



HIV Testing and Counseling among Patients with Tuberculosis at Arbaminch Hospital, Southern Ethiopia

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ABSTRACT

Since 2005, Ethiopia's national guideline for tuberculosis (TB) and human immunodeficiency virus (HIV) collaborative activity recommend HIV testing and counseling as part of routine TB care. However, the number of patients with TB that know their HIV status remains low. The objective of our study was to assess the HIV testing and counseling among patients with TB at Arbaminch Hospital, Southern Ethiopia. We conducted a cross sectional study from January to April 2012 at Arbaminch Hospital (AMH). Patients newly diagnosed with TB who fulfilled the inclusion criteria were enrolled for this study. We calculated our sample size using a single proportion formula and participants were recruited sequentially. Socio-demographic and TB/HIV related information for study participants were collected using a pre-tested interviewer administered questionnaire. The HIV status and other clinical data of study participants were taken from the TB treatment registration book in the TB clinic. We enrolled a total of 76 people newly diagnosed patients with TB. The majority of study participants (92%) reported that they were consulted by physician to take an HIV test when they were diagnosed with TB. Among study participants consulted by physician to get HIV testing, 88.6% were willing to get tested among which majority has their status documented. After the test, only 41.4% (n=24/58) received counseling services among which 33.3% (n=8/24) tested HIV positive. Overall, 23.7% of the study participants were receiving anti-TB treatment and had unknown HIV status. Most of the patient related factors we assessed were not associated with obtaining consultation and counseling services or with willingness to get tested. Provision of HIV testing and counseling service for people with TB in the Hospital was low and poorly integrated, which illustrates that work remains to be done to ensure all people with TB have a known HIV status. It sounds like improving the awareness of physicians on the benefit of HIV testing and improving coordination between physicians and TB clinic workers is of paramount importance in improving the uptake of consultation and counseling services, and in increasing willingness of TB patients to get tested.

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Introduction

Tuberculosis (TB) and human immunodeficiency virus (HIV) are known to have complex interactions [1]. TB is the leading cause of morbidity and mortality among people living with HIV as a result of progressive immune deficiency [2]. HIV infection is the most important single predictor of TB incidence [3]. HIV increases the likelihood of reactivation, reinfection and progression of latent TB infection to active TB disease. HIV also alters the clinical presentation of TB, complicates the follow up and compromises the response to anti-TB treatment [1].

According to the World Health Organization's (WHO) 2012 Global TB report, 1.1 million (13%) of the 8.7 million people who developed TB worldwide in 2011 were HIV-positive; 79% of these HIV-positive TB cases were in the African Region. In Ethiopia, the prevalence of HIV in incident TB cases was reported as 17%. However, the overall prevalence of HIV among people with TB in Ethiopia was the lowest (8.4%) of all African countries reported to WHO [4].

Since 2004, WHO recommends a package of collaborative TB/HIV intervention activities that include HIV testing for people with TB so that people with both TB disease and HIV infection can receive appropriate care and treatment [5, 6]. As a

result, the percentage of people with TB having documented HIV status has increased worldwide (from 3.1% in 2004 to 40% in 2012); and in particular in African countries where about 69% of people with TB had documented HIV status. Moreover, among countries in the world that had $\geq 75\%$ of their TB patients with documented HIV status, African countries comprised the 35% [4].

However, only 41% of people with TB in Ethiopia had a documented HIV test result [4], despite the fact that the National TB/HIV guideline include HIV counseling and testing as part of routine TB care since 2005 [7]. Poor uptake of HIV testing among people with TB results in an underestimation of the overall prevalence of HIV among people with TB and results in missed opportunities to provide lifesaving antiretroviral therapy for people with TB disease and HIV infection. Thus, the objective of our study was to assess the practices of HIV testing and counseling among patients with TB at Arbaminch Hospital in Southern Ethiopia.

Method and Materials

We conducted a cross sectional study to determine the extent of HIV counseling and testing for people with TB from January to April 2012 at Arbaminch Hospital (AMH). Individuals who are on antiretroviral treatment (ART)/pre-ART,

those who were <18 years of age during the data collection period and those who were not willing to be interviewed were excluded from the study.

We calculated our sample size using a single proportion formula. We assumed that 73% of patients with TB would accept HIV testing based on a previous study at the same hospital [8]. Our target sample size was 76 people newly diagnosed with TB based on a desired error margin of 10% and 95% confidence intervals. We sequentially recruited participants until we achieved our target sample size.

We received an ethical approval for this study from the ethical review committee in the Department of Medical Laboratory Science of Arbaminch University. We obtained verbal consents from each study participant after providing a clear explanation of the purpose of the study. Then, we interviewed participants who were willing to participate in the study. Arbaminch Hospital TB clinic was also asked for permission to review the clinical information of our study participants. We assured confidentiality of the participants' data by omitting the names from the questionnaire and by using unique identifier number instead. All our consent procedures were approved by the ethical review committee.

Data on socio-demographic and TB/HIV related information of study participants were collected using a pre-tested interviewer administered questionnaire. Study participants' clinical data were taken from the TB treatment registration book in the TB clinic. The collected data were entered in to Microsoft Excel sheet and exported to Medcalc® version 12.1.4 software for further analysis.

Results

Socio-demographic characteristics of study participants

From a total of 76 study participants, 56.6% (n=43) were males and the median age of study participants was 33 years (IQR= 21.5-45 years). The median family size among study participants was 4 (IQR= 3-6 members). Other socio-demographic characteristics of the study participants are summarized in table 1 below.

Knowledge and attitudes about TB and HIV, TB exposure history, and HIV testing history among study participants

The majority of study participants (61.8%, n=47) had heard about TB mainly from mass media (46.8%, n=22/47), followed by friends/family/teachers (38.3%, n=18/47) and health workers (14.9%, n=7/47).

Most study participants (89.5%, n=68) reported that they had not previously been diagnosed with TB. All of the respondents that had been previously diagnosed with TB (n=8) had taken anti-TB treatment in health facilities for 3 to 12 months.

Almost half of the study participants (47.4%, n=36) said that they had recent exposure with a family member and/or friend with a cough of long duration. Among these respondents, 88.9% (n=32) said that their family member/friend had been taking treatments for the cough. More than a third (36.8%, n=28) of study participants also reported that they had a family member and/or friend who was diagnosed with TB and had been taking treatments for it.

Among all study participants, 89.5% (n=68) had heard about HIV/AIDS mainly from mass media (42.7%, n=29/68) followed by family/friends/teachers (25%, n=17/68), health workers (22.1%, n=15/68) and religious leaders (10.3%, n=7/68).

The majority of study participants (64.5%, n=49) had never been tested for HIV/AIDS. For respondents who were

previously tested (n=27, 35.5%), their most recent testing was anywhere from 2-60 months prior their TB diagnosis.

Self-perceived risk of HIV positivity was reported by 18.4% (n=14) of study participants providing the reasons "I have no idea why" (14.3%, n=2) and "I have exposed to at least one of the predisposing factors to HIV" (85.7%, n=12). But, 82.6% (n=62) of the study participants did not report self-perceived risk of HIV positivity among which 12.9% (n=8) had no reason while the remaining 87.1% (n=54) mentioned "I am free from the predisposing factors".

Many of the study participants (28.9%, n=22) reported that they would feel nothing if they found themselves positive for HIV while the others said that they would feel frightened (15.8%, n=12), ashamed (19.7%, n=15), sad (18.4%, n=14), angry (9.2%, n=7) and desperate (7.9%, n=6).

Assessment of HIV testing and counseling among people newly diagnosed with TB

The majority of participants (92.1%, n=70) reported that they have been consulted and recommended by physician to get an HIV test when they were diagnosed with TB (figure 1). But 7.9% (n=6) were not consulted by physician to get an HIV test and thus initiated anti-TB treatment without their HIV status determined.

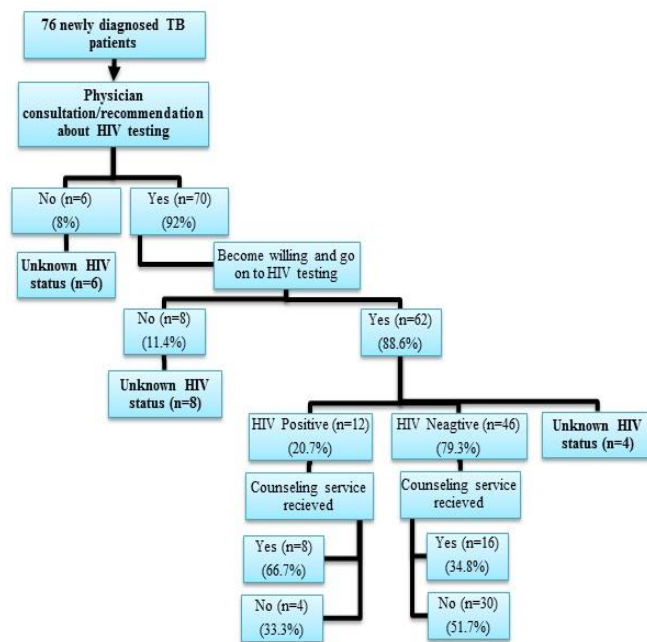


Figure 1. An algorithm depicting the physician consultation, HIV testing and counseling outcomes of the 76 participant TB patients in Arbaminch Hospital, January - April, 2012.

Among participants consulted by a physician to get an HIV test, 88.6% (n=62) were willing and go on to the test. However, 11.4% (n=8) were not willing to go on to the test and started anti-TB treatments without their HIV status known. The reasons these patients outlined for not getting an HIV test were 'afraid of knowing my status' (62.5%, n=5) and 'I am healthy and do not need the test' (37.5%, n=3). Among patients with TB who were willing to get the test, 93.5% (n=58/62) had documented HIV statuses while the status was missing for 6.5% (n=4/62) of them in the TB registers.

After the HIV testing, only 41.4% (n=24/58) received counseling services among which 33.3% (n=8/24) were HIV positive and the rest 67.7% (n=16/24) were HIV negatives according to our review of the HIV testing variable in the TB registration book.

Overall, there were 18 of 76 (23.7%) participants receiving anti-TB treatment with unknown HIV status (6 not consulted and 12 consulted but not willing to get tested).

Table 1 The socio-demographic and clinical characteristics of study participants, January - April 2012, Arbaminch Hospital (N=76)			
		<i>Frequency</i>	<i>Percentage (%)</i>
Sex	Male	43	56.6
	Female	33	43.4
Age group	≤ 25	31	40.8
	26-44	24	31.6
	≥ 45	21	27.6
BMI	Under-weight	29	38.2
	Normal weight	40	52.6
	Over-weight	7	9.2
Residence	Urban	33	43.4
	Rural	43	56.6
Religion	Orthodox	32	42.1
	Protestant	40	52.6
	Other	4	5.2
Marital status	Single	30	39.5
	Married	40	52.6
	Other	6	7.9
Family size	≤ 4 members	41	53.9
	> 4 members	35	46.1
Education level	Illiterate	29	38.2
	Read and write	17	22.4
	Grade 8 & above	30	39.4
Occupation	Student	22	28.9
	Farmer	26	34.2
	Employee	11	14.5
	Other	17	22.4
Has patient heard of TB?	Yes	47	61.8
	No	29	38.2
Has patient heard of HIV?	Yes	68	89.5
	No	8	10.5
TB site	Pulmonary	62	81.6
	Extra-pulmonary	14	18.4
Smear result of pulmonary TB (n=62)	Smear positive	19	30.6
	Smear negative	43	69.4
Under-weight (BMI <18.5), Normal weight (BMI=18.5-24.9), Over-weight (BMI >25)			

Table 2 The association of socio-demographic and clinical variables of study participants with the provision of consultation and counseling service of HIV testing and participants' willingness to take the test, January - April 2012, Arbaminch Hospital										
Factors	Consultation (n=76)			Willingness (n=70)			Counseling (n=58)			
	Yes	No	P-value	Yes	No	P-value	Yes	No	P-value	
Sex	Female	32	1	0.225 [§]	27	5	0.455 [§]	13	13	0.351 [*]
	Male	38	5		35	3		11	21	
Age group	≤ 25	26	5	0.076 [*]	23	3	0.935 [*]	9	13	0.997 [*]
	26-44	23	1		20	3		7	10	
	≥ 45	21	0		19	2		8	11	
BMI	Under-weight	27	2	0.643 [*]	24	3	0.571 [*]	9	11	0.300 [*]
	Normal weight	36	4		31	5		14	17	
	Over-weight	7	0		7	0		1	6	
Residence	Urban	31	2	0.692 [§]	30	1	0.069 [§]	14	15	0.424 [*]
	Rural	39	4		32	7		10	19	
Family size	≤ 4 members	31	4	0.405 [§]	35	4	1.000 [§]	15	17	0.500 [*]
	> 4 members	39	2		27	4		9	17	
Religion	Orthodox	31	1	0.285 [*]	28	3	0.640 [*]	8	19	0.237 [*]
	Protestant	35	5		30	5		14	13	
	Other	4	0		4	0		2	2	
Marital status	Single	25	5	0.071 [*]	22	3	0.184 [*]	7	14	0.635 [*]
	Married	39	1		36	3		15	18	
	Other	6	0		4	2		2	2	
Education	Illiterate	28	1	0.349 [*]	23	5	0.267 [*]	7	13	0.682 [*]
	Read and write	16	1		14	2		7	7	
	Grade 8 & above	26	4		25	1		10	14	
Occupation	Student	17	5	0.022 [*]	16	1	0.779 [*]	7	8	0.808 [*]
	Farmer	25	1		21	4		6	12	
	Employee	11	0		10	1		5	5	
	Other	17	0		15	2		6	9	
Has patient heard of TB?	Yes	44	3	0.669 [§]	40	4	0.458 [§]	18	21	0.439 [*]
	No	26	3		22	4		6	13	
Has patient heard of HIV?	Yes	62	6	1.000 [§]	55	7	1.000 [§]	22	29	0.688 [§]
	No	8	0		7	1		2	5	
Previous HIV screening	Yes	25	2	1.000 [§]	25	0	0.044 [§]	14	11	0.089 [*]
	No	45	4		37	8		10	23	
Self-perceived risk of HIV positivity	Yes	14	0	0.586 [§]	12	2	0.656 [§]	6	6	0.725 [*]
	No	56	6		50	6		18	28	
TB site	Pulmonary	58	4	0.304 [§]	50	8	0.335 [§]	19	27	0.759 [*]
	Extra-pulmonary	12	2		12	0		5	7	
Smear result of Pulmonary TB (n=62)		16	3	0.081 [§]	13	3	0.672 [§]	4	8	0.735 [§]
	Smear positive	42	1		37	5		15	19	
	Smear negative									

* Chi Square test result, § Fisher's Exact test result

Under-weight (BMI <18.5), Normal weight (BMI=18.5-24.9), Over-weight (BMI >25)

Among patients with TB tested for HIV and had documented HIV status in the TB register (n=58), the HIV prevalence was 20.7% (n=12).

Table 2 summarizes association of socio-demographic and clinical variables of study participants with the provision of consultation and counseling service of HIV testing and participants' willingness to take the test. Almost all of the studied variables were associated with getting consultation by the physician, become willingness to go to the test and receiving counseling services.

Discussion

In this study, we determined that 23.7% (n=18) of patients with TB were on anti-TB treatment with unknown HIV status. We identified multiple missed opportunities for HIV testing among people with TB.

One-third of people with TB had an unknown HIV status because physicians did not recommend they get HIV testing at the time of their TB diagnosis. None of the patient related factors we measured were associated with whether or not a physician recommended HIV testing at the time patients were diagnosed with TB except for occupation of the participant in which students and farmers were less likely to get HIV test recommendation from their physician. This finding is consistent with other studies [9] and suggests that recommendations were based on physicians' judgment rather than National guideline.

Another missed opportunity was when patients did not become willing to go on to HIV testing. The willingness of patients to get HIV testing is improved since a previous study conducted seven years ago in the same hospital [8]. This could be explained by the establishment of provider initiated testing and counseling (PITC) service in the hospital which might have removed the barriers for willingness in the former model of HIV testing, provider initiated counseling and testing (PICT). However, work remains to be done since 11.4% of patients with TB were still refusing to get tested. Statistically significant association was only seen between willingness to be tested and previous HIV screening ($p=0.004$) of the patients. All of the participants who refused HIV testing did not have previous history of screening for HIV. Though it was not statistically significant ($p=0.069$), an association was noted between willingness to be tested and residence of participants. Unwillingness to take the test among patients from rural area was increased in seven fold as compared to unwillingness among patients from urban areas.

We were surprised to learn that the HIV status of 4 patients with TB, who were willing and tested, was not documented on the TB registration book. This might indicate weak interaction between the clinicians and the TB clinic staff or that those patients have poor recall about previous HIV testing.

In this study, we showed that only 41.4% of patients tested for HIV received counseling services among which one thirds were HIV positives. Although it is suggested in the PITC model that the service provider spends minimal time with patients having negative results, this does not mean not to provide any counseling at all [10]. Failure of providing counseling for HIV positive patients seriously hamper the purpose of HIV testing among TB patients since the counseling is critical to ensure that people with TB that test HIV get started on ART. Regarding the accessibility of counseling service, none of the patient related factors were associated with getting counseling.

Overall, we have found that a quarter of newly diagnosed TB patients were receiving anti-TB treatment without their HIV status known. At the hospital, testing all people with TB for HIV is still a challenge. However, known HIV status of 76.3% of

people with TB at the hospital exceeds the National average of 41% [4].

We found that the prevalence of HIV among tested TB patients was 20.7% which is slightly higher than the national figure as reported in 2011 [4]. However, of particular concern were those 4 patients newly diagnosed with TB that has been tested for HIV but not having documented HIV status.

Although we have not had an intervention in the hospital after the study, we suggest ideal processes through which a patient with TB shall pass so that percentage of willingness and provision of counseling could be improved. In the PITC model, the consultation and recommendation of HIV testing is made prior diagnosing the disease that make the patient visit the health facility. Thus, our first suggestion is to enable physicians re-recommend unwilling patients diagnosed with TB with special emphasis in terms of explaining the relationships between HIV and TB infections and the TB/HIV collaborative services and benefits. Our second suggestion to increase willingness of patients with TB to get tested is to establish strong referral system in between physicians and TB clinic workers so that counselors in TB clinic would keep repeating the benefits of testing and remind the unwilling patient of available treatments during directly observed treatments (DOTs). We also suggest implementing a rule for TB clinic workers that they shall first assure whether the patient has received consultation and counseling services before providing the anti-TB treatment.

Study limitation

This study was a cross-sectional one and hence, we failed to follow the patients and see the success of turning unwilling patients on the first day of diagnosis during DOTs and after that.

Conclusion

In conclusion, HIV testing and counseling service given to people with TB in the Hospital was low and poorly integrated which illustrates that work remains to be done to ensure all people with TB have a known HIV status. It sounds like improving the awareness of physicians on the benefit of HIV testing and improving coordination between physicians and TB clinic workers is of paramount importance in improving the provision of consultation and counseling services, and in increasing willingness of TB patients to be tested.

Competing interests

The authors declared no competing interests in this research.

Authors' contributions

MM has conceived and designed the study. All authors have participated in the selection of study participants. RA, MF, YH and MY have participated in acquisition of data. MM has prepared the draft manuscript. All authors have critically reviewed and approved the final manuscript.

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