9%) from public radio, and 75 (17.8%) from television. Among respondents only 12.3% (52) tried to search information about TB and 99.8% (421) feel that they were not well informed about TB.

General knowledge about TB. Inhaled droplets through coughing and sneezing were recognized as the common source of TB infection that was recognized by 79.9% of respondents,

TABLE 1

Socio-demographic characteristics of smear positive and negative patients in Eastern Amhara region, Ethiopia February 2011

Variables	Number	(%)
Age group (year)		
18–30	212	50.2
31–40	91	21.6
41–50	79	18.7
≥ 51	40	9.5
Sex		
Male	221	52.4
Female	201	47.6
Religion		
Muslim	206	48.8
Christian	216	51.2
Education		
Literate	177	41.9
Illiterate	245	58.1
Residence		
Urban	161	38.2
Rural	261	61.8

TABLE 2

Respondent's knowledge about general aspects of TB in Eastern Amhara region, Ethiopia, February 2011

Variables	Number	(%)
Sign/symptom		
Cough	277	65.6
Cough > 2 weeks	138	32.7
Ongoing fatigue	112	26.5
Shortness of breath	124	29.4
Weight loss	140	33.2
Fever	70	16.6
Do not know	57	13.5
Mode of acquiring Tb		
Through air droplet	337	79.9
Through shaking hands	5	1.2
Through sharing dish	127	30.1
Do not know	61	14.5
Mode of prevention of Tb		
Covering mouth and nose	281	66.6
Avoiding sharing dish	122	28.9
Through good nutrition	225	53.3
Closing windows	194	46

but exposure to dust (65.4%), exposure to cold (62.6%), and drinking raw milk (44.8%) were also mentioned as important modes of transmission.

The four most commonly recognized symptoms of TB mentioned by respondents were coughing (65.6%), weight loss (33.2%), cough for 2 weeks and above (32.7%), and shortness of breath (29.4%). Of the respondents, 281 (66%) respondents considered covering their mouth and nose as the most commonly used method for preventing the spread and transmission of TB. Moreover, 53.3% respondents mentioned that transmission and spread of TB could be prevented by closing windows (46%), avoiding sex (46.2%), and separating dishes (28.9%).

The majority of respondents, 76.8% (324) believed that TB is a curable disease and 60.4% (255) of anybody were at risk of acquiring the disease. Similarly, 278 (65.9%) respondents stated that the disease is curable with modern therapy but 22.5% (95) of respondents did not know how it is cured. Only 43.1% of respondents knew the current free service of diagnosis and treatment of TB and 50.5% did not know its service fee (Table 2).⁷ The mean and median knowledge score of respondents toward pulmonary tuberculosis was 6.81 and 7, respectively.

Attitudes and practices. In studying the attitudes and practices of respondents, 36.5% (153) of the study subjects thought PTB as very serious. Among respondents, 58.3% (246) feared they had TB. Only 24.4% (103) of the respondents told their close friends freely about the presence of TB and 37.4% (158) of the respondents thought that they might acquire the TB disease (Table 3).

From open-ended questions the majority of the respondents worried that the disease may be transmitted to their family. They also worried that the disease might not be curable and that society may stigmatize them. In addition, they felt sad because they cannot work properly.

About 45.3% (191) of the respondents pursued a self-treatment option as a choice for primary health care; however, only 13.7% (58) of respondents visited a governmental clinic/hospital two or more times per year. There were ~69.9% (295) and 54.5% (230) respondents that mentioned cost and difficulties in transportation, respectively, as the main reason for their delay in

TABLE 3

Respondents' attitude and practice about TB in Eastern Amhara region, Ethiopia, February 2011

Variables	Number	(%)
Thought on seriousness of Tb		
Very serious	153	36.3
Somewhat serious	78	18.5
Not very serious	100	23.7
Choices of care for Tb		
Health facilities	65	15.4
Pharmacy	104	24.6
Traditional healer	62	14.7
Pursue self treatment option	191	45.3
Frequency of visit of clinic		
Twice or more/yr	58	13.7
Once/yr	90	21.3
< Once/yr, at least twice/5 yrs	120	28.4
Once in past 5 yrs	90	21.3
Never in past 5 yrs	64	15.2
Reason for delay in Tb Diagnosis		
Difficulties in transportation	230	54.5
Not sure where to go	86	20.4
Cost	295	69.9

seeking TB care. Of the respondents, 20.4% (86) were not sure where TB care is accessed (Table 3).

On the multivariate logistic regression analysis non-previous history of contracting TB, self-treatment option experience, delayed frequency of visit, and being a rural resident was independently associated with a low knowledge score (Table 4).

DISCUSSION

Several studies explained that the majority of respondents heard about TB from health workers and personal experience for the first time^{8-10,13,16}; this study also reported similar findings. This indicates that health workers, radio, and personal experience were acting as a successful means of disseminating information about TB and it was a promising means for better detection of TB cases. However, this study showed there was very little information from the TV, and this may be a result of the majority of the subjects not having a TV because they are in rural areas (Table 1).

TABLE 4

Multivariate analysis of characteristics associated with a high knowledge score among smear positive and negative patients in Eastern Amhara region, Ethiopia February 2011

Variables	Odds ratio	95 % CI	P value
Residence			
Rural	0.440	0.292–0.662	0.000*
Urban	1		
Education			
Illiterate	0.694	0.465–0.949	0.021*
Literate	1		
Choice of care for Tb			
Governmental health facilities	1		
Pharmacy	1.121	0.569–2.208	0.741
Traditional healer	0.785	0.362–1.701	0.540
Pursue self treatment option	0.458	0.253–0.828	0.010*
Frequency of visit to clinic			
Twice or more/yr	1		
Once a year	0.610	0.292–1.278	0.190
< Once/yr, at least twice/5 yrs	0.514	0.253–1.044	0.660
Once in past 5 yrs	0.427	0.202–0.904	0.026*
Never in past 5 yrs	0.154	0.065–0.368	0.000*

*These variables have significant association.

Based on the present findings, a majority of the respondents mentioned that TB is transmitted by respiratory droplets and can be prevented by covering the mouth and nose (Table 2). This was in agreement with studies done in Ethiopia and Pakistan^{13,16}; this study observed that there were numerous misconceived ideas about the causes of TB, transmission, and prevention (Table 2). Studies conducted in Pakistan, Croatia, and Ethiopia depicted similar finding^{12,13,16}; those misconceived ideas might have a potential to create ground for stigmatization of TB patients and decrease the TB case detection rate.

Moreover, in this study a majority of respondents were deficient or unaware of different symptoms of TB (Table 2). This finding was consistent with a study conducted by Mushtaq and others and Hoa and others.^{10,19}

In this study a majority of respondents defined TB as a curable disease with modern therapy, whereas only half of the respondents were aware of the free charge of TB diagnosis and treatment (Table 2). This was in agreement with a study conducted by Mushtaq and others in Pakistan.^{9,10}

This study revealed that the majority (58.3%) of respondents feared, stigmatized, and worried if they had TB. This finding was similar to other studies conducted in Iraq, Tanzania, and Norway.^{11,14,15} Furthermore, this finding indicated the need to strengthen health education activities such as information, education, and communication about TB and KAP seriousness, cause, the modes of transmission, the sequelae of treatment, interruption, and the curability of TB.

Several studies indicated that educational background,^{9,11-13,20} and residence^{10,11,13} of respondents was important determinants of TB knowledge. This study also found that a low level of knowledge score was significantly associated with illiterate and rural people (Table 1). Studies showed that a greater knowledge level was observed among males and older age group than females and younger age group.^{8,12,18,21} However, a sex and age group knowledge difference was not observed in this study. This might be a result of variation in study subjects and a small number of sample sizes in contrast to other studies.

Long and others²⁰ in China and Meaza and others⁷ in Ethiopia showed that low awareness, poor knowledge, and low financial capacity to pay for care and diagnoses were factors contributing to delayed health seeking⁷; this study also found that a majority of respondents delayed in seeking care because of cost and difficulties of transportation (Table 3). In this study, a delayed seeking behavior was also associated with a low knowledge score, experience self-treatment option, and delayed frequency of visits (Table 1). This is expected as the majority of study participants live in rural areas and access to transportation is a serious problem.

In this study a delayed health-seeking practice was not associated with age, literacy status, residence, and sex. This might be a result of culture, low financial capacity, health perception, stigma, and socio-psychological barriers (beliefs).^{11,12,14,15,22} As a result, correct knowledge and positive perception of the patient toward TB and its management is a prerequisite for them to seek early health care.

CONCLUSIONS AND RECOMMENDATIONS

Conclusions. The majority of respondents had several misconceptions in all aspects of the most infectious form of TB. About 45.3% (191) of respondents pursue a self-treatment

option as their choice for primary health care. Cost and difficulties in transportation were mentioned as the main reasons for people to delay in seeking TB care.

Recommendations. It would be better to establish an appropriate control measure such as establishing proper information, education, and a communication pathway that indicate the level of severity of the disease. In addition, creating proper awareness about its cause, transmission, prevention, and availability of public service are very essential.

Furthermore, the national TB control program should consider coordinating advocacy, communication, and social mobilization activities on the communities to improve KAP of patients, to reduce misconceptions, and prevent transmission of TB in the community.

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