

BRIEF COMMUNICATION**DISEASE-RELATED KNOWLEDGE AND PRACTICES OF TUBERCULOSIS PATIENTS**

Solomon Gebre-Selassie^{1*}, MD, MSc, Tewodros Eguale², MD, Girm Abebe², MD, Girmay Medhin³, MSc, Getahun Abate⁴, MD, PhD

ABSTRACT

BACKGROUND: *Tuberculosis (TB) is a major public health problem. World Health Organization (WHO) recommends the use of directly observed treatment, short course (DOTS) strategy for effective control of TB. Disease-related knowledge, beliefs and practices need to be recognized to tailor the DOTS strategy into the local norms. This study was performed with two objectives: i) to assess TB-related knowledge among TB patients in two rural hospitals in Ethiopia, ii) to assess the practices that contribute to delay in the initiation of anti-TB treatment.*

METHODS: *The study was conducted between June 2000 and May 2001. Two hundred twenty two known adult TB patients attending TB clinics in Jimma and Hossana hospitals were interviewed on their knowledge, attitude and practice related to TB using pre-tested structured questionnaire. Patients belonged to 14 ethnic groups.*

RESULTS: *Sixty percent (134/222) were female. The average family size of patients was 5.3. The number of illiterate female patients was greater than that of males ($p = 0.002$). Only 36% (80/222) of patients gave a correct response on the transmission of TB. Similarly, only 34% (76/222) knew about symptoms indicative of TB. Hundred and fifty (67.5%) patients sought medical help after experiencing TB indicative symptoms for more than one month. Age, sex, education, occupation, and religion did not affect TB-related knowledge. Thirty-seven (16.7%) patients used traditional medicine for at least one week before they came to a health institution. The diagnosis of TB had a negative social impact. Forty-eight (21.6%) patients were either divorced, expelled from their family, abandoned by friends, or lost job.*

CONCLUSION: *Health education targeting basic concepts on the transmission of TB and also targeting the need for early diagnosis is important in TB control. TB control programs may need to include traditional healers into the control strategy to refer patients with specific symptoms.*

KEY WORDS: Tuberculosis, Knowledge, Practice, Traditional healers, DOTs

¹Department of Microbiology and Parasitology, Jimma University, P.O. Box 378, Jimma, Ethiopia

²Hossana Hospital, P.O. Box 22, Hossana, Ethiopia

³Institute of Pathobiology, P.O. Box 1176, Addis Ababa, Ethiopia

⁴Armauer Hansen Research Institute, P.O. Box 1005, Addis Ababa, Ethiopia

*Corresponding author

INTRODUCTION

Tuberculosis (TB) is an age-old disease of mankind yet it is far from being controlled. One-third of the world's populations is infected with *Mycobacterium tuberculosis*, the causative agent of TB (1). TB kills more than 2 million people every year (1) and this makes it a leading cause of death from a single infectious cause. More than 80% of TB cases and deaths are from 22 high TB endemic countries (2).

BCG vaccine, which is the only available and widely used vaccine for TB protects only against severe forms of TB in children (3). Therefore, the only currently available means is to strengthen the treatment-based control measures. There are standard treatment regimens for the treatment of TB using five first-line drugs (4). It has been shown that anti-TB treatments when given under direct observation gives a cure rate as high as 95 % (2, 4) and the World Health Organization (WHO) recommends control programs to use directly observed treatment, short course (DOTs) [5]. However, in many places with DOTs, either the coverage is low or the rate of default from treatment is high (6).

Effective TB control requires early diagnosis, which is the basis of treating patients before they transmit the disease. Moreover, TB control is unique in that there is always a need to lay out mechanisms of assuring compliance with months of treatment period. Thus, for the DOTs strategy to be effective it has to be tailored into the existing local structure and norms (5). Today, more than ever, evaluation of communities' perception of TB is important because of the increasing spread of drug-resistant TB and the strong association of TB with the human immunodeficiency virus (HIV) infection. Drug-resistant TB emerges because of lack of compliance with anti-TB treatment. A

stigma associated with HIV infection may keep TB patients from seeking a timely medical care and may also interfere with treatment compliance.

In Ethiopia, co-infection with TB and HIV is common (7, 8). The National control program uses a DOTs strategy since 1995 (9,10). The coverage with DOTs, and success rate are increasing (10) but there is still a dire need to further improve the DOTs coverage in the best way possible and decrease the default rate.

This study was performed with the following objectives: i) to assess the TB related knowledge among TB patients in two rural hospitals in Ethiopia (Hossana Hospital from Southern National and Nationalities Regional State and Jimma Hospital from Oromya Regional state of Ethiopia), ii) to assess the attitudes and practices of TB patients that contribute to delay in initiation of anti-TB treatment.

PATIENTS AND METHODS

Study sites and period: This cross sectional study was conducted at two sites, Jimma and Hossana Hospitals. Jimma Hospital is located 335 kms Southwest of Addis Ababa, the capital city of Ethiopia. Hossana Hospital is located 230 kms South of Addis Ababa. The two hospitals were selected for a unique population mix with different culture in their catchments area. All registered TB patients with follow-ups in the respective clinics of the hospitals were included in the study. The study was conducted between June 2000 and May 2001.

Patients and Data collection: Two hundred twenty two adult patients with ages greater than 17 years diagnosed as cases of pulmonary tuberculosis in the two hospitals. Permissions were secured from the respective directors of the hospitals and verbal consent was obtained from each

patient. Information from patients were collected by the investigators and data were retrieved in computer. A pre-tested, structured questionnaire was used to collect relevant information. The questionnaire included questions that show knowledge of patients and practices related to tuberculosis.

Statistical analysis: Knowledge on the transmission of TB, knowledge on treatment and curability, and practices to protect others were considered dependent variables. Responses implying transmission from person to person and from cattle to person were taken as correct knowledge on the transmission. The response that TB is curable and/or the treatment is at least 6 months duration were taken as correct responses on treatment and curability. Those that exercised (practiced) acceptable ways of protecting others (i.e., protected cough and sneezing; use of well ventilated rooms and rooms with enough day light) were considered as having a positive practice. Proportions were compared using chi-square and ODDS ratio was calculated using logistic regression.

RESULTS

General characteristics of patients:

One hundred and thirty four patients (60.0%) were females. Ninety-nine patients (45.0 %) were married, 8/222 (3.6 %) divorced, and 5/222 (2.3 %) widowed. The average family size of patients was 5.3 with a standard deviation of 2.7. The patients belonged to 14 ethnic groups. One hundred sixty eight (75.7 %) of patients were from three ethnic groups (i.e., Hadiya, Oromo, and Amhara). One hundred forty-four (64.9 %) were Christians and 77/222 (34.7 %) were Muslims. A hundred seventy-one (80.0 %) were literate and could at least read and write. The number of female patients who were illiterate was higher than

that of male patients (32.0 % Vs 13.0 %; $p=0.002$). The majority (30.0 %) of patients were farmers (data not shown).

Tuberculosis-related knowledge and attitude:

Eighty (36.0 %) patients gave a correct response on the transmission of TB. They were aware that the disease could be transmitted through aerosol from a sick person or from infected cattle. Bad smell and cold air were the most common responses identified as incorrect. There was no correlation between sex, age, occupation and religion on the knowledge of patients about the transmission of TB (Table 1). There was a marginal difference between those who can at least read/write and those who were illiterate in the knowledge on transmission of TB ($p = 0.04$).

Only 76/222 (34.0 %) patients know about the symptoms indicative of TB. Different variables such as sex, education, age, occupation and religion did not have effect on the symptom-related knowledge. A hundred and fifty (67.5 %) patients sought medical help at least a month after the onset of illness, 104/222 (47 %) after two months. Nevertheless, 201/222 (90.5 %) patients knew that the disease is curable and 163/222 (73.4 %) even knew the total duration of treatment. The knowledge on the curability of TB and duration of treatment was not affected by sex, educational status, age, occupation or religion ($p > 0.05$).

Disease-related practices:

It was evident that the care that patients actually take not to spread disease is not related to the knowledge on transmission. Of 222 patients, 172 (77.5 %) patients practice an acceptable care when coughing or spitting and they allow adequate ventilation and sun light in their house. Table 1 shows that none of the independent variables (sex, education, age, occupation

and religion) affected the practices to limit the spread of disease ($p > 0.05$). Knowledge increases as age increases but the practice remains the same. Both TB-related knowledge and practice did not differ between males and females.

Thirty- seven (16.7 %) patients used traditional medicine for their current problem before they came for medical help. All of them used either specific local plants or mixed herbal soup. A majority (51.4 %) of those who used traditional medicine used it for one to two weeks. Only 11/37 (29.7 %) of those who used traditional

medicine felt that they improved after taking the herbal drugs.

Social impact of Tuberculosis diagnosis:

The diagnosis of TB had a negative social impact on 48/222 (21.6 %) patients. These patients were either divorced, expelled from their family, abandoned by friends, or lost job. The negative social impact of TB did not differ between males and females (27.0% in males Vs 21.0% in females, $p = 0.5$).

Table 1. The effect of socio-demographic variables on knowledge and acceptable practices to limit the spread of TB.

Socio-demographic variables	N	Acceptable practice not to transmit disease, N (%)	ODDs ratio, P value	Knowledge on how disease is transmitted, N (%)	ODDs ratio, P value
Sex					
Male	134	103 (77.0)	1	50 (37.0)	1
Female	88	69 (78.0)	1.09, 0.79	30 (34.0)	0.87, 0.625
Education					
Literate	171	136 (80.0)	1	57 (33.0)	1
Illiterate	44	32 (73.0)	0.91, 0.33	22 (50.0)	2, 0.043
Age (years)					
< 25	99	78 (79.0)	1	35 (35.0)	1
25-45	104	80 (77.0)	0.90, 0.75	37 (36.0)	1.01, 0.973
> 45	17	13 (76.0)	0.87, 0.83	8 (47.0)	1.63, 0.359
Occupation					
Students	34	26 (76.0)	1	9 (26.0)	1
Farmers	100	67 (67.0)	0.62, .303	38 (38.0)	1.70, 0.226
Gov. employee	21	18 (86.0)	1.85, 0.41	10 (48.0)	2.53, 0.113
Others*	65	59 (91.0)	3.03, 0.06	23 (35.0)	1.52, 0.69
Religion					
Christians	144	113 (78.0)	1	48 (33.0)	1
Muslims	77	58 (75.0)	0.84, 0.59	32 (42.0)	1.42, 0.226

*Includes commercial sex workers and merchants

DISCUSSION

Passive case finding and DOTS are important components of a TB control programme. These components are affected by people's perceptions and beliefs. This

study demonstrated the effect of different social factors on the knowledge, and practice related to TB. An average family size of 5.3 in our study group indicates the magnitude that any factor which delays the diagnosis will have a direct impact on the

transmission of TB to these house hold contacts.

Only 36.0 % of our patients knew how TB is transmitted. Bad smell, and exposure to cold were the most common incorrect responses obtained in our study. Traditional beliefs may lead to a delay in TB diagnosis (11). It has been previously reported that empirically based causal factors unrelated to tubercle bacilli were acceptable etiological model postulates in 217 samples from a rural Southern Ethiopia (12). The fact that more than 50.0% of the population are illiterates (2) might have contributed to the unacceptable dogmas of contagion in Ethiopia. This study showed that females were more likely to be illiterate ($p = 0.002$) although sex per se did not affect the knowledge about TB.

In a study by Wandwalo & Morkvel (13), 88.0% of patients knew at least one symptom of TB. In our study, knowledge about TB symptoms was addressed in a slightly different way. Patients were asked what symptoms they have and if the symptoms were indicative of TB. Only 34.0 % knew that their symptoms were indicative of TB. This could be one reason why a majority of patients (67.5 %) sought medical help at least a month after the onset of illness. Moreover, majority of our patients (90.5 %) knew that TB is curable. This is reassuring because TB, in Ethiopia, has a local name (*Samba Nekersa*) synonymous with cancer implying that it is incurable. Equally high proportion of patients with knowledge on the curability of the disease was reported from Tanzania (13). A good proportion (73.0%) of our patients also knew the duration of anti-TB treatment. A similar study (14) showed that 50.0% of patients knew the duration of treatment.

The use of traditional medicine is one possible factor that could contribute to the delay in the diagnosis of TB. In a study from Malawi 37.0 % of TB patients used

traditional medicine before they came for medical help and almost all the traditional healers interviewed claimed that they could cure TB (15). In our study, 16.7 % of patients used traditional medicine but only 30.0% of those who used it felt that they improved initially.

Tuberculosis, though transmitted by a tubercle bacilli, is a social disease. Tuberculosis patients are usually rejected by the immediate family and community because of fear of transmission (16). Among our patients, 21.6 % reported a negative social impact associated with their disease. There was no difference in the negative social impact between males and females. This is in contrast to what is known for leprosy where the social stigmas are more commonly seen on females (17).

In conclusion, this study demonstrated that although a majority of patients exercise care to limit the spread of TB, only few knew how TB is transmitted. Poor knowledge on the symptoms indicative of TB and visiting traditional healers could be reasons for the delay to seek proper medical advice. Moreover, there are social stigmas associated with the diagnosis of TB. Therefore, health education targeting basic concepts on transmission and practices, and on the need for early diagnosis could have paramount importance in TB control in the multiethnic communities included in this study. Control programmes may need to include traditional healers into the control strategy to refer patients with specific symptoms.

ACKNOWLEDGEMENTS

We are grateful to staffs of the respective health institutions who helped us in the data collection.

REFERENCES

1. Dye C, Scheele S, Dolin P, Pathania V, Raviglione MC. Global burden of tuberculosis: estimated incidence, prevalence and mortality by country in 1997. 1999; *JAMA* 282: 677-686.
2. World Health Organization. The stop TB Initiative. Country Profiles. WHO/CDS/ STB / 2000.3. 2000.
3. Fine PE. BCG: the challenge continues. *Scand. J. Infect. Dis.* 2001; 33: 243-245.
4. World Health Organization. Guidelines for tuberculosis treatment in adults and children in national tuberculosis programmes. WHO/TB/ 161. Geneva, 1991.
5. World Health Organization. Tuberculosis. WHO/TB/98.253, 1998.
6. World Health Organization Report. Global Tuberculosis Control. WHO/CDS/ TB/2001.287, 2001.
7. Ministry of Health. AIDS in Ethiopia. Background, projections, impacts, interventions. MOH, Ethiopia, 1998.
8. Gellete A, Kebede D, Berhane Y. Tuberculosis and HIV infection in southern Ethiopia. *Ethiop. J. Health Dev.* 1997; 11: 51-59.
9. Ministry of Health. Manual: National Tuberculosis and Leprosy Control Program, Ethiopia, Addis Ababa, 1997.
10. National TB-Leprosy Control Team. Concise introduction and performance in July 1999 - June 2000. Background document for the TB research workshop 24 -26 April 2001, Addis Ababa, 2001.
11. Long NH, Johansson E, Diwan VK, Winkvist A. Different tuberculosis in men and women: beliefs from focus group in Vietnam. *Soc. Sci. Med.* 1999; 49: 815-822.
12. Vecchiato NL. Socio-cultural aspects of tuberculosis control in Ethiopia. *Med. Anthropol. Q.* 1997; 11: 183-201.
13. Wandwalo ER, Morkve O. Knowledge of disease and treatment among tuberculosis patients in Mwanza, Tanzania. *Int. J. Tuberc. Lung Dis.* 2000; 4: 1041-1046.
14. Bhat S, Sigal N, Aggarwal CS, Jain RC. Knowledge, attitudes and practices of newly diagnosed sputum positive cases of pulmonary tuberculosis. *J. Commun. Dis.* 1999; 31: 247-252.
15. Brouwer JA, Boeree MJ, Kager P, Varkevisser CM, Harries AD. Traditional healers and pulmonary tuberculosis in Malawi. *Int. J. Tuberc. Lung Dis.* 1998; 2: 231-234.
16. Westaway MS, Wolmarans L. Cognitive and affective reactions of black urban South Africans towards tuberculosis. *Tuberc. Lung Dis.* 1994; 75: 447-453.
17. Ulrich M, Zulueta A.M, Caceres-Dittmar G, Sampson C, Pinaridi ME, Rada, EM, *et al.* Leprosy in women: characteristics and repercussions. *Soc. Sci. Med.* 1993; 37: 445-456.