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Original Research

Acceptability of Provider Initiated HIV Counseling and Testing among Tuberculosis and Non-tuberculosis Patients in Shashemene Town, Ethiopia

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Abstract

The objective of the study was to assess the acceptability of Provider Initiated HIV Counseling and Testing (PIHCT) and factors influencing its service uptake among TB and non TB patients in Shashemene town of West Arsi Zone. Institution-based, comparative cross-sectional study was conducted from January to February 2010, on 237 TB patients attending Tuberculosis clinics and 236 non TB patients who were offered PIHCT from outpatient department of Shashemene Hospital and Health Center. Data were collected using consecutive sampling until the required sample size was attained using structured questionnaire. Majority of the participants were male 286(60.5%), in the age group 25-34 years 172(36.4%), Muslim by religion 233 (49%).Among 473 study participants 86.3% (89.9% TB versus 82.6% non TB) had accepted PIHCT. TB patients are more likely to accept PICHT than non TB patients at AOR= 2.6; 95% CI (1.3, 5.0). Those who support importance of PIHCT were more likely to accept PIHCT at AOR=11.4; 95% CI (5.1, 25.4) than those who are against PIHCT. The acceptance rate of PIHCT is relatively higher in this study; TB patients were more likely to accept PIHCT than non TB patients. The programme needs to be strengthened in all settings for both TB and non TB patients since HIV testing and counseling stands out as paramount both in treatment and in prevention of HIV/AIDS.

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INTRODUCTION

Tuberculosis (TB) is a leading cause of morbidity and mortality among people living with HIV/AIDS (PLWHA) (CDC, 2006). Untreated human immuno-deficiency virus (HIV) infection leads to progressive immunodeficiency, and increased susceptibility to infections including TB (Coetzee *et al*., 2004). HIV is fuelling the tuberculosis epidemic particularly in Africa, where TB incidence rates are still rising across the continent at a rate of 3-4% annually (WHO, 2000). TB had tripled or quadrupled in Sub-Saharan Africa (SSA) due to the deadly synergy effect between TB and HIV, since 1990 (WHO, 2005).

HIV infection is now the most important single predictor of TB incidence in SSA. The region accounts for 70% of the world's 14 million people who are co-infected with TB and HIV (WHO, 2004). Death rate in patients treated for tuberculosis in sub-Saharan Africa has risen in the last 10-15 years, the most important reasons being concomitant HIV infection (Ya Duil, Dermot and Anthony 2001). Between 20% and 30% of HIV infected patients with smear positive pulmonary tuberculosis (PTB^+) die within 12 months of starting treatment. In Ethiopia, it is estimated that HIV/AIDS accounts for 32% of the estimated 141,000 TB case incidences in 2005 (MOH, 2004). The prevalence of HIV co-infection among adult TB cases is estimated to be 40% in urban areas of Ethiopia (MOH, 2004). A study conducted in Addis Ababa in 1998 showed HIV co infection was 45.3% among PTB+ patients (Demissie, Lindtjorn and Tegbaru, 2004).

Despite close epidemiological links between HIV and TB, the public health responses have largely been separated (WHO, 2004). In addition, because of the low priority given to voluntary counseling and testing (VCT) in the past, access to this service has been limited in countries most severely affected by HIV (Fylkesnes and siziya, 2004). According to the 2003 WHO report, only 3% of the 4.4 million TB cases were reported to have been HIV tested worldwide (WHO, 2009).

Due to the under utilization of the client initiated HIV counseling and testing the revised UNAIDS / WHO policy statement on HIV testing recommended that PIHCT should be implemented in clinical settings (WHO, 2005). For instance, only 10% of patients knew their sero-status in the world in 2003 (Knut, Alan, Catharina and Pascal, 1999). In Ethiopia, the second round behavioral surveillance survey (BSS) reported that only 5% of the general population (15-49 years of age) being ever tested for HIV in 2005 (MOH, 2006).

HIV pandemic presents a massive challenge to the control of TB (UNAIDS, 2004). On the other hand, TB is also one of the leading causes of morbidity and mortality

in PLWHA in Ethiopia (MOH, 2003). HIV testing and counseling stands out as paramount to tackle these problems in treatment and prevention activities. Results of VCT acceptability assessments in the general population as well as among TB patients showed wide variability. The National guideline for management of opportunistic infections and ART in adolescents and adults in Ethiopia recommends HIV counseling and testing as a routine care for TB patients (MOH, 2007). Shashemene City Administration Health Bureau is implementing PIHCT in response to the high HIV prevalence among TB patients, and in an attempt to increase the uptake of HIV testing and antiretroviral treatment (ART).

MATERIAL AND METHODS

Study Area and Population

The study was conducted in Shashemene town, which is located 250 kilometers south of the capital city, Addis Ababa, situated at a crossroad to Bale, Arsi, Zeway, Awasa and most parts of Southern Ethiopia. The study was conducted from January 01 to Feburary 30, 2010. According to the Central Statistics Authority 102,000 people (51% female and 49% male) were estimated to live in Shashemene town in 2007 (37). The town is divided in to 10 kebeles (the smallest administrative units) with an average population of over 10,000 in each kebele (ACORD, 1999-2003).

Study Design

A facility-based, comparative cross-sectional study was conducted among TB patients attending their treatment under DOTS strategy and non TB patients from the health institution who were offered with PIHCT. For this study, the source population was all TB patients who were registered under DOTS and non TB patients who were offered PIHCT during the study period in Shashamane hospital and health center, West Arsi Zone.

Sample Size Determination and Sampling Procedure

The sample size for this study was determined using the formula for the difference between population proportions. The number of population willing to accept PIHCT was the main outcome variable used to calculate the sample size and a study conducted in Arbaminch Town shows the prevalence of willingness to accept PIHCT was 35% among cases (Jerene, Endale and Lindtjorn, 2007) and 50% among controls were assumed to consider maximum sample size since there is no similar study done, with 5% marginal error and 95% confidence interval, and 80% power. Assuming 15% non-response rate, the minimum sample size was calculated to be 473 for both groups using the formula for difference between population proportions.

Data were collected from the all government health facilities, both hospital and health centers where DOTS are being implemented in Shashemene town i.e. Hospital and health center in Shashemene town over the data collection period. Patients who visited the health facilities and fulfilled the inclusion criteria during the study period for treatment of TB and patients who initiated PIHCT at the outpatient departments were interviewed consecutively until the total sample size of the study was completed. The sample size was proportionally allocated to Shashemene hospital and health center based on monthly client size. Study subjects in the selected institutions were stratified by patient status related to presence or absence of TB and sample size for each stratum was equally allocated. To select study subjects within each stratum quota sampling was used. Initially the daily average number of clients visiting the health institution during data collection period was estimated based on the previous daily client flow of the units. This was obtained by referring client registration book/ record for a month prior to data collection. The study utilized closed ended structured questionnaire containing questions on socio demographic variables, patients' knowledge and attitude related to TB/HIV/AIDS, self risk perception to HIV/AIDS and knowledge and attitude related to PIHCT. The questionnaire was prepared in English and then translated in to the local language (Afan Oromo) and then back translated into English to check for its consistency.

Data Processing and Analysis

EPI INFO version 6 was used for data entry and cleaning, and SPSS16 for Statistical analysis. In the analysis process, frequency distributions of variables were worked out in order to describe them in relation with the study population. Knowledge on major HIV/AIDS transmission and prevention was weighted for 4 and 3 questions; score greater than 75% (3 and above out of 4) and 67% (2 and above out of 3) are defined for existence of adequate knowledge. And again, for HIV/AIDS comprehensive knowledge five variables were measured, namely, existence of disease, weighted mode of transmission, weighted means of prevention, nature of the disease and curability. An average score greater than 80% are defined as presence of adequate comprehensive HIV/AIDS knowledge

Ethical Clearance

Ethical clearance was obtained from the Institutional Review Board of the Faculty of Medicine at Addis Ababa University. Permission to undertake the study was obtained from Oromia Regional State Health Bureau and from administrative bodies of Shashemene town including West Arsi Zone Health Bureau. Informed written consent was obtained from all consented study participants.

RESULTS

Socio Demographic Characteristics of Participants

A total of 237(50.2%) TB and 236(49.8%) non TB patients participated in the study. About 68% (323) of the participants were from Shashemene hospital, while the remaining 150(32%) were from Shashemene health center. Fifty seven percent male and 42.6% female TB and 63.6% male and 36.4% female non TB patients were participated in the interview respectively. The mean and median ages of the patients were 30 and 27 years old for TB patients and 30 and 28 years old for non TB patients, respectively.

Nearly half (48.9%) of the respondents were Muslims; followed by, Orthodox Christians 76(32.1%) among TB patients and similarly 49.2% Muslim followed by Orthodox Christian 53(22.5%) among non TB patients by religion. About 57% and 64.8% of the study participants were from Oromo ethnic group followed by Amhara, 41(17.3%) and 37(15.7%) among TB and non TB patients respectively. The rest were Gurage, and few others.

Regarding the marital status of the participants, 113(47.7%) were single, 102(43%) was married in union, and 5.5% were widowed among TB patients. While 149(63.1%) were married in union, 83(35.2%) were single and 2(0.8%) were widowed from non TB patients. The educational status of the study group is similar both in TB

and non TB patients with 97(40.9%) and 127(53.8%) completed greater than grade eight, 75(31.6%) and 63(26.7%) completed grade five to eight, 33(13.9%) and 30(12.7%) read and write up to grade four and 33 (13.9%) and 30(12.7%) are illiterate respectively. Majority of the participants were students 63(26.6%) and 56(23.7%) followed by civil servants 32(13.5%) and 42(17.8%) both in TB and non TB patients respectively. Others including merchants, daily laborer, house wife and domestic servants are also participated in both groups. Of the total participants responded to the income variable 65(27.5%) and 50(21%) were reported that they have monthly income of less than 400 Ethiopian birr and 49(20.7) and 73(30.8%) have a monthly income of greater than 400 Ethiopian birr among TB and non TB patients respectively. Thirty four percent of TB and 59(25%) of non TB patients were not responded to income variables.

Knowledge and Attitude of Participants toward PIHCT

Nearly all (96%) of the study participants were aware of the availability of PIHCT in health institutions (94.1% TB Vs 97.9% non TB). The most common sources of information about PIHCT for the participants were health worker/institutions as mentioned by 89% of TB and 91.1% of non TB patients, mass media by74.3% of TB patients and 84.7% of non TB patients followed by friends by 22.4% of TB and 54.2 % non TB patients and family members by 20.3% TB 45.3% of non TB patients. Majority of the patients have positive attitude toward PIHCT after it was explained to them by their treatment supervisor. 86.6% TB and 70.8% non TB patients were “extremely” in favor of PIHCT. 96.2% of TB and 98.3% of non TB patients agreed that any one should check his/her HIV sero status.

Most of the participants both from TB and non TB patients (95.8% and 98.7%) respectively believed that PIHCT is important. Among those who believe PIHCT is important, majority of them agreed that PIHCT result in gain access to ART (72.2%, 76.3%), helps to get care and support if positive (73.8%, 91.5%), makes it easier for them to get tested (77.6%, 78.8%), and helps to protect infection(81.9%, 91.9%) by TB and non TB patients respectively. On the other hand, among 56(23.6%) TB and 13(5.5%) non TB patients, who believe that PIHCT has influence on TB treatment service utilization, 39(16.5%) TB and 11(4.7%) non TB believed that PIHCT would cause TB patients to avoid seeing health care provider for fear of being tested (table 1).

Table 1: Knowledge and Attitude Related to PIHCT among TB and non-TB Patients.

Variables	TB patients	Non TB patients	Both TB and non TB patients
	Number (%)	Number (%)	Number (%)
Source of information*			
Health worker/institution	211(89)	215(91.1)	426(90)
Mass media	176(74.3)	200(84.7)	376(79.5)
Friends	53(22.4)	128(54.2)	181(38.3)
Family members	48(20.3)	107(45.3)	155(32.7)
In favor of PIHCT			
Extremely	205(86.5)	167(70.8)	372(78.6)
Very much	12(5.9)	58(25.8)	70(14.8)
To some extent and not at all	20(7.6)	11(3.4)	31(6.6)
Reasons for PIHCT is important *			
To know their HIV sero status	184(77.6)	186(78.8)	370(78)
To protect infection	194(81.9)	217(91.9)	411(86.8)
If positive, not to transmit to others	184(77.6)	195(82.6)	379(80)
If positive ,to get support and care	175(73.8)	216(91.5)	391(82.6)
If positive ,to get ART	171(72.2)	180(76.3)	351(74.2)
To be free from stress	124(52.3)	149(63.1)	273(57.7)

*-more than one response is possible

Acceptability of PIHCT and Factors Associated with its Utilization

This study assessed factors associated with acceptability of PIHCT. A logistic regression model was used to examine factors associated with acceptability of PIHCT (having been tested for HIV following supervisor initiation) as dependent variable. A stepwise forward regression analysis was utilized in three steps in order to find out predictors on acceptability of PIHCT. The first step was related to the socio demographic variables, in the second step knowledge; attitude and risk perception towards TB/ HIV/AIDS was involved, and the last step involved analyzing the joint effects of the variables on socio-demographic, knowledge and self risk perception on acceptability of PIHCT in order to detect weak associations that may be strong during interactions with other Variables. Variables with $P<0.05$ were considered for further analysis.

Socio Demographic Determinants of Acceptability of PIHCT

The association between socio demographic characteristics of TB and non TB patients with acceptability of PIHCT was assessed using Univariate and multivariate logistic regression models. In the bivariate analysis, being younger, education status of grade 5-8, being male and TB patient were more likely associated with acceptance of PIHCT. Controlling for other variables in the logistic regression model, being TB patient was strongly associated with acceptance of PIHCT (table 2).

Association of Socio-demographic Characteristics, Knowledge and Attitude with Acceptance of PIHCT

Knowledge related factors like believing that HIV is not curable illness (p=0.6), having ever heard of the disease called HIV/AIDS (p=0.7), believing that one self can be infected with HIV/AIDS (p=0.2), were not significantly associated with acceptability of PIHCT for the overall study participants.

Those believing that HIV infection could be asymptomatic [COR(95%CI=2.4(1.2,4.8)] , patients those who believed that PIHCT is important [COR (95%CI =13.5(6.2,28.9)], believing that control of TB helps to control HIV/AIDS [COR(95%CI=1.9(1.1,3.4)] and knowing

any one infected or died of HIV/AIDS [COR(95%CI=3.8 (2.2,6.6)] were significantly associated with PIHCT acceptance in bivirate analysis for the overall study subjects. After variables were controlled for confounding factors using multiple logistic regression analysis only those patients who feel PIHT is important and those who have known someone with/died of HIV/AIDS remain associated with acceptance of PIHCT in the overall study participants

Among all, those respondents who agree PIHCT is important are nearly eleven times more likely to accept PIHCT when compared to those who were against PIHCT [Adjusted OR=10.7; 95%CI (4.2, 27.3), those who have known someone with or died of HIV/AIDS are three times more likely to accept PIHCT than those who haven't [Adjusted OR=3.4; 95%CI (1.0, 11.7) and TB patients are twice as more likely to accept PIHCT than non TB patients [Adjusted OR=2.6; 95%CI (1.3, 5.0). The other variables were not significantly associated with PIHCT acceptability after adjusting for confounders (table 3).

DISCUSSION

More than half (57.8%TB and 56.4%non TB) of the study participant were young age of <29 years old. This might be due the high prevalence of HIV/AIDS infection in this age group which could have made them susceptible to TB. The findings of this study (high prevalence of TB occurred in the young (<29) population) is similar to findings documented by several studies and the WHO (Jerene, Endale and Lindtjorn, 2007).

Assessment of high-risk behaviors in Ethiopia was initiated in the 1990s. High scores especially in knowledge of mode of viral transmission were documented which showed some success in raising awareness in the general population and sub-groups. Adequate knowledge on viral transmission and prevention is believed to be a key factor in fighting the epidemic. Regarding the findings of the respondents' knowledge on mode of HIV transmission and prevention, most of the participants had the correct knowledge. In this study a substantial proportion of TB patients (88.4%) and non TB patients (87.3%) were aware of asymptotic healthy carriers can be HIV case, knowledge on mother-to-child transmission [during pregnancy (56.5%) for TB and (74.2%) for non TB patients and via breast feeding (84.4%) for TB and (71.2%) for non TB patients] was found relatively higher compared to study done in other area On the other hand misconceptions regarding HIV transmission like transmission through sharing meal with HIV infected person and mosquito bite (15.8% in TB and 10% in non TB patients) was relatively higher than similar study done in Adama (3.7%). Misconceptions on HIV transmission and poor knowledge about the disease would cause stigma associated with the disease that have impacts on the control of the epidemic (Seid, 2008; Higgins, 1991).

Table 2: Socio-demographic variables of TB and non-TB Patients and acceptability of PIHCT.

Variables	PIHCT		95% CI	
	Acceptor	Non acceptor	COR(95% CI)	AOR(95% CI)
Age(years)				
15-24	152	20	**2.2(1.0,4.9)**	1.6(0.5,4.8)
25-34	151	21	2.1(0.9,4.6)	1.9(0.7,4.7)
35-44	64	12	1.5(0.6,3.8)	1.7(0.6,4.8)
>45	41	12	1.0	1.0
Sex				
Male	250	36	1.2(0.7,2.1)	1.3(0.6,2.6)
Female	158	29	1.0	1.0
Religion				
Orthodox	113	16	1.0	1.0
Muslim	202	30	0.9(0.4,1.8)	0.9(0.4,2.4)
Protestant	61	14	0.6(0.2,1.3)	0.8(0.3,2.3)
Catholic	23	1	3.2(0.4,25.7)	0.4(0.1,1.8)
Ethnicity				
Oromo	253	35	1.0	1.0
Amhara	69	9	1.0(0.4,2.3)	0.8(0.3,2.4)
Gurage	42	4	1.4(0.4,4.2)	1.3(0.4,4.5)
Tigre	19	4	0.6(0.2,2.0)	0.3(0.1,1.5)
Marital status				
Married	213	38	1.0	1.0
Single	195	27	1.2(0.7,2.1)	0.6(0.3,1.3)
Patient status				
TB patient	213	24	**1.8(1.0,3.2)**	**1.9(1.0,3.6)**
No TB patient	195	41	1.00	1.0
Educational level				
Illiterate	36	12	1.0	1.0
completed grade 4	51	12	1.4(0.5,3.5)	0.9(0.3,2.5)
Completed grade 5-8	**127**	**11**	**3.8(1.5,9.4)**	2.3(0.8,6.5)
Greater than grade 8	194	**30**	**2.1(1.0,4.6)**	0.9(0.3,2.7)
Occupation				
Civil servant	68	6	1.0	1.0
Student	107	12	0.7(0.2,2.1)	0.6(0.1,2.2)
Merchant	69	11	0.5(0.1,1.5)	0.3(0.1,1.1)
House wife	46	11	0.3(0.1,1.0)	0.2(0.1,0.9)
Daily laborer	35	4	0.7(0.2,2.9)	0.5(0.1,2.7)
No job	33	5	0.5(0.1,2.0)	0.4(0.1,1.8)

Table 3: Proportion of acceptors and non acceptors of PIHCT and odds ratios (95% CI) from binary logistic regression assessing the association of PIHCT acceptance and selected variables among TB and non TB.

Variables	PIHCT		95% CI	
	Acceptor	Non- acceptor	COR(95% CI)	AOR(95% CI)
Age(years)				
15-24	152	20	**2.2(1.0,4.9)**	1.6(0.5,4.8)
25-34	151	21	2.1(0.9,4.6)	1.9(0.7,4.7)
35-44	64	12	1.5(0.6,3.8)	1.7(0.6,4.8)
>45	41	12	1.0	1.0
Sex				
Male	250	36	1.2(0.7,2.1)	1.3(0.6,2.6)
Female	158	29	1.0	1.0
Patient status				
TB patient	213	24	**1.8(1.0,3.2)**	**2.6(1.3,5.0)**
Non TB patient	195	41	1.00	1.0
Health looking person be infected with HIV?				
Yes	367	51	**2.4(1.2,4.8)**	1.8(0.8,3.8)
No	41	14	1.0	1.0
PIHCT is important				
Yes	395	45	**13.5(6.2,28.9)**	**11.4(5.1,25.4)**
No	13	20	1.0	1.0
Control of TB helps control HIV/AIDS?				
Yes	315	41	**1.9(1.1,3.4)**	1.2(0.6,1.8)
No	93	24	1.0	1.0
TB patients increased after HIV/AIDS?				
Yes	306	40	**1.8(1.0,3.7)**	0.9(0.4,1.8)
No	102	25	1.0	1.0
know PLWHA				
Yes	304	24	**3.8(2.2,6.6)**	**3(1.6,5.5)**
No	104	37	1.0	1.0

The overall PIHCT acceptability rate of 86.3% of this study was slightly higher than a study conducted in Adama (81.2%). In the present study the high prevalence of PICHT acceptability could be due to the availability of comprehensive HIV/AIDS care (availability of many free standing VCT centers, increased access to ART, OI and care and support services). Moreover, high knowledge of TB and HIV association could be the possible explanations for the relatively high prevalence of HIV test for the TB patients. It can be noted that a high theoretical acceptability which may not necessarily true for the high practical acceptability. A study conducted in Arbaminch (35%) and Addis Ababa (67%) also demonstrated a low prevalence of practical acceptability of PIHCT (Seid, 2007; Girma, 2008).

In pilot and clinical trials, when HIV counseling and testing was routinely offered by health care providers, the acceptability rate of HIV testing is reported to be satisfactorily high, reaching 90-100% for patients attending TB clinics in several countries. For instance, acceptability of HIV testing among TB patients was 91% in Guyana and Mali and 99% in South Africa. Prospective study by Fisher *et al* showed that intention did predict performing specific HIV-preventive behavior under study. Therefore, the findings of the present study could be considered as indication of the need for promotion and expansion of PIHCT service to the public at large (Zachariah, 2003; Hisler, 2003).

There was widespread support for PIHCT, with 86.6% TB and70.8% of non TB patients reporting that they were either extremely or very much in favor of PIHCT. Majority of respondents felt that PIHCT would increase uptake of ARV, number of tested patients and would decrease HIV related stigma. Patient who believed that PIHCT is important OR= 11.4; 95% CI (5.1, 25.4) and those who knows people living with HIV/AIDS OR=3; 95% CI (1.6, 5.5) were significantly associated with PIHCT acceptability after adjusted for other variables. A similar result was also reported from a population based study on routine testing in Botswana, where 81% of the study TB patients were extremely or very much in favor of routine HIV test. These results, seen with the high acceptability of PIHCT among TB patients (89.9%) and 82.6% among non TB patients in this study, suggest that PIHCT is beneficial in improving access to testing and thereby increasing life-saving treatment users. HIV testing in combination with appropriate counseling is an important tool in the public health response to AIDS through providing Counseling and testing programs designed to promote knowledge of sero-status which can facilitate behavioral change, assist partners to negotiate safer sexual practice and allow early access to care, treatment and support for the HIV infected (Kasster William, 1997; Weiser et.al, 2006).

CONCLUSIONS

Despite high knowledge on HIV/TB, still there is misconception about disease transmission which requires provision of health education and expanding IEC to raise awareness on the disease transmission in the study participants.Most of the study subjects have heard about PIHCT and are in favor of the service provided in the TB clinic and OPD for TB and non TB patients respectively. There was relatively high acceptability of PIHCT in this study, with TB patients more accepted than non TB patients, which can be taken as constructive in the HIV/AIDS prevention and control program. The key perceived facilitator and barrier for PIHCT willingness were health care provider initiation and thinking self as not being at risk respectively, which was in line with other studies report.

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