

# Health Seeking Behavior among Pulmonary Tuberculosis Suspects in the Community in Indonesia

Dina Bisara Lolong<sup>1</sup>, Lamria Pangaribuan<sup>1</sup>, Kristina L. Tobing<sup>1</sup>, Oster S Simarmata<sup>1</sup>, Ingan Tarigan<sup>2</sup>, Siti Isfandari<sup>3</sup>, Ni Ketut Aryastami<sup>3</sup>, Ina Kusri<sup>4</sup>\*

<sup>1</sup>Department of Health Research and Development, Center for Public Health Efforts, Jakarta, Indonesia

<sup>2</sup>Department of Health Research and Development, Center for Health Resources and Services, Jakarta, Indonesia

<sup>3</sup>Department of Health Research and Development, Center for Humanities and Health Management, Jakarta, Indonesia

<sup>4</sup>Department of Health Research and Development, Unit in Magelang, Jakarta, Indonesia

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## ABSTRACT

Late seeking health facilities among Tuberculosis (TB) suspects patients leads to the low detection rate of tuberculosis cases.

**Objectives:** To determine the factors that influence health-seeking behavior in tuberculosis suspect patients.

**Methods:** This national cross-sectional TB survey was carried out from 2013 to 2014. The 156 stratified clusters sampling units were sort into rural/urban and three regions. A sample of eligible 15-year-olds was interviewed for TB symptoms and screened for MTB by microscopy and LJ culture. All positively screened participants were interviewed about TB treatment-seeking behavior. Statistical analysis using logistic regression by Stata.

**Results:** Approximately 13.3% (1,119 out of 8,388) of

TB suspect participants said they could hide a family member's TB. However, TB suspects who hid their family member's TB were 1.2 times more likely to seek treatment (unadjusted OR=1.22 (95 percent CI:1.04-1.44). Current smokers were 1.81 times less likely to seek treatment (OR=1.81 (95 percent CI:1.55-2.11). Females are more likely than males to have tuberculosis (OR=1.26 (95 percent CI:1.09-1.45).

**Conclusion:** The proportion of TB patients seeking medical attention remains low. Patients with TB in their family, current smokers and female patients are determining factors of health-seeking behavior.

**Keywords:** Health-seeking, Behavior, Tuberculosis

\***Correspondence:** Ina Kusri, Department of Health Research and Development, Unit in Magelang, Jakarta, Indonesia, E-mail: dyy\_syg@yahoo.com

## ABBERRATIONS

TB: Tuberculosis; MTB: Mycobacterium Tuberculosis; DOTS: Directly Observed Treatment Short-course; CXR: Chest Radiography; KAP: Knowledge, Attitude, Practice; CI: Confidence Interval; OR: Odds Ratio

## INTRODUCTION

Prompt diagnosis and early initiation of treatment remain key strategies for TB prevention and control. Diagnostic delays have been documented both at patient and health system levels (Kiwuwa MS, *et al.*, 2005). The main factors associated with diagnostic delay included low health care access, geographical or sociopsychological barriers (Storla DG, *et al.*, 2008) and also low-level healthcare facility, private practitioner consultation or traditional healer, poverty, alcoholism and substance abuse, history of immigration, low educational level, low awareness of TB, incomprehensive beliefs, self-treatment, and stigma (Kiwuwa MS, *et al.*, 2005; Xu B, *et al.*, 2005). Without treatment, the mortality rate of TB is high. Studies of the natural history of TB disease in the absence of treatment with anti-TB drugs found that about 70% of individuals with sputum smear-positive pulmonary TB died within ten years of being diagnosed, as did about 20% of people with culture-positive (but smear-negative) pulmonary TB (Tiemersma EW, *et al.*, 2011).

The Directly Observed Treatment Short-course (DOTS), the internationally recommended strategy for TB control, was adopted in 1995. DOTS comprise five components: Case detection by sputum smear microscopy and rapid molecular test, standardized treatment with supervision, and patient support are the major ones (MHRI, 2007). Despite the early introduction of DOTS, a national study carried out in 2017 found that about 80% of new cases were detected of which 41% of these cases were not reported, while the rest 20% were undetected or under-diagnosed (WHO, 2008). The low case detection rate could be attributed to many fac-

tors which could be broadly categorized as patient-related delay of health care seeking and failure of the health care system to diagnose patients. Studies have reported that patient delay represented 77% of the total delay period from onset of symptoms to initiation of treatment (Kiwuwa MS, *et al.*, 2005; MHRI, 2018).

Patients live in a complex healthcare system with formal and informal providers, and that TB diagnosis is not missed at first contact with the healthcare system. Missed opportunities at first contact with the healthcare system threaten the well-being of the patients and have the potential to increase and sustain TB transmission in the community. Furthermore, we need to investigate tuberculosis suspect's health-seeking behavior to avoid diagnosis delay of TB diagnosis in the community. In this study, we only documented the health-seeking behaviors of patients with chronic cough. We focus to evaluate early TB diagnosis, so interventions could be instituted to ensure early TB diagnosis and prompt treatment initiation.

## MATERIALS AND METHODS

### Sampling and participants

We analyze secondary data based on national coverage cross-sectional survey that was carried out from April 14, 2013 until June 30, 2014 applying stratified multi-stage cluster sampling. Stratification was done by regions and urban/rural status. Indonesia was divided into three regions: Sumatera (46 clusters), Java-Bali (64), and other regions (outside Java-Bali and Sumatera) (46). The 156 clusters were distributed in 136 districts/cities throughout 33 provinces. The inclusion criteria were that residents should have lived in the selected cluster for a minimum of one month and be aged 15 years and above.

All suspect participants were interviewed about TB symptoms and received direct digital chest radiography (CXR). Participants were considered presumptive TB cases if they reported a cough for two weeks or more and/or hemoptysis and/or had abnormal-

ity in lungs or pleura based on the CXR. The presumptive TB patients were asked to submit spot and morning sputum specimens for direct microscopy examination with Ziehl-Neelsen staining and Lowenstein Jensen culture. Expert MTB/RIF was carried out if the smear was positive or decisive culture result was not available. For knowledge, attitude and stigma information, all positively screened participants were interviewed about KAP (Knowledge, Attitude, and Practice) and TB-related stigma.

The inclusion criteria of sampling in this study are completed records of Knowledge, Attitude, and Practice from the participant with chronic cough. The number of successfully interviewed participants about Knowledge, Attitude, and Practice (KAP) is 8,388. Age was calculated based on the participant's life span according to the last birthday. Based on age group classification, age was categorized into two groups: 15-54 years and 55 years+. Education was the highest completed level of formal education (the highest diploma attained by the participant), grouped into ≤ junior high school and ≥ senior high school. The area was classified into urban and rural areas. Other variables were asked knowledge of transmission, main TB symptoms, whether TB is curable.

**Data analysis**

Bivariate analysis using chi-square and multivariate analysis by logistic regression was performed using STATA 14.0 (College Station, TX, USA). Participants were asked how TB can be transmitted, including variables: through black magic, genetically inherited, and through food/drink. Some socio-demographic questions were asked and questions about the main TB symptoms, whether TB is curable, and whether TB treatment is free. Attitude towards TB-related stigma was also asked, whether participant's family hide their member who has TB.

**RESULTS**

**The proportion of presumptive TB patients with chronic cough**

The health seeking behavior of the respondents with chronic cough is represented in Figure 1, also shows the proportion of participants presenting with chronic cough and or hemoptysis (suspects). Total number of participants were 67,944. Majority of the participants with chronic cough 8,553 (12.59%) and the number of 8,466 (98.98%) consented and from this the total sample was 8,388 (99.08%) of which were successfully interviewed about TB knowledge, attitude and practice. Very few of the

participants refused to be interviewed 87 (1.02%). Out of 8,466 (12.59%) participants who had chronic cough symptom, 78 (0.92%) were under TB treatment (consuming anti-TB drugs at the time of interview).

Only 2,134 (25.44%) out of 8,388 (99.08%) TB suspect participants sought treatment at health facility or healthcare provider, while as many as 6,254 (74.56%) did not. Of the latter participants, more than half of them, which were 3,641 (58.22%), also did not seek health (not treated), while 2,513 (40.18%) went to pharmacy/drugstore. Majority of the participants who sought treatment went to health center 885 (41.47%), followed by general practitioner/specialist 409 (19.17%), nurse/midwife 376 (17.62%), government hospital 233 (10.92%), clinic 139 (6.51%) and private hospital 92 (4.31%).

Participants were asked about where they initially looked for health provider when they had chronic cough. Majority of the participants did not seek care 6,254 (75.6%) and only 2,134 (25.4%) did seek healthcare. Out of those 25.4% of participants, 885 (41.5%) chose health center, followed by physician private doctor practionary 409 (19.2%), nurse/midwife 376 (17.6%), government Hospital 233 (10.9%), clinic 139 (6.5%) and private hospital 92 (4.3%) (Figure 1).

The number of males with chronic cough were 4,979 (59.4%), higher than females which were 3,409 (40.6%). The number of participants aged 15-54 were two times higher than of the 55+ age group. Majority of suspect participants were senior high school graduated. Participants with chronic cough living in rural area were higher than participants living in urban area. Even though mentioning TB transmission through droplet (65,47%), more than half of the participants reported that TB transmission was through food/drink (59.4%). Witchcraft (18.44%) was still reported as source of TB infection, while some claimed that genetic factor (46.98%) was also source of TB infection.

There were 864 participants (10.3%) who had been ever diagnosed with TB and 533 participants (6.4%) mentioned that they had lived with a TB patient. Some 339 participants (4.0%) also reported that they had DM. Almost half of the participants with chronic cough reported that they currently smoked. In general, the participants knew about main TB symptoms (75.8%) and that TB can be cured (75.7%). Unfortunately, only 20% of the participants mentioned that TB drugs are free. Furthermore, there were still participants who reported that they hid their family member who had TB (13.3%) (Table 1).

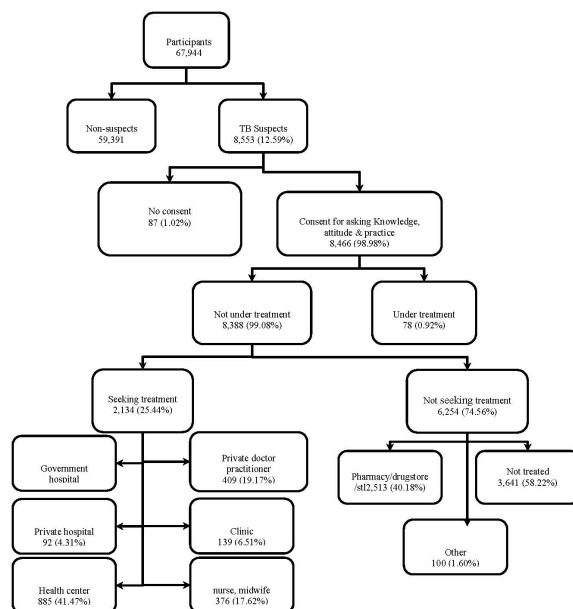


Figure 1: Consort health seeking behavior of presumptive TB with chronic

**Table 1: Socio-demographic characteristics of suspect participants**

No.	Variable	N	%
1	Sex		
	Male	4,979	59.36
	Female	3,409	40.64
2	Age		
	15-54	5,584	66.57
	≥ 55	2,804	33.43
3	Education		
	≤ Junior high School	1,781	21.23
	≥ Senior high School	6,607	78.77
4	Urban/Rural		
	Urban	3,103	36.99
	Rural	5,285	63.01
5	Droplet		
	No	2,896	34.53
	Yes	5,492	65.47
6	Through food/drink		
	No	3,406	40.61
	Yes	4,982	59.39
7	Magic		
	No	6,841	81.56
	Yes	1,547	18.44
8	Genetic factor		
	No	4,447	53.02
	Yes	3,941	46.98
9	Ever diagnosed with TB		
	No	7,524	89.7
	Yes	864	10.3
10	DM		
	No	8,049	95.96
	Yes	339	4.04
11	Ever had lived with TB patient		
	No	7,855	93.65
	Yes	533	6.35
12	Smoking habit		
	No	4,447	53.02
	Yes	3,941	46.98
13	Knew TB main symptom		
	No	2,027	24.17
	Yes	6,361	75.83
14	TB Can be Cured		
	No	2,041	24.33
	Yes	6,347	75.67
15	Anti-tuberculosis free		
	No	6,712	80.02
	Yes	1,676	19.98
16	Hiding family member with TB		
	No	7,269	86.66
	Yes	1,119	13.34

**Factors associated with health seeking behavior specifically regarding anti-TB therapy**

Univariate analysis of socio-demographic and other variables was shown in Table 2. A total of 8,388 presumptive TB participants were asked about the initial TB treatment seeking. In Table 2, univariate analysis revealed that 8 variables were significant (P-value<0.010). The main predicting factors for health seeking treatment were namely gender, age, education level, DM, ever diagnosis with TB, history of contact with TB patient, current smoking habit, knowing that TB treatment is free and hiding TB patient. The crude odds ratios (95% CI) were 1.81 (1.61-2.02), 1.34 (1.23-1.46), 1.52 (1.21-1.91), 1.45 (1.23-1.72), 1.29 (1.06-1.56) and 2.19 (1.94-2.47), 1.39 times (1.22-1.58), respectively. However, participants hiding family member with TB were 1.22 times (1.04-1.44) less likely to seek TB treatment.

Information on the knowledge of respondents about cause and symptoms of TB is summarized in Table 2. Most of the respondents (75.8%) had known the main symptom of TB (chronic cough and hemoptysis), TB can be cured (75.7%), however only 20% the participants knew anti-TB drugs are free. Knowledge about the mode of transmission and preventive methods of TB are also summarized in Table 2. More than half (65.5%) of the study participants said that PTB is transmitted through cough droplets. Almost half (47%) of the participants mentioned that PTB is cause genetic, and that PTB is transmitted through magic (18.4%) and through food/drink (59.4%).

A total of 8,388 presumptive TB participants were asked about their initial TB treatment seeking. In Table 2, from the result of the multivariate analysis, 7 variables were found to be significant (P-value 0.005). The variables were namely gender, age, DM, history of contact with TB, current smoking habit, free TB drugs, and hiding family member with TB in the household (Table 2).

In this final multivariate analysis, as shown in Table 3, it was found that females were 1.3 times (OR=1.26, 95% CI (1.09-1.45) more likely to seek TB treatment than males. Participants aged 55+ were 1.3 times (OR=1.32, 95% CI (1.21-1.46) more likely to seek TB treatment than younger ones. Participants who had no current smoking habit were 1.8 times (OR=1.81, 95% CI (1.55-2.11) more likely to seek TB treatment than participants who currently smoked. Participants who knew TB treatment is free were 1.2 times (OR=1.24, 95% CI (1.08-1.42) more likely to seek TB treatment than participants did not know TB treatment is free. Participants who knew about ways of TB transmission (droplets) were 1.2 times (OR=1.18, 95% CI (1.04-1.33) more likely to seek treatment than participants who did not know about ways of TB transmission.

Participants who did not keep a secret if a TB patient living at their house were 1.2 times (OR=1.18, 95% CI (1.00-1.39) more likely to seek treatment than participants who kept a secret if they had a TB patient living at their house.

**Table 2: Bivariate analysis of associations between selected factors and TB patient's health seeking behavior**

No.	Variables	Total	Health seeking		OR(95% CI)	P-value
		n	Yes, n(%)	No, n(%)		
1	Gender				1	
	Male	4,979	1,033 (20.75)	3,946 (79.25)		
	Female	3,409	1,101 (32.30)	2,308 (67.70)	1.81 (1.61-2.02)	0
2	Age (years)				1	
	15-54	2,804	814 (29.03)	1,990 (70.97)		
	≥ 55	5,584	1,320 (23.64)	4,264 (76.36)	1.34 (1.23-1.46)	0
3	Education				1	
	≤ Junior high School	1,781	469 (26.33)	1,312(73.67)		
	≥ Senior high School	6,607	1,665 (25.20)	4,942 (74.80)	1.07 (0.92-1.25)	0.39
4	DM				1	
	No	8,049	2,018 (25.07)	6,031 (74.93)		
	Yes	339	116 (34.22)	223 (65.78)	1.52 (1.21-1.91)	0
5	Ever diagnosis with TB				1	
	Non TB cases	7,524	1,851 (24.60)	5,673 (75.40)		
	Yes TB cases	864	283 (32.75)	581 (67.25)	1.45 (1.23-1.72)	0
6	History of contact with TB patient				1	
	No	7,855	1,973 (25.12)	5,882 (74.88)		
	Yes	533	161 (30.21)	372 (69.79)	1.29 (1.06-1.56)	0.01
7	Current smoking habit				1	
	No	4,447	1,435 (32.27)	3,012 (67.73)	2.19 (1.94-2.47)	0
	Yes	3,941	699 (17.74)	3,242 (82.26)		
8	Droplets				1	
	No	2,896	710 (24.52)	2,186 (75.48)		
	Yes	5,492	1,424 (25.93)	4,068 (74.07)	1.10 (0.98-1.23)	0.113

9	Knowing main TB symptoms					
	No	2,027	506 (24.96)	1,521 (75.04)	1	
	Yes	6,361	1,628 (25.59)	4,733 (74.41)	1.04 (0.92-1.18)	0.525
10	Knowing TB is curable					
	No	2,041	500 (24.50)	1,541 (75.50)	1	
	Yes	6,347	1,634 (25.74)	4,713 (74.26)	1.08 (0.94-1.23)	0.283
11	Knowing TB drugs are free					
	No	6,712	1,621 (24.15)	5,091 (75.85)	1	
	Yes	1,676	513 (30.61)	1,163 (69.39)	1.39 (1.22-1.58)	0
12	Keeping a secret about TB patient in house					
	No	7,269	1,883 (25.90)	5,386 (74.10)	1.22 (1.04-1.44)	0.014
	Yes	1,119	251 (22.43)	868 (77.57)	1	
13	Witchcraft/magic					
	No	6,841	1,762 (25.76)	5,079 (74.24)	1.12 (0.97-1.28)	0.112
	Yes	1,547	372 (24.05)	1,175 (75.95)	1	
14	Genetic factor					
	No	4,447	1,140 (25.64)	3,307 (74.36)	1.02 (0.92-1.13)	0.738
	Yes	3,941	994 (25.22)	2,947 (74.78)	1	
15	Through food/drinks					
	No	3,406	857 (25.16)	2,549 (74.84)	1	
	Yes	4,982	1,277 (25.63)	3,705 (74.37)	1.03 (0.91-1.16)	0.654
16	Place of residence					
	Urban	3,103	800 (25.78)	2,303 (74.22)	1.02 (0.86-1.22)	0.808
	Rural	5,285	1,334 (25.24)	3,951 (74.76)	1	

Table 3: Logistic regression model to determine the predicting factors of TB patient's health seeking behaviour

No.	Variables	OR (95% CI)	P-value
1	Gender		
	Male	1	
	Female	1.26 (1.09-1.45)	0.002
2	Age (years)		
	15-54	1	
	≥ 55	1.32 (1.21-1.46)	0
3	Current smoking habit		
	No	1.81 (1.55-2.11)	0
	Yes	1	
4	Droplet infection		
	No	1	
	Yes	1.18 (1.04-1.33)	0.01
5	Knowing TB drugs are free		
	No	1	
	Yes	1.24 (1.08-1.42)	0.002
6	Keeping a secret about TB patient in house		
	No	1.18 (1.00-1.39)	0.046
	Yes	1	

## DISCUSSION

Various studies have highlighted the importance of knowledge as well as misconceptions about TB transmission. Stigma defines as existing when a person is identified by a label that sets the person apart and links the person to undesirable stereotypes that result in unfair treatment and discrimination (Baral SC, *et al.*, 2007). Different propositions have been propounded concerning the etiology of stigma fear of being infected is an obvious cause of discrimination, while scientifically unfounded beliefs about

the transmission of the disease have been found to be significant predictors of stigma (Jaramillo E, 2009). Stigma and discrimination may affect the extent to which the patient is able to obtain, maintain and complete treatment (Lienhardt C and Ogdén JA, 2004).

Basic knowledge about the cause and mode of transmission is needed to reduce the stigma caused by traditional beliefs and negative attitudes towards TB (Hoa NP, *et al.*, 2004). Misconceptions may include notions such as transmission through sharing utensils or through food, etc. that could

have a tendency towards discrimination and stigmatization (Das P, *et al.*, 2012). Multiple factors related to stigma can influence treatment-seeking behavior, including knowledge and social attitudes toward TB. A study in Pakistan on the knowledge, attitude and misconceptions regarding Tuberculosis in Pakistani patients found that eating contaminated food was considered the source of infection by 81 (47.6%) and 97 (57%) considered separating dishes as an important means of preventing TB transmission (Khan JA, *et al.*, 2006). Misconceptions and false beliefs or myths among TB patients have turned TB into a social stigma. Such stigmatization of TB patients in the society can play an important role that leads to reluctance of patients in seeking treatment (Ali SS, *et al.*, 2003).

Besides, there was no significant relationship found between knowledge, attitude and practice towards TB infection among the community. Feeling better after sometime treatment could non-adherence treatment TB say 2 months treatment (Widjanarko B, *et al.*, 2015; Farhanah S, *et al.*, 2018). The findings of this study are expected to build community awareness towards TB, thus assist in planning the effective methods to promote better knowledge and understanding, and eliminate misconceptions regarding TB infection among the community and consequently reduce the prevalence of TB and improve the community's quality of health (Mekonnen HS and Azage AW, 2018).

Majority of the study participants had no correct information about the causative agent of TB and the main symptom of PTB. Moreover, low level of overall knowledge, attitudes and practices about TB was associated. Only 3.3% mentioned bacteria/germ as the cause of pulmonary TB (PTB) and 9.9% mentioned cough for at least two weeks as the sign of TB in Ethiopia (Bati J, *et al.*, 2013).

Furthermore, many studies found that patients lacked knowledge about the cause, transmission and duration of treatment of TB. The most common reason mentioned for discontinuing treatment was the patient "felt cured" (Rondags A, *et al.*, 2014; Gebreweld FH, *et al.*, 2018). Similar to this study, women in Ghana were more inclined (33%) than men (25%) to keep TB in the family a secret. Views about keeping TB secret declined with age for both sexes. For women, higher education had a positive association with whether TB in the family would be kept a secret or not but the same was not observed for men. In a multivariable regression model, the strongest predictor of keeping TB secret (Amo-Adjei J, 2016).

The results showed that most respondents experienced mild self-stigma, there were feelings of shame, fear, despair, restrictions on interaction, and the inability to solve problems. The conclusion is that self-stigma is still experienced by TB clients at various level (Sari Y, 2018).

Ernesto found prejudice of TB treatment, to be significant predictors of stigma (Jaramillo E, 2009). Stigma and discrimination may affect the extent to which the patient is able to obtain, maintain and complete treatment. Surprisingly, this study found that Indonesia still has TB stigma, people believe TB transmission is through food/drink (59.4%), black magic (18.4%), even genetic (47%).

The tendency of patients to seek care at private practitioners in rural setting, was much lower than that observed in another study that covered populations from all over Bangladesh in which 43.8% first sought care at private practitioners before reporting to public health facilities (Ehsanul-Huq KATM, *et al.*, 2018; Rifat M, *et al.*, 2015).

## CONCLUSION

Lack of knowledge and stigma emerged as important barriers for treatment adherence. It is therefore essential for health workers to address these misconceptions and disseminate accurate information to patients, as ignorance may encourage stigmatization and social isolation of those diagnosed with TB.

## Limitations

The limitation of this study was the exclusion of all participants who were less than 15 years old. National Prevalence Survey is community-based information obtained only from suspect TB participants and not all participants.

## Significance to public health:

1. To identify TB related health seeking behavior
2. To provide information to health program to educate community to know TB symptom by educating people to visit health facility for TB treatment
3. To reduce treatment delay due to lack of TB knowledge and stigma

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