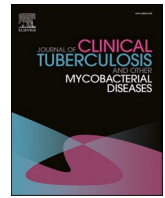




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Assessment of knowledge, attitude, and practices of tuberculosis patients towards DOTs regimen in Jimma health center, Jimma zone, southwest Ethiopia

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ABSTRACT

Objectives: The purpose of conducting this study was to assess the knowledge, attitude, and practices of tuberculosis patients towards dots regimen in Jimma health Center. In addition, assessing the attitude of tuberculosis towards factors, modern, and traditional medicine was another aim of this study.

Methods: A cross-sectional study was conducted based on patient card and registration book at TB follow-up clinic at Jimma health center, southwest Ethiopia. The study population comprises 150 participants, who were selected from the patient registration book by interviewing and questionnaires. Additionally, cross-tabulation and OR with 95% confidence interval were computed.

Results: In this study, only 103 (68.7%) and 47 (31.3%) patients scored higher and lower knowledge status respectively. Of the total enrolled governmental employee, 25 (16.7 %) patients had an overall high knowledge status. On the other hand, 101 (67.3%) and 49 (32.7 %) patients scored high and low overall attitude respectively.

Conclusions: In this study, the knowledge and attitude of patients about TB and its treatment were found within a low level of perception. Therefore, implementation of health education and awareness creation through different mobilization mechanisms are required to avoid the problem for patients.

1. Introduction

Tuberculosis (TB) is a chronic infectious disease caused by *Mycobacterium tuberculosis*, an acid-fast rod-shaped bacillus. The incidence of newly infected TB cases is expected to be reached around one billion from 2002 to 2020 [1]. Annually, 8.4 million people develop active TB and 2.3 million died from the disease. The burden of the disease is highly elevated, particularly among TB/HIV co-infected young women [2]. Immune-competency and a proper nutritional diet are required for prevention and treatment of TB [3]. Studies showed that the prevalence of pulmonary TB cases was higher within the age group of 15–24 and 25–34 years old [4].

According to the World Health Organization (WHO) in 2015, the incidence and death of TB was estimated to be 10.4 and 1.4 million populations respectively [5]. In addition to HIV/AIDS and malaria, WHO has declared TB as a global public health emergency to resist the elevation of TB cases, thus the organization developed a new strategic

framework for effective TB control and management [6]. Directly Observed Treatment (DOT) is a WHO-recommended TB control strategy plan. According to WHO, over 30 million patients are treated using the guidelines strategy of DOTs programme. Regarding DOTs programme, the default and curative rates of TB are expected to be <10% and >80% respectively [7]. It is significant for successful TB control or health workers to treat within this framework in the national TB program [8].

Drugs utilized for the treatment in the DOTS system are not novel drugs. DOTs requires less time in the hospital for supervised ambulatory treatment [8]. At the beginning of programme (1993) at a global level, no >2% of the active TB cases were treated by this method. According to World Health Forum reported in 1997, the estimated figure is nearly 12% which reflects a remarkable rate of expansion. Millions of TB patients still require the accessibility of the system [9]. Therefore, the purpose of conducting this study was to assess the knowledge, attitude, and practices of TB patients towards DOTS regimens.

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2. Methods and materials

2.1. Study design

A cross-sectional study was conducted based on the patient card and registration at the Jimma health center TB Follow-up Clinic. It was conducted from June 20 to September 19, 2016.

2.2. Study population

The study population was all TB patients who were identified and registered on DOTS regimen. All TB patients having known treatment outcomes at TB follow-up clinics were included in the study population during the study period.

2.3. Eligibility criteria for patients

All registered TB patients who started treatment and volunteered were participated in the survey. On the other hand, the exclusion of study participants was done carefully by professionals. Seriously ill patients who didn't respond well were excluded in this study.

2.4. Data collection procedure and process

Different techniques were utilized to gather relevant information to assess the knowledge of DOTs. Socio-demographic characteristics, treatment outcomes, and category of the patient were assessed using well-structured questionnaires. All TB patients registered at the TB follow-up clinic were identified from the registration book.

2.5. Data processing and analysis

The data were processed and analyzed manually by using tally sheet. In addition, cross-tabulation and OR with 95% CI were computed to assess the association between the dependent and independent variables.

3. Results

3.1. Socio-demographic characteristics

In this study, a 100% response rate was detected from a total of 150 respondents. Of the total study participants, 70 (46.7%) patients were categorized in the age group of 15–45. Concerning religion and ethnicity, 49 (32.7%) and 72 (48%) study participants were Muslim and Oromo respectively. Out of 150 study participants, 89 (59.3%) were married and 142 (94.7%) patients were able to read and write. In this study, 37 (24.7%) had housewives occupation category. Regarding monthly income, 6 (9%) and 10 (6.6%) study participants had <1500 birr, and >1500 monthly income respectively.

3.2. Distribution of TB patients on DOTS regimen by age and sex

In this study, a total of 150 TB patients with equal male to female proportion were involved on DOTS regimen. Of the total enrolled study participants, 70 (46.7%) patients were between 15 and 49. Thus, 54 (36%) patients were above 50 years old and 26 (17.3%) study participants were <14 years old.

In this study, participants were evaluated as positive and negative for TB using a diagnostic classification method. It was revealed that the highest positivity was found within the age group of 15–49. The study showed the presence of a relatively equal frequency of positivity among patients having <14 and >50 years old. The result of the study showed the incidence of an extra-pulmonary TB was higher in study participants age <14 and >50 years old.

Out of the total of 76 study participants, pulmonary TB (PTB)

positivity was separated by sex. The results showed that 45 (30%) and 31(20.7%) male and female patients were positive for tuberculosis respectively. On the other hand, 15 (10%) and 25 (16.7%) male and female patients had negative results respectively. Additionally, 19 (12.7%) and 15 (10%) male and female participants had extra-pulmonary (EP) tuberculosis respectively.

Concerning evaluation of the treatment outcome, the higher cure rate was observed within age group 15–49, whereas the treatment completion rate was elevated in >50 years old. In addition, the death rate was increased only in the old age group category.

3.3. Sex of TB patients and treatment outcome.

In this study, the higher cure rate was observed between age group 15–49. The treatment completion rate was elevated in the age group >50 and the death rate were increased among the old age group of males. The sex of TB patients on the DOTS regimen in relation to treatment outcome was evaluated as shown below in [Table 2](#).

3.4. Comparison of treatment outcome with types of TB diagnosis

Of the total 76 PTB positive patients (p/pos), 43 (28.7%) and 2 (1.3%) study participants were cured and died respectively. From the total 40 PTB negative patients (p/Neg), 22 (14.7%) patients had cured the treatment outcome. Out of the total 34 EP cases, 27 (18%) patients were completed the treatment course successfully. Types of the TB diagnosis with respect to treatment outcome evaluated as shown in [Table 3](#) below.

3.5. Evaluation of knowledge status of TB patients in Jimma health center

The majority of patients responded that prevention of tuberculosis was possible using a different mechanism. They explained some prevention mechanisms, including avoidance of coughing (95.3%), and sneezing (94.7%) in front of other people, and kissing (80%). Of total participants, 135 (90%) patients mentioned that cough more than two weeks, loss of weight, night sweating, loss of appetite, and weakness as the sign and symptoms of all forms of tuberculosis. The result of this study showed that 122 (81.3%) patients reported that the transmission of tuberculosis is through bacilli. Of total study participants, 143 (95.3%), 138 (92%), and 135 (90%) patients explained about the drugs, adverse effect of drugs, follow-up and default treatment outcome respectively. In this study, 129 (86%), 143 (95.3%), and 115 (76.7%) patients considered tuberculosis as a curable disease, life treating condition, and adverse effect of drug respectively. Regarding duration of the treatment, 148 (98.7%) and 120 (80) patients responded that duration of treatment requires 6-months and >6 months respectively.

3.6. Factors associated with patient's overall knowledge about tuberculosis and its treatment

During the assessment of this study, patient's overall knowledge status was evaluated using well-defined and structured questions. Therefore, the overall knowledge of patients was categorized into higher status. In this regard, 103 (68.7%) and 47 (31.3%) patients scored above the mean and below the mean value respectively. A statically significant association was found between overall knowledge status and occupation types.

3.7. Factors associated with patient's overall attitudes

On the other hand, the patient's overall attitudes were evaluated using summarized and well-defined questions. In this study, the mean attitudes score estimation was 3.00. Therefore, overall knowledge status of participants was categorized into high attitudes status. Hence, 101 (67.3%) and 49 (32.7%) patients scored above the mean and below the

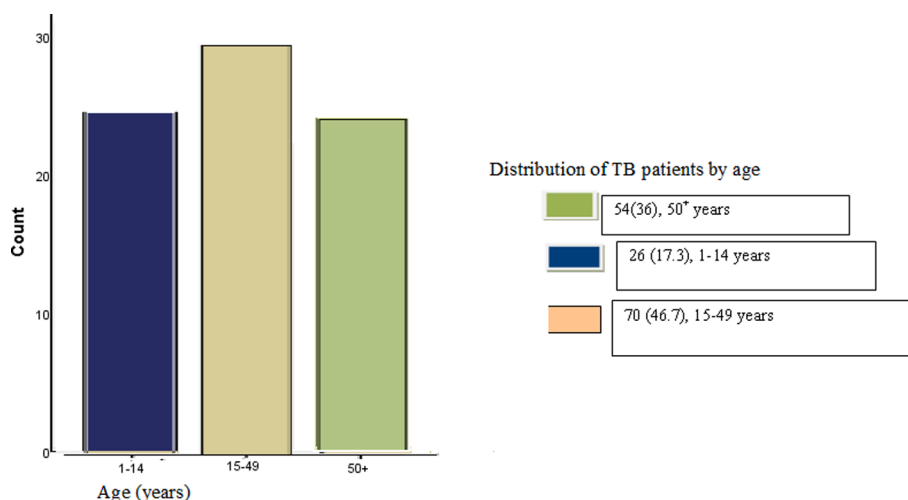


Fig. 1. Age group of TB patients concerning types of diagnosis.

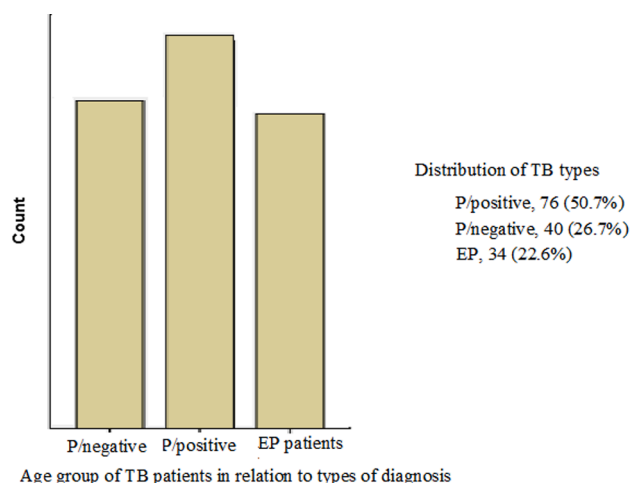


Fig. 2. Distribution of TB patients on DOTS regimen by sex and diagnosis types.

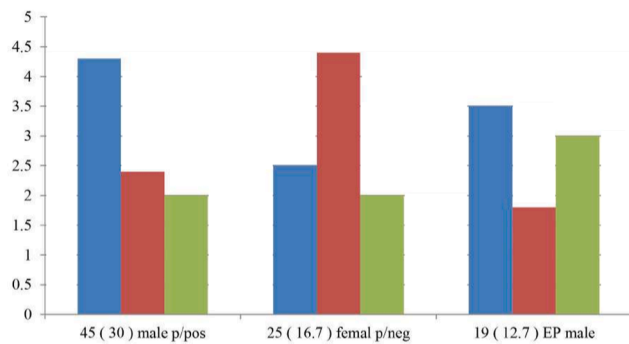


Figure 3: Distribution of patients on DOTS regimen by sex and types of diagnosis.

Fig. 3. Age group of TB patients regarding treatment outcomes.

mean scores respectively.

4. Discussion

Of the total enrolled 70 tuberculosis patients, the majority of them were male. Additionally, 46.7% of them were within the age category of 15–49 years old. On the other hand, 26% of them were <14 years old

Table 1

Evaluation of age category according to treatment outcomes.

Age	Treatment outcomes			
	Cured	Completed	Death	Total
0–14	9(6)	15(10)	2(1.3)	26 (17.3)
15–49	41 (27.3)	26(17.3)	3(2)	70 (46.7)
50+	17 (11.3)	32(21.3)	5(3.3)	54 (36)
Total	67 (44.7)	73(48.7)	10(6.7)	150 (100)

(Simple descriptive analysis was done to evaluate the outcome of treatment within different age interval).

Table 2

Evaluation of treatment outcomes in relation to sex.

Sex	Treatment outcomes			
	Cured	Completed	Death	Total
Male	41(27)	31(20.7)	7(4.7)	79(52.7)
Female	26(17)	42(28)	3(2)	71(47.3)
Total	67(44)	73(48.7)	10(6.7)	150(100)

(Simple descriptive analysis was done to evaluate the outcome of treatment within different age interval).

(Fig. 1). The finding of previous studies revealed the presence of high rate of tuberculosis cases among men than women. In China, the incidence of TB among men is 27% more than women within the age category of 25–44 years old (10). It may be associated with HIV/AIDS-related exposure risk factors.

In this study, the highest positive TB cases were found within the age group of 15–49. It was agreed with another study [11]. The result of our study showed that the incidence of EPT cases were higher among <14 and >50 years old (Fig. 2). Of the total of 76 participants, the majority of PTB positive patients were males (Fig. 3). The higher PTB cases detected among economically active reproductive age group. They are a potential risk group for HIV/AIDS having higher association of co-infection with TB. The study conducted in China (2017) showed that the higher prevalent of TB patients were detected among co-infected with HIV [12]. The findings of different studies notified that the newly recommended strategy, DOTs increases the cure rate of patients in Mozambique and Tanzania [13]. In our study, 44.7% and 48.7% of study participants were cured and completed their treatment course respectively (Table 1). The major challenge for cure and control strategy is failure of DOTs due to inadequate supervision of therapy and follow-up [14]. Treatment completion rate was higher in age group >50 and death

Table 3

Type of diagnosis TB patient on DOTS regimen in relation to the treatment outcome.

Types of diagnosis	Treatment outcomes			
	Cured	Completed	Death	Total
p/pos	43 (28.7)	31(20.7)	2(1.3)	76(50.7)
p/Neg	22 (14.7)	15(10)	3(2)	40(26.7)
Ep	2(1.3)	27(18)	5(3.3)	34(22.6)
Total	67 (44.7)	73(48.7)	10(6.6)	150(100)

(Simple descriptive analysis was done. p/pos; Smear positive Pulmonary Tuberculosis, p/Neg; Smear Negative pulmonary Tuberculosis, Ep; Extra Pulmonary).

Table 4

Factors associated with patients' overall knowledge about Tuberculosis and its treatment in Jimma Health Center August 2016.

Characteristics	Overall knowledge status evaluation	p-value	
Sex			
Male	55 (36.7)	24 (16)	
Female	48 (32)	23 (15.3)	
Age (years)			
1-14	20 (13.3)	6 (4)	0.1639
15-49	51 (34)	19 (12.7)	
50+	32 (21.3)	22 (14.7)	
Education			
Informal	98 (65.3)	52 (34.7)	0.5390
Formal	103(68.7)	47 (31.3)	
Occupation			
Housewives	20 (13.3)	17 (11.3)	0.016*
Merchant	20 (13.3)	9 (6)	
Government	25 (16.7)	2 (1.3)	
Daily labor	5 (3.3)	2 (1.3)	

(The independent *t*-test was done to compare Overall knowledge status evaluation among various socio-demographic characteristics. *Statistically significant at *P*-value < 0.05).

rate was higher among old age group of males (Table 2). Of the total PTB patients (p/Neg), 14.7% of them were cured. Of the total EP cases, 18% of them were completed the treatment course successfully (Table 3).

The result of this study showed that the overall knowledge of patients about TB was unsatisfactory, but they have better understand than previous study [15] and lower level of understanding than in Iraq [16]. In this study, 81.3% of patients mentioned bacteria/germs as the cause of tuberculosis. The study conducted in Addis Ababa showed that 33.7% of patients explained it as a factor [17]. In Nigeria, 50% of patients had better knowledge status on the etiological agent [18]. It may be due to its higher mobilization and focuses for health education. In this study, majority of patients had good knowledge about the transmission (Table 4). It was in line with a previous work (17). Of total participants, 30.3% of them have an unfavorable attitude about tuberculosis and its treatment (Table 4). Similarly, the study done in Iraq also revealed 54.8% of patients had unfavorable attitudes and practice. In this regard, the negative attitude of patients towards health care seeking and treatment was identified as significant attributable factor for defaulting [19]. Of the total participants, the majority of them agreed that DOTs can cure TB, and disagreed traditional medicine. Similarly, the study conducted in the Amhara regional state showed that 95% and 36.9% of patients agreed on both DOTs and traditional medicines respectively [15]. The result of our study showed that 12% of patients discontinued DOTs (Table 4). In line to this study, the previous study done in china also revealed that 20% of the TB patients discontinued their treatment [20]. Additionally, it was agreed with previous study [15].

5. Conclusions

The result of study identified there was a knowledge gap in areas of TB causative factor, transmission, and symptoms other than cough. Generally, the overall result of the study indicated there was a low level of knowledge and attitude towards DOTs. On the other hand, there was an association between overall knowledge and occupation, and overall attitude with educational status. Adequate knowledge about the route of transmission of the diseases is a critical factor for TB prevention and control programs. Therefore, the finding of our study is also suggestive that further interventions are mandatory to change the attitude and knowledge of patients.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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Further reading

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