

Knowledge, Attitude and Practice of Tuberculosis and its Transmission among High School Students in Yirgacheffe Town, Gedeo Zone, Southern Ethiopia

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Abstract

Background: Tuberculosis continues to be a major public health problem throughout the world, including Ethiopia. The aim of this study was to assess secondary students knowledge, attitude, and practice tuberculosis and its transmission.

Methods: Institutional based cross sectional study was conducted from April 17-18/2015 in Yirgacheffe secondary school students. A total of 264 study participants were included using simple random sampling technique. Data was collected using self-administered questionnaires and analyzed using SPSS software version 20.0.

Result: Two hundred forty five (99.6%) of the respondents said that they ever heard about tuberculosis. It was indicated that 59.8% (95% CI: 53.9% to 65.7%) of participants had good knowledge of TB and its transmission, only 32.9% (95% CI: 27.0% to 38.6%) have good attitude and 68.7% (95% CI: 63.1% to 74.3%) have good practice towards the prevention of TB transmission. Being grade 12 had significant association with knowledge of tuberculosis and its transmission.

Conclusion: It was identified that there was a gap in knowledge and attitude on tuberculosis and its transmission among the study participants. Emphasis needs to be given on increasing the knowledge, attitude and practice of students about TB and its transmission.

Keywords Knowledge; Attitude and practice; Secondary high school; Tuberculosis; Yirgacheffe; Ethiopia

Background

Tuberculosis (TB) is a far-flung infectious disease caused by bacteria of Mycobacterium tuberculosis complex, usually Mycobacterium Tuberculosis. Tuberculosis primarily attacks the Lungs, but can also affect other parts of the body in up to one-third of cases. It is transmitted through air from infectious person to others while coughing, sneezing, singing or talking. A single cough can bring out up to 4,000 droplets. Most infections do not have symptoms, known as latent tuberculosis. It is estimated that up to 10% of infected persons will gradually develop active TB in their lifetime and fatal up to 50% of patients if left untreated [1-3].

Tuberculosis continues to be a major public health problem across the world, including Ethiopia. It causes ill-health among millions of people each year and ranks as the second leading cause of death from an infectious disease globally next to the human immunodeficiency virus (HIV). According to World Health Organization (WHO) in 2013, there were an estimated 9.0 million incident cases of TB (ranging from 8.6 million–9.4 million) and 11.0 million prevalent cases (range, 10 million–13 million) of global populations. Most of the figured number of cases in 2013 occurred in Asia (56%) and the African Region (29%). Tuberculosis is also one of the major diseases that cause tremendous economic crisis in low income countries [4-7].

Ethiopia placed seventh among the world's 22 high burden countries, which have an incidence and prevalence rate of 210 (160-240) and 200 (180-260) cases per 100,000 populations in year 2014, respectively. In Ethiopia the case detection was 62 (51-74%) for all forms of TB. Among all new TB cases, 2.2 per 100,000 populations were smearing positive [4,8,9].

The main factors associated with TB acquiring and development of disease and its epidemiological burden includes poverty, infection with HIV, poor nutritional status, smoking, poor access to health facilities, lack of financial source, lack of awareness and knowledge about the cause, mode of transmission, and symptoms TB, demographic characteristics, lack health education, socio-economic status and traditional beliefs. These are thought to have an essential impact on the health seeking behavior of patients, delay in diagnosis, treatment compliance and treatment success rate [3,10,11]. The chance of contact with a person who has an infectious form of TB, the intimacy and length of that contact, the degree of infectiousness of the case, and the divided environment in which the contact happens are all important determinants of the probability of transmission [2,12,13].

To reverse the impact of TB situation, TB control strategies including decentralizing and expansion of TB diagnosis and treatment services to lowest levels like health posts, private clinics, expanding health extension program (HEP) and participation of communities through health extension workers (HEWs) have been the center of Federal Ministry of Health [14].

A study in the Southern part of Ethiopia pointed out that deployment of the HEWs has ameliorated TB case detection rate (CDR), treatment success rate (TSR), community's awareness in TB suspect recognition/contact tracing mechanism and screening of TB patients for HIV infection [15].

Assessment of knowledge, attitude, and practice (KAP) of community toward TB, is very essential to collect information for planning public health programs, problem cognition and planning intervention based on the gaps. Even if this type of research is very essential to give high beneficiary to the community a few studies are done among students. Therefore, the objective of this study is to assess secondary school students' knowledge, attitude, and health-seeking practice and associated factors toward tuberculosis and its transmission.

Materials and Methods

Institutional based Cross sectional descriptive study design was conducted to assess KAP towards TB and its transmission among high school students found in Yirgacheffe town, Southern Ethiopia, Ethiopia. The study was conducted from April 17-18/2015 in Yirgacheffe town.

Yirgacheffe is the capital town of Yirgacheffe woreda, Gedeo Zone, Southern Nations, Nationalities, and Peoples' Region, Ethiopia. The town is located at a distance of 417 km from Addis Ababa a capital city of Ethiopia and 145 km from Hawassa, the capital city of Southern Nations, Nationalities, and Peoples Region, Ethiopia. The town has one secondary (high) school providing educational service for grade 9 to 12.

The source population was all secondary school students in Yirgachaffe town and the study population were all students who were selected randomly.

The sample size was determined using single population proportion formula by taking the proportion 77.1% [16], 95% confidence interval and 5% margin of error with 10% non-response rate and the final sample size calculated as 240. The study variables were the dependent variable (knowledge, Attitude and Practice) and the independent variables: socio demographic (Age, Sex, Religion, Ethnicity, Marital status) and socio economic characteristics (Residence, Educational status, Family income, Housing condition, family size).

A pretested self-administered structured questionnaire was used for data collection. The questionnaire was prepared based on the literature review and using WHO guidelines. A total of five trained data collection facilitators were participated. One day training was given to the data collection facilitators. The analysis was done using SPSS version 20.0.

Data was edited and cleaned before data analysis. Frequency, percentage and descriptive summaries were used to describe the study variables. Logistic regression was carried out to identify associated factors. Variables with p-value ≤ 0.05 in the bivariate analysis were transferred into multivariate logistic regression analysis to control the effect of confounders. Adjusted odds ratios with their 95% confidence intervals and p-value of less than 0.05 were considered to have significant association between the outcome and the explanatory variables.

In this study knowledge was measured based on respondent's ability to respond to 19 questions about TB including the cause, infectiousness, seriousness, transmission, prevention, sign &

symptoms, curability, free TB diagnosis/treatment policy, consequences of stopping treatment, how TB is cured, risk associated with TB transmission and disease). For each question, a score of one was given to correct response and score of zero was given to the incorrect response. Attitude and practices were measured by 4 and 7 questions, respectively. The reliability of the questionnaire for Knowledge, attitude and Practice was checked using Cronbach's alpha. Ethical clearance was obtained from Hawassa University, College of Medicine and Health Science Institutional Review Board. Supportive letter was taken to Yirgachaffe town educational office, health office. Informed verbal consent was obtained from the study participants.

Results

Socio-demographic characteristics

A total of 246 students with a response rate of 93.2% were involved in the study. The mean age of the participants was 17.22 (+1.67 SD years). Of the study subjects, 121 (63.7%) were urban by residence (Table 1).

Characteristic		Frequency (n)	Percentage (%)
Sex	Male	164	66.7
	Female	82	33.3
Age	<16	31	12.6
	16-18	181	73.6
	>18	34	13.8
Ethnicity	Gedeo	141	57.3
	Amhara	34	13.8
	Oromo	31	12.6
	Gurage	29	11.8
Religion	Orthodox	126	51.2
	Protestant	91	37.0
	Catholic	14	5.7
	Muslim	13	5.3
Educational level	Grade 9	97	39.4
	Grade 10	85	34.6
	Grade 11	33	13.4
	Grade 12	31	12.6
Family income*	<600	59	24.0
	600-2000	64	26.0
	>2000	112	45.5

*Ethiopian birr, per month

Table 1: Socio-demographic characteristic of the respondents: Yirgachaffe town, Southern Ethiopia Ethiopia, June, 2015.

Knowledge related characteristic of respondents

Almost all, (99.6%) of the study participants heard about Tuberculosis. One hundred seventy three (70.3%) got information from television, 152 (61.8%) from radio, 94 (38.2%) from teachers, 190 (77.2%) from health workers and 62 (25.2%) family members (Table 2).

Variables	Frequency	Percentage
Source of information*		
Printed materials	81	32.9
Television	173	70.3
Radio	152	61.8
Health workers	190	77.2
Family	62	25.2
Teachers	94	38.2

*The respondent can select more than one option

Table 2: Sources of information about Tuberculosis: Yirgacheffe, Southern Ethiopia, Ethiopia, June 2015.

Among the study participants 147 (59.8%, 95% CI: 53.9% to 65.71%) had good level of knowledge about TB and its transmission (Table 3). Increased proportion of TB and its transmission knowledge was observed to be higher among grade 12 students followed by grade 11 (83.87% and 72.73%), respectively.

Almost four among five 201 (81.7%, 95% CI: 77.04% to 86.36%) responded that TB is a disease caused by bacteria. Those who were grade 12 (AOR=5.035, 95%, 1.120 to 22.641) highly likely to have good knowledge than grade 9 (Table 3).

In this study 32.9% (95% CI: 27.0% to 38.6%) of participants said that TB is caused by cold air ("birid"). One hundred eighty nine (76.8%, 95% CI: 71.7% to 81.9%) respondents agreed anybody was at risk of acquiring the disease, but the other agreed only poor people (4.1%), only people living with HIV/AIDS (11.0%) and only alcoholics (8.1%) could acquire the disease

Two hundred twenty three (90.7%, 95% CI: 87.2% to 94.2%) respondents mentioned that TB is a communicable disease. Four among five, 198 (80.6%), 95% CI: 75.9% to 85.3%) of respondents responded that TB is very serious disease, 32 (13.0%). The most frequently reported symptoms were cough 204 (82.9%), shortness of breath 130 (52.2%), weight loss 115 (50%), fever 114 (46.3%), fatigue/tiredness 98 (39.8%), and chest pain 98 (39.8%).

Two hundred fourteen (87.0%, 95% CI: 82.9% to 91.1%) respondents gave response that TB can be transmitted through air when a person coughs, sneezes and speaks. There was no any statistically significant difference noted between levels of education, sex, age, family income and residence. Almost twenty percent, 195 (20.7%) of the respondents said that TB can be transmitted by shaking hands and sharing dishes with infected person. Only 78 (31.7%) of the respondents responded that Tb can be transmitted by drink raw milk.

The respondent considered that not taking anti-TB drug properly is risky for TB transmission (93.1%, 95% CI: 90% to 96.2%).

Characteristics	Knowledge score		COR (CI)	AOR (CI)
	Good (n=147)	Poor (n=99)		
Age				
<16yrs	15 (48.4%)	16 (51.6%)	1	1
16-18yrs	111 (61.3%)	70 (38.7%)	1.69 (0.79, 3.64)	1.63 (0.71, 3.73)
>18yrs	21 (61.8%)	13 (38.2%)	1.72 (0.64, 4.62)	1.16 (0.36, 3.71)
Residence				
Urban	121 (63.7%)	69 (36.3%)	1	1
Rural	26 (46.4%)	30 (53.6%)	0.49 (0.27, 0.90)	0.55 (0.281,1.07)
Educational level				
Grade 9	56 (57.7%)	41 (42.3%)	1	1
Grade 10	41 (48.2%)	44 (51.8%)	0.68 (0.38, 1.23)	0.71 (0.38, 1.33)
Grade 11	24 (72.7%)	9 (27.3%)	1.95 (0.82, 4.64)	1.97 (0.75, 4.97)
Grade 12	26 (83.9%)	5 (16.1%)	3.80 (1.35, 10.75)	4.09 (1.28, 13.06)

Table 3: Factors associated with knowledge of Tuberculosis among high school students: Yirgacheffe town, Southern Ethiopia, Ethiopia, June, 2015.

Majority of respondents, 230 (93.5%, 95% CI: 90.5% to 96.5%) believed that TB is a curable disease. More than ninety percent of the respondents 229 (93.1%, 95% CI: 90.4% to 96.2%) were stated that specific drugs given by health Centre was the best treatment for TB, whereas 7 (2.8%) were responded herbal medicine or home rest without medicine is important. Only 54 (22%, 95% CI: 17.0% to 27.0%) of respondents knew the current free service of diagnosis and treatment of TB but 78% did not know its service free.

The study showed that 237 (96.3%, 95% CI: 94.0% to 98.6%) of respondents agreed TB transmissions can be preventable. Of the respondents, 212 (86.2%, 95% CI: 82.0 % to 90.4%) considered covering their mouth and nose when coughing and sneezing as the most commonly used method for preventing the spread and transmission of TB. Moreover, 41 (16.7%, 95% CI: 12.2% to 21.2%) respondents mentioned that transmission and spread of TB could be prevented by closing windows, 51 (20.7%, 95% CI: 15.8% to 25.6%) avoid shaking hands and sharing dishes.

Only one hundred and sixty nine (68.7%, 95% CI: 63.1% to 74.3%) of the respondents were agreed that HIV infected patients are at greater risk of getting TB and sixty eight (27.6%, 95% CI: 22.2% to 33.0%) were said that it has no effect. Hundred ninety eight (80.5%, 95% CI: 75.7% to 85.3%) were mentioned travelling with closed window is more risk for TB transmission during transportation, 40

(16.3%) mentioned travelling with open window and the rest (3.3%) said opening window during transportation has no effect on TB transmission

Only 23.6% (58, 23.6%, 95% CI: 18.5% to 28.7%) respondents were agreed that nutrition has effect to suffer from TB. Regarding the effect of housing condition on TB transmission, 203 (82.5%, 95% CI: 77.9% to 87.0%) said housing condition has effect on TB transmission. Among these 156 (63.8%, 95% CI: 58.0% to 69.6%) respondents stated a house which has good ventilation is safe. Regarding family size 160 (65%, 95% CI: 59.2% to 70.8%) respondents cited that family size have effect for TB transmission. Among these 152 (95%, 95% CI: 92.4% to 97.6%) study participants pointed out large family size have high risk for TB transmission.

Attitude related characteristic of respondents

Almost half, 121 (49.2%) of the study participants responded that they could get TB and the rest 125 (50.8%, 95% CI: 44.8% to 56.8%) students responded that they could not get TB. High proportion of the respondents, 141 (57.3%), feel nothing if they have had TB and the remaining responds as fear, shame and hopelessness with the proportion of 26%, 5.3%, 11.4% respectively whereas for the questions opening windows during transportation is important to reduce TB transmission 121 (49.2%, 95% CI: 43.2% to 55.2%), 80 (32.5%), 16 (6.5%), 29 (11.8%) responds strongly agree, agree, disagree & strongly disagree respectively.

Regarding to the feeling towards people with TB disease, 115 (46.7%, 95% CI: 40.7% to 52.7%) students feel compassion and desire to help, 99 (40.2%, 95% CI: 34.3% to 46.1%) students feel compassion but they tend to stay away, 19 (7.7%) students responds fearing them because they may be infected and the remaining 13 (5.3%) students have no particular feeling towards TB patient. Overall majority of the students (67.1%, 95% CI: 61.4% to 72.8%) had unfavorable attitude toward tuberculosis

Practice related characteristic of respondents

Out of 246 respondents 233 (94.7%, 95% CI: 92.0 to 97.4%) said they will take those who are caught by TB to health institution but the remaining 13 (5.3%) said they will not take them assuming that it is a common cold. Two hundred and twenty five (91.5%, 95% CI: 88.1 to 94.9%) responded they will open windows to allow fresh air entry while 15 (6.1%) admitted not to open windows due to fear of cold and the rest 6 (2.4%) will do nothing during transportation.

Two hundred twenty two study participants, 220 (89.4%, 95% CI: 85.7% to 93.1%) responded that they will boil milk to prevent TB infection. Two hundred and forty (97.6%, 95% CI: 95.8% to 99.4%) responded that they would go to a health facility if they think they had symptoms of TB, 5 (2%) mentioned pursuing other self-treatment options like herbs and visiting traditional healers.

Concerning the practice to cover mouth and nose when coughing and sneezing, 240 (97.6%) of the study participants had the practice of covering their mouth and nose during coughing and sneezing. Fifty four (22%) participants thought treatment of TB is costly but the remaining 192 (78%, 95% CI: 73% to 83%) didn't. About 68.7% (95% CI: 63.1% to 74.3%) of the participants had good level of practice

Discussion

The present study revealed that almost all students have heard of TB (99.5%). This study was congruent with study conducted in India among high school students [17]. Almost seven among ten (70.3%) of students stated to have acquired the awareness from TV and 61.6% students stated radio as source of information. Similarly, other study done in Vietnam showed that health education means such as television (64.6%) can play an essential role in disseminating educational messages and creating awareness [18]. However, study done in India described that neighbors, friends and family members mentioned as major source of information [19].

In this study, nearly three in five (59.8%) of the respondents had good overall knowledge about tuberculosis infection control. This finding was lower than the finding of the study conducted in Addis Ababa [20] and India [19] among high school students, which were 77.7% and 90.2%, respectively

Knowledge TB and its transmission were also identified to have significant association to level of education among study participants. Study conducted in Southwest Ethiopia [21] and Philippines [22] showed similar relationship between level of education and Knowledge TB and its transmission.

Knowledge with respect to disease causation in our study agreed with the findings of studies done in India, where 81.7% students knew TB was caused by bacteria [17]. Besides, study done among the high school students in Addis Ababa [20] and India [23] reported almost similar findings

It was also found that participants from the current study area considered TB as a very serious disease in general. This result was in agreement with the study conducted in Iran among high where 67.7% the study participants stated TB as a very serious disease [24]. The present study indicated the most frequently reported symptoms was cough (82.9%) followed by shortness of breath (52.2%), weight loss (50%), fever (46.3%) and fatigue (39.8%). The study done in various parts of Ethiopia [25-28], most of the study participants keyed out persistent productive cough as a major signs and symptoms of TB. Studies in India [29], Uganda [30] Pakistan [31] and Bangladesh [32] showed prolonged cough, chest pain, loss of weight, fever, difficulty in breathing, and coughing up blood are perceived to be associated with TB by the people.

Regarding transmission, nearly nine among ten (87.0%) respondents recognized that TB can be transmitted through the air when a person with TB coughs, sneeze or speaks. This finding was in line with the study in different areas of Ethiopia [26,27] and a study in India [23] among high school students.

Concerning the attitude of students towards TB and its transmission, it was found that nearly seven among 10 students (67.1%) had unfavorable overall attitude towards TB. This study was in line with the finding in rural Ethiopia [28]. In this study it was identified that almost all (97.6%, 95% CI: 95.8% to 99.4%) would visit a health facility or health workers if they think they had symptoms of TB, and the rest mentioned would prefer to find other self-treatment options like herbs and visiting traditional healers. This result was higher than the finding in rural Ethiopia [28].

Conclusion

Generally, the results of this study revealed that only three in five (59.8%) of students had relatively good overall knowledge. Almost seven among ten (67.1%) students had unfavorable overall attitude towards TB. Nearly seven in ten (68.7%) students had good practice towards tuberculosis infection control. The present finding identified that knowledge toward causes, signs and symptoms, methods of transmission and ways of prevention was high among these students however limited knowledge with respect to free service to the treatment TB in Ethiopia. Educational level was found to have a significant association with knowledge TB and its transmission.

Establishing and strengthen clubs related to Tuberculosis transmission and control, including topics like TB in educational curriculum, encouraging peer education programs in high schools not only in the study area but also throughout the country needs to be encouraged which play crucial role in promoting health and preventing communicable disease including TB in school.

Health education dissemination strategies (e.g. campaign to end TB) on the Tuberculosis, its sign and symptoms, transmission and control needs to be continuously done at the community and health facility level.

Conflict of Interests

The authors declared that there are no competing interests.

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