ORIGINAL ARTICLE

Prevalence and associated factors of non-uptake of human immunodeficiency virus testing of tuberculosis patients in Thailand

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Abstract

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The aim of this study is to assess the prevalence and associated factors of non-uptake of human immunodeficiency virus (HIV) testing by tuberculosis hospital patients in Thailand. In 2014, a cross-sectional survey was conducted among 425 tuberculosis (TB) patients from 42 public hospitals (21 provincial and 21 district hospitals), in 21 provinces, from all four regions in Thailand. All new TB and new retreatment patients were interviewed within one month of anti-tuberculosis treatment. The outcome was self-reported HIV testing after TB diagnosis.

Results indicated that 38.4% of the 425 participants had not undergone HIV testing. Multiple logistic regression found that 61 years and older and being a Thai national were significantly associated with "Not tested for HIV", while other socio-demographic factors, residential status, TB diagnosis characteristics, TB treatment status, TB knowledge, substance use and TB-AIDS stigma were not significantly associated with "Not tested for HIV". In conclusion, the level of HIV testing among TB hospital patients was suboptimal, and the Ministry of Public Health should continue to scale-up HIV testing and other collaborative TB-HIV services at health facilities.

Keywords: HIV testing, tuberculosis patients, Thailand

Introduction

Thailand is one of the "high-burden" tuberculosis (TB) and high TB/HIV burden countries.[1,2] It is estimated that the TB burden is even higher among migrants in Thailand.[3] HIV-positive TB patients are estimated to be 15% in 2013 in Thailand.[2] Mortality for cases of TB-HIV co-infection was about 13%, which was about double the mortality of TB cases without HIV infection.[4] HIV testing among TB patients provides access to the package of HIV treatment and care.[5] The World Health Organization[5] has recommended routine HIV counselling and testing of all TB suspects. Thailand has promoted provider-initiated HIV testing and counselling (PITC) for TB patients as part of the national implementation guidelines with a target to test all registered TB patients for HIV.[4,6] TB patients with known HIV status was 83% in 2013 in Thailand.[2] Using patient record data in an earlier study in Thailand, 70.1% of TB patients had received HIV testing.[7]

As reviewed in Peltzer et al.[8] various patient-level factors have been found to be associated with TB patients' non-uptake of HIV testing, including male sex, older age, lower education, employment status, TB treatment status, HIV risk behaviour, fear of stigmatization, and fears of testing HIV-positive. In addition, based on a previous surveillance study in Thailand, associated factors with not receiving HIV testing included having a non-Thai nationality, living in a non-urban area, lack of TB knowledge and attending a large government or non governmental health facility.[7]

Information about the status of implementation of collaborative TB/HIV activities to identify HIV positives among TB patients in Thailand is limited to patient record data. Therefore, the aim of this study was to assess HIV case finding among TB patients at public health facilities in Thailand by interviewing TB patients during their TB treatment. The findings are hoped to provide feasible recommendations for policy makers and implementers of TB/HIV care in Thailand. Research objectives included, (1) To determine the proportion of TB patients who were tested for HIV during anti-TB treatment follow-ups in 42 public provincial and district hospitals across Thailand, and (2) To assess factors associated with non-uptake of HIV testing of tuberculosis patients.

Methods

Sample and procedure

TB out-patients were interviewed as they were visiting the TB clinic at a public provincial or district hospital. The target was to recruit 15 Thai TB patients for each of 28 public hospitals (14 provincial and 14 district hospitals) and 5 TB migrant patients for each hospital of 14 public hospitals (7 provincial and 7 district hospitals). Two public hospitals (one provincial and one district hospital) were purposefully selected per province in 21 provinces (out of 67 public provincial or district hospitals in Thailand) from all four regions in Thailand. A health care provider identified a new TB treatment or retreatment patient (within one month of treatment, and 18 years and above) informed the patient about the study and referred the patient for participation if interested. A research assistant asked for permission/consent from patients attending the health facility to participate in the study. All new TB and new retreatment patients were interviewed within one month of anti-tuberculosis treatment. The interview was conducted by trained

research assistants. Ethical approval was granted from the Research Ethics Committee of Faculty of Social Sciences and Humanities, Mahidol University (COA No: 2014/222.1308) and the Ministry of Public of Health Thailand also provided approval for this study.

Measure

Socioeconomic characteristics included age, gender, educational level, marital status, income, employment status, and residential status.

HIV testing history was asked with the question, "Have you ever had an HIV test?" If the response was affirmative, the patient was asked, "How long ago have had your most recent HIV test?"[8]

TB treatment status and HIV status were assessed by self-report and where possible from medical information.[8] TB knowledge and how TB was diagnosed was also assessed.[9] *Stigma in relation to TB and HIVAIDS* was assessed with a validated scale in Thailand.10 Cronbach alpha for this scale was 0.78 in this study.

Alcohol consumption was assessed with one item on the frequency of alcohol use.[11]

Tobacco use was assessed with the question, "Do you currently use one or more of the following tobacco products (cigarettes, snuff, chewing tobacco, cigars, etc.)?" Response options were "yes" or "no".[12]

Data analysis

All statistical analyses are carried out using IBM (International Business Machines Corporation) SPSS (Statistical Package for the Social Sciences) version 22. Frequencies, means, and standard deviations, were calculated to describe the sample. Chi-square and independent t-tests were used to identify significant differences between TB patients who had and who had not tested for HIV across the categorical and continuous study variables. Multiple logistic regression with forced "entry" was used to identify associations between independent variables such as sociodemographic and health status veriables and dependent variable (not having tested for HIV). P-value of <0.05 was considered significant.

Results

Sample characteristics

Of the total sample (N=473) included in the study 3 refused to participate and 45 had incomplete data, so the final sample included 425, 70.1% men and 29.9% women, with a mean age of 47.9 years (SD=16.0), range 18 to 88 years. Almost two-thirds of the participants (66.7%) were 41 years and older, the majority (91.8%) were Thai, and 34.7% had completed secondary education. Regarding TB diagnosis, 81.3% were diagnosed when they were sick, 11.3% were TB retreatment cases and few (3.8%) believed that TB cannot be cured. Participants' characteristics stratified by HIV test uptake are presented in Table 1. Almost four in ten (38.4%) of the 425 participants had not undergone HIV testing. Of those who got tested for HIV about 85% got tested within the past year.

Table 1: Characteristics of TB patients

	Total n (%)	Tested for HIV n (%)	Not tested for HIV n (%)	χ^2 P-value
All	(n=425)	262 (61.6)	163 (38.4)	
Age in years	(n=423)			
18-40	141 (33.3)	102 (72.3)	39 (27.7)	<0.001
41-60	187 (44.2)	120 (64.2)	67 (35.8)	
61 or more	95 (22.5	39 (41.1)	56 (58.9)	
Gender	(n=425)			
Female	127 (29.9)	87 (68.5)	40 (31.5)	0.058
Male	298 (70.1)	175 (58.7)	123 (41.3)	
Nationality	(n=425)			
Thai	390 (91.8)	232 (59.5)	158 (40.5)	0.002
Migrants[1]	35 (8.2)	30 (85.7)	5 (14.3)	
Education	(n=424)			
None	42 (9.9)	27 (64.3)	15 (35.7)	0.001
Primary	235 (55.4)	127 (54.0)	108 (46.0)	
Secondary or more	147 (34.7)	108 (73.5)	39 (26.2)	
Residence	(n=425)			
Urban	212 (49.9)	127 (59.9)	85 (40.1)	0.461
Rural	213 (50.1)	135 (63.4)	78 (36.6)	
How TB was diagnosed	(n=402)			
Community screening	20 (5.0)	14 (70.0)	6 (30.0)	0.223
Sick	327 (81.3)	201 (61.5)	126 (38.5)	
By chance when checking other diseases	55 (13.7)	28 (50.9)	27 (49.0)	
TB treatment status	(n=425)			
New TB	377 (88.7)	230 (61.0)	147 (39.0)	0.448
Retreatment	48 (11.3)	32 (66.7)	16 (33.3)	
Substance use	(n=425)			
Current tobacco use	68 (16.0) (n=417)	44 (64.7)	24 (35.3)	0.571
Past week alcohol use	36 (8.6) (n=418)	20 (55.6)	16 (44.4)	0.433
TB cannot be cured	16 (3.8)	7 (43.8)	9 (56.3)	0.132
				t-test P-value
TB-AIDS stigma (scale)	11.2 (4.3)	11.0 (4.1)	11.3 (4.5)	0.506

[1] from Myanmar, Cambodia and Lao PDR

Associations with not testing for HIV

Multivariate analysis found 61 years and older and being a Thai was significantly associated with "Not tested for HIV", while other socio-demographic factors, residential status, TB diagnosis characteristics, TB treatment status, TB knowledge, substance use and TB-AIDS stigma were not significantly associated with "Not tested for HIV" (see Table 2).

Table 2: Predictors of non-uptake of HIV testing of TB patients in Thailand

Variable	Crude OR (95% CI)	P-value	Adjusted OR (95% CI)[a,b]	P-value
Age in years				
18-40	1.00		1.00	0.876
41-60	1.46 (0.91-2.35)	0.118	1.05 (0.59-1.85)	0.015
61 or more	3.76 (2.17-6.51)	<0.001	2.41 (1.19-4.86)	
Gender				
Female	1.00		1.00	
Male	1.53 (0.99-2.37)	0.059	1.34 (0.80-2.24)	0.266
Nationality				
Migrants	1.00		1.00	
Thai	4.09 (1.55-10.76)	0.004	4.42 (1.44-13.56)	0.009
Education				
None	1.00		1.00	
Primary	1.53 (0.77-3.03)	0.221	0.84 (0.35-2.03)	0.698
Secondary or more	0.65 (0.31-1.36)	0.247	0.44 (0.16-1.20)	0.111
Residence				
Urban	1.00		1.00	
Rural	1.16 (0.78-1.71)	0.461	1.38 (0.88-2.17)	0.159
How TB was diagnosed				
Community screening	1.00		1.00	
Sick	1.46 (0.55-3.91)	0.448	1.43 (0.48-4.31)	0.525
By chance when checking other diseases	2.25 (0.75-6.71)	0.146	1.97 (0.58-6.68)	0.279
TB treatment status				
New TB	1.00		1.00	
Retreatment	0.78 (0.42-1.48)	0.448	1.11 (0.47-2.62)	0.809
Substance use				
Current tobacco use	0.86 (0.50-1.47)	0.572	0.76 (0.40-1.41)	0.381
Past week alcohol use	1.32 (0.66-2.62)	0.434	1.63 (0.73-3.63)	0.233
TB-AIDS stigma (scale)	1.06 (0.93-1.21)	0.506	1.01 (0.96-1.07)	0.645
TB cannot be cured	2.14 (0.78-5.86)	0.140	2.60 (0.69-9.83)	0.160

[a] Using "enter" LR selection of variables

[b] Hosmer and Lemeshow goodness of fit Chi-square 11.63, df 8, 0.168; Cox and Snell R2 0.11; Nagelkerke R^2 0.15

Discussion

The study found in a national sample of tuberculosis public health care patients that 38.4% had not tested for HIV within one month of TB treatment. This rate seems to be worse than in previous surveillance data in Thailand[2, 7] and patient report data in South Africa.[8, 13] Therefore, there is a need to improved uptake of HIV testing among TB public health care patients in Thailand.

In multivariate analysis, 61 years and older and being a Thai were significantly associated with "Not tested for HIV". Older age was also found to be associated with non-uptake of HIV testing in other studies.[14] The finding of better HIV testing uptake among migrants than among Thais seems contrary to a previous study[7] but seems to show improved HIV testing rates among migrant TB patients. More emphasis may need to be placed on increasing access to HIV testing of Thai TB patients. Unlike some previous studies[7,15-17] this study did not find residential status, TB diagnosis characteristics, TB treatment status, lack of TB knowledge, substance use and TB-AIDS stigma associated with "Not tested for HIV".

As a recommendation, more focus should be placed on offering routine HIV testing to all patients with presumptive and diagnosed TB, especially among older and Thai TB patients in Thailand.

Study limitations

Caution should be taken when interpreting the results of this study because of certain limitations. Generalisability of our findings is limited to TB patients on treatment in public health care centres. As this was a cross-sectional study, causality between the variables cannot be concluded. A further limitation was that variables were assessed by self-report and desirable responses may have been given. Moreover, there were some problems of identifying migrants in this study, which can explain the lower than expected number of migrant participants. Some areas of assessment were not included in the study, which have been related to non-uptake of HIV testing in TB patients, such as HIV knowledge[15], reasons for not testing for HIV[8], relational factors[13], and health system factors.[13,18]

Recommendations

The level of HIV testing among TB public health care patients was by far suboptimal, as per policy all patients should be tested. The Ministry of Public Health should continue to scale-up HIV testing and other collaborative TB-HIV services at health facilities.

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