Community Research

The social determinants of knowledge and perception on pulmonary tuberculosis among females in Jakarta, Indonesia

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Abstrak

Latar belakang: *Indonesia belum berhasil mengatasi masalah tuberkulosis dengan angka prevalensi dan insidens yang masih tinggi. Jakarta, ibukota Indonesia dengan populasi yang besar dan angka tuberkulosis yang tinggi, memiliki karakteristik tersendiri dalam permasalahan tuberkulosis. Studi ini bertujuan mendapatkan determinan sosial terhadap tingkat pengetahuan dan persepsi masyarakat urban terkait tuberkulosis paru.*

Metode: *Studi ini melibatkan 2.323 sampel secara acak di Jakarta selama Februari-Mei 2011. Kuesioner disebar untuk menilai pengetahuan dan persepsi responden terhadap tuberkulosis paru. Tingkat pengetahuan dikategorikan menjadi 'buruk' dan 'baik'. Persepsi mengenai tuberkulosis diukur dengan menilai apakah responden mempersepsikan tuberkulosis sebagai penyakit yang memalukan dan akan dikucilkan.*

Hasil: *Mayoritas responden (88,7%) memiliki tingkat pengetahuan yang baik mengenai tuberkulosis, tetapi kesalahan persepsi terhadap tuberkulosis masih tinggi (45,9%). Tingkat pendidikan mempengaruhi tingkat pengetahuan tuberkulosis. Semakin tinggi tingkat pendidikan, semakin rendah risiko kekurangan pengetahuan. Persepsi mengenai tuberkulosis ditentukan oleh pendapatan keluarga dan tingkat pendidikan. Tingginya tingkat pendapatan keluarga dan pendidikan merupakan faktor protektif terhadap mispersepsi mengenai tuberkulosis sebagai penyakit yang memalukan dan kecenderungan untuk mengucilkan pasien tuberkulosis.*

Kesimpulan: *Masyarakat urban Jakarta memiliki tingkat pengetahuan tuberkulosis yang baik, namun hal tersebut tidak serta merta membuat masyarakat mempersepsikan tuberkulosis secara tepat. Usia, tingkat pendidikan dan memiliki asuransi kesehatan menentukan tingkat pengetahuan, sedangkan persepsi mengenai tuberkulosis lebih banyak dipengaruhi oleh tingkat pendidikan dan pendapatan keluarga. Program pengendalian tuberkulosis harus mempertimbangkan determinan sosial tersebut sebelum membuat strategi pengendalian yang komprehensif.*

Abstract

Background: Indonesia has not resolved tuberculosis burden since its prevalence and incidence has remained high. As the capital of Indonesia with a large population and a high number of tuberculosis cases, Jakarta has a distinctive condition of tuberculosis burden. This study aimed to obtain social determinants of knowledge and perception of pulmonary tuberculosis in an urban community.

Methods: This study used 2,323 samples taken by random sampling in Jakarta during February-May 2011. Questionnaires were delivered to assess respondents' knowledge and perception about pulmonary tuberculosis. Levels of knowledge were categorized into 'poor' and 'good'. Perceptions about tuberculosis were measured by whether respondents perceived tuberculosis as a humiliating disease and a shunned disease.

Results: Most respondents (88.7%) had good level of knowledge about tuberculosis, but misperception remained high (45.9%) in the community. Education level determined level of knowledge. The higher the education level the lower the risk of lack of knowledge. Tuberculosis perceptions were determined by family income and education level. Higher family income and education level were protective factors of misperception about tuberculosis as a humiliating disease and tendency to shun tuberculosis patients.

Conclusion: People in urban area of Jakarta have good level of knowledge about tuberculosis, but it does not necessarily lead to proper perception of tuberculosis. Age, education level and having health insurance determined level of knowledge, while tuberculosis perceptions were determined much more by education level and family income. Tuberculosis control program should consider these determinants prior to developing a comprehensive strategy.

Keywords: knowledge, perception, pulmonary tuberculosis, social determinants of health

Tuberculosis (TB) has remained a major global health issue for almost two decades including in Indonesia. Carried out since 1995,[1] directly observed treatment short course (DOTS) strategy has not been able to overcome TB problems in Indonesia. Indonesia's rank for TB prevalence has declined, but the number of TB prevalence and incidence has remained high.[2,3] World Health Organization (WHO) reported that estimated TB prevalence and incidence in Indonesia were still 690,000 and 450,000, respectively in 2010, with 64,000 mortality cases per year.[2] In 2004, 17 out of 33 provinces had higher TB prevalence than national number,[4] and the number only reduced to 12 out of 33 provinces in 2010.[3]

Even though medical interventions are the main global strategy, controlling TB also requires social, economic and environmental interventions as it is considered as "social disease".[5] Poverty and low economic status as causes of increasing risk of TB may remain unclear, but the higher risk of TB among people in low economic status may be largely affected by the greater exposure to some risk factors of TB. Currently, DOTS program mainly focuses on curative perspective and give limited concern on public health and prevention issue. Whereas, strengthening preventive efforts in the community is imperative including protection of uninfected, healthy people in community.

TB-burdened countries like Indonesia require both good quality of health care services and community involvement. Some considerable challenges, such as delayed care seeking and poor treatment compliance,[6,7] are resulted from limited community involvement in TB control program. TB programs within community are important to reduce risk infection and decline TB incidence in community. Program should modify some factors such as poor knowledge of TB[6,8] and stigmatization[7] in community which lead to delayed seeking care[8,9] and poor adherence to treatment. Otherwise, increasing number of delayed treatment, high number of untreated cases, low cure rate, increasing number of mortality, wide spread in population, and increasing number of TB multi-drugs resistances (MDR) remain unresolved.[10] Therefore, recognizing socio-demographic determinants of TB knowledge and perception in community is required.

Urban slum area is related to the high prevalence of TB.[11] Jakarta, Indonesia's capital, is a highly populated urban area of Indonesia which has a distinctive condition of TB burden and a wide variety of community. It is necessary to analyze underlying problems before developing further strategy to sustain existing achievements and address remaining constraints and challenges.[12] Despite its large access to both public and private health care services, Jakarta's TB prevalence is higher than national prevalence.[3] Plausible factors underlying this problem, instead of availability of health care services, are social determinants. This study aims to obtain social determinants of community knowledge and perception of pulmonary TB.

METHODS

We carried out a cross-sectional study during February-May 2011 in Jakarta. As TB prevalence is higher in slum and densely area,[11,13] we chose the 11 most densely villages in East Jakarta that were Bidara Cina, Pisangan Baru, Cipinang Cempedak, Kampung Melayu, Utan Kayu Utara, Malaka Sari, Utan Kayu Selatan, Palmeriam, Balimester, Kayu Manis, and Cipinang. We involved 2408 households as samples, taken by random sampling in the village, proportionally to the population density. Respondents were female of each household member who signed informed consent before the beginning of the study. We chose female as respondents since they may may provide reality in community where females are person-in-charge in households during working hours. Moreover, in Indonesia, they are also the most possible persons carrying household members to health services and attending health promotion program either in community or health services.

Since Jakarta is the main destination of urbanization, people move rapidly, some of them stay illegally, and live in slum and densely area. These conditions raised problems in data registration. We applied a point random sampling using geographic information system (GIS) supported by Arc View and Google Earth program[14-18] instead of using population data from village offices, in order to tackle its possible poor validity and reliability. We spread points in Google Earth map and marked it by geographical positioning system (GPS) point. Interviewers visited the closest household to the point in the map with GPS tools support. When the closest household was unable to follow the study, interviewers would look for other households living around within a maximum distance of 50 meters. They who approved to follow the study were marked as respondents of the study.

Before the study, we validated a questionnaire and trained interviewers to undertake interviews. Variables of socio-demographic determinants included in this study were sex, age, education level, family incomes, residence status, having health saving and having (type of) health insurances. The outcomes variables were TB knowledge and perception about TB as a humiliating disease and a shunned disease. The questions are provided in table 1.

Table 1. Questions asked to respondents

Knowledge
1. Do you know about tuberculosis, TB or TBC?
2. What is the cause of tuberculosis?
3. Is tuberculosis curable?
4. Is tuberculosis infectious?
5. How long is the minimum period for tuberculosis treatment?
Perception
1. In your opinion, is tuberculosis a humiliating disease? If "Yes", why?
2. If there is your friend or family with tuberculosis, will you shun him/her? If "Yes", why?

With 8.3% TB prevalence,[4] 5% precision and alpha = 5%, a minimum of 117 household are required in each sub-district. A number of 2408 household was sufficient, compared to the minimum samples required. The data are analyzed using SPSS 15. Demographic and outcome data were summarized into frequencies and percentages. The knowledge of TB was assessed by scoring with interval 0-25 then categorized into 'poor' (0-14) and 'good' (15-25). We explored the exposure of social characteristics and outcome variables by univariate analysis. Using two-sided test, the difference is considered significant if $p < 0.05$ in bivariate analysis. We included potential determinants of outcome variables at bivariate analysis ($p < 0.25$) to binary logistic and multinomial regression model.

The Ethical Committee of Faculty of Medicine Universitas Indonesia and Cipto Mangunkusumo Hospital, Indonesia approved this study prior to implementation.

RESULTS

Characteristics of respondents

We sampled respondents proportionally from 11 villages with a range of 2.2-17.2% per village. From the total of 2,408 interviewed respondents within 11 villages in Jakarta, we analyzed 2,323 (96.5%) data of female respondents. Majority of respondents were elderly, not-working females, with 35.4% female respondents above 50 years old and 68.1% unemployed females. Fifty (3.0%) respondents were temporary workers and foreign.

Majority of respondents' family (72.8%) had monthly income higher than IDR 1,300,000 (USD 134) which was Jakarta's monthly regional minimum payment in 2011 and can easily access health care services (92.0%). However, most respondents were not covered by either health insurances (58.8%) or health saving (93.7%). More than half respondents (52.9%) were completely uncovered by both of health insurances and health saving. Only 4% of uninsured households prepared health savings to cover their health expenses (Table 2).

Table 2. Characteristics of respondents (n = 2,323)

Characteristics	n	%
Age		
< 20 year old	13	0.6
20 - 30 year old	215	9.3
30 - 40 year old	582	25.1
40 - 50 year old	690	29.7
> 50 year old	823	35.4
Education level		
Not graduated elementary school	178	7.7
Elementary and secondary school	931	40.1
High school	995	42.8
University or higher	219	9.4
Family income		
< IDR 1,300,000	631	27.2
IDR 1,300,000 - 2,599,000	870	37.5
IDR 2,600,000 - 5,400,000	629	27.1
> IDR 5,400,000	193	8.3
Residence status		
Permanent resident	2,273	97.8
Temporary workers and foreign	50	2.2
Having health saving		
Yes	147	6.3
No	2,176	93.7
Having health insurance		
Askes	287	12.4
Askeskin/Jamkesmas	248	10.7
Jamsostek	250	10.8
Other insurance	172	7.4
No insurance	1,366	58.8

IDR: Indonesian Rupiah, *Askes: Asuransi Kesehatan* (health insurance for state civil servants), *Jamkesmas: Jaminan Kesehatan Masyarakat* (social health insurance for poor people), *Jamsostek: Jaminan Kesehatan Sosial* (health insurance for registered formal workers)

Most respondents (88.7%) had the good level of knowledge while the remaining (11.3%) was lacked of knowledge (5.2%). Despite having good level of knowledge, 45.9% out of respondents remained perceiving TB as humiliating disease while only 23.1% of respondents perceived that they would shun TB patients.

Table 3. Respondents' level of knowledge and perception (n = 2,323)

Characteristics	n	%
Level of knowledge		
Good	2,060	88.7
Poor	263	11.3
Perceiving TB as a humiliating disease		
Yes	1,066	45.9
No	1,257	54.1
Perceiving TB as a shunned disease		
Yes	537	23.1
No	1,786	76.9

Social determinants of TB knowledge

Social variables, except residence status and having health saving, were related to level of knowledge of TB with p < 0.05. We included age, education level, family income, and type of health insurance into a multivariable binary regression analysis (aOR, CI 95%, p). This study found that those with age > 50 years old was protective factor to have good TB knowledge, or a risk factor to poor TB knowledge compared to those with age of under 20 years old (0.786, 0.477-0.954, 0.026). This study also found that those with education level of elementary and secondary school tend to have good TB knowledge (7.607, 3.299-17.540, < 0.001), compared to those had not graduated elementary school. Respondents with education level of high school also tend to have good TB knowledge despite being lower than those with basic education level (2.800, 1.300-6.034, 0.009). Another social determinant was having *Askes* as health insurance (2.573, 1.101-6.010, 0.029).

Table 4. Social determinants of TB knowledge

Characteristics	Good		Poor		p	aOR	95% CI
	n	%	n	%			
Age							
< 20 year old	10	0.5	3	1.1	0.057	1.000	
20-30 year old	191	9.3	24	9.1	0.287	2.218	0.544-8.316
30-40 year old	533	25.9	49	18.6	0.490	1.194	0.722-1.977
40-50 year old	630	30.6	60	22.8	0.209	0.786	0.535-1.147
> 50 year old	696	33.8	127	48.3	0.026	0.786	0.477-0.954
Family income							
< IDR 1,300,000	509	24.7	122	46.4	0.001	1.000	
IDR 1,300,000-2,599,000	775	37.6	95	36.1	0.073	1.925	0.942-3.933
IDR 2,600,000-5,400,000	593	28.8	36	13.7	0.413	1.345	0.662-2.732
> IDR 5,400,000	183	8.9	10	3.8	0.705	0.866	0.411-1.825
Education level							
Not graduated elementary school	118	5.7	60	22.8	< 0.001	1.00	
Elementary and secondary school	791	38.4	140	53.2	< 0.001	7.607	3.299-17.540
High school	940	45.6	55	20.9	0.009	2.800	1.300-6.034
University or higher	211	10.2	8	3.0	0.644	1.210	0.552-2.611
Health insurance							
No insurance	1,177	57.1	189	71.9	0.006	1.000	
Askes	271	13.2	16	6.1	0.029	2.573	1.101-6.010
Askeskin/Jamkesmas	208	10.1	40	15.2	0.544	1.354	0.509-3.600
Jamsostek	238	11.6	12	4.6	0.188	1.856	0.739-4.660
Other insurance	166	8.1	6	2.3	0.666	1.252	0.451-3.471

aOR: Adjusted odds ratio, IDR: Indonesian Rupiah, *Askes: Asuransi Kesehatan* (health insurance for state civil servants), *Jamkesmas: Jaminan Kesehatan Masyarakat* (social health insurance for poor people), *Jamsostek: Jaminan Kesehatan Sosial* (health insurance for registered formal workers)

Social determinants of TB perception

A multivariable binary regression model showed that perception of TB as humiliating disease was related to family income and education level. The higher family income and the higher education level were protective factors of misperception about TB. Those having family income higher than IDR 2,599,000 had a lower the risk to perceive TB as a humiliating disease. This study revealed similar result for those having education level more than elementary school (Table 5).

Given 23.1% of respondents perceiving that they would shun TB patients from community, their perceptions were related to family income and education level. In a multivariable binary regression analysis, respondents with higher family income and education level had lower risk to misperception of shunning TB patients (Table 6).

Table 5. Social determinants of perceiving TB as humiliating disease

Characteristics	Yes		No		p	aOR	95% CI
	n	%	n	%			
Family income							
< IDR 1,300,000	291	27.3	340	27.0	0.089	1.00	
IDR 1,300,000-2,599,000	420	39.4	450	35.8	0.193	0.791	0.555-1.126
IDR 2,600,000-5,400,000	287	26.9	342	27.2	0.023	0.676	0.483-0.947
> IDR 5,400,000	68	6.4	125	9.9	0.045	0.706	0.502-0.993
Education level							
Not graduated elementary school	102	9.6	76	6.0	< 0.001	1.00	
Elementary and secondary school	441	41.4	490	39.0	< 0.001	0.404	0.263-0.619
High school	448	42.0	547	43.5	0.004	0.617	0.446-0.854
University or higher	75	7.0	144	11.5	0.016	0.679	0.496-0.930

aOR: Adjusted odds ratio, IDR: Indonesian Rupiah

Table 6. Social determinants of perceiving that TB patient should be shunned

Characteristics	Yes		No		p	aOR	95% CI
	n	%	n	%			
Family income							
< IDR 1,300,000	174	32.4	457	25.6	0.089	1.000	
IDR 1,300,000 - 2,599,000	186	34.6	684	38.3	0.193	0.791	0.555-1.126
IDR 2,600,000 - 5,400,000	135	25.1	494	27.7	0.023	0.676	0.483-0.947
> IDR 5,400,000	42	7.8	151	8.5	0.045	0.706	0.502-0.993
Education level							
Not graduated elementary school	87	16.2	91	5.1	< 0.001	1.000	
Elementary and secondary school	203	37.8	728	40.8	< 0.001	0.404	0.263-0.619
High school	212	39.5	783	43.8	0.004	0.617	0.446-0.854
University or higher	35	6.5	184	10.3	0.016	0.679	0.496-0.930
Residence status							
Non permanent resident and foreign	20	3.7	30	1.7		1.000	
Permanent resident	517	96.3	1,756	98.3	0.470	0.810	0.458-1.433
Health insurance							
No insurance	302	56.2	1,064	59.6	0.170	1.000	
Askes	53	9.9	234	13.1	0.326	0.845	0.604-1.183
Askeskin/Jamkesmas	70	13.0	178	10.0	0.161	0.757	0.513-1.117
Jamsostek	63	11.7	187	10.5	0.548	1.138	0.747-1.734
Other insurance	49	9.1	123	6.9	0.592	0.896	0.600-1.338

aOR: Adjusted odds ratio, IDR: Indonesian Rupiah, *Askes: Asuransi Kesehatan* (health insurance for state civil servants), *Jamkesmas: Jaminan Kesehatan Masyarakat* (social health insurance for poor people), *Jamsostek: Jaminan Kesehatan Sosial* (health insurance for registered formal workers)

DISCUSSION

As a "social disease", Government should consider the importance of social determinants and prevent TB spread into uninfected people in the community. It requires a strengthening preventive action in community to resolve this problem. Assessing TB knowledge and perception in community is a prerequisite prior to developing a proper strategy to combat TB in community. This study revealed that current level of knowledge about TB in urban community is good, in general. People may obtain information of TB easily from health care services or television since they live in an urban city with a large access to information.

Communication with trusted persons is a key factor of well deployed information.[19] Primary health centre (PHC) should provide community health care services instead of relying on in-clinic services by delivering structured, trusted information about TB so that people may the information to their neighbourhood. Otherwise, people may receive bias and incorrect information about TB. Some potential of incorrect information such as TB cause and duration of TB treatment may lead to stigmatization. Misconceptions of treatment and its duration are utmost causes of dropped out cases.[10,20] Health workers, as a consequence, must provide adequate and proper knowledge of TB to raise community awareness and prevent spreading misconceptions.

People with lower education level tend to lacked of TB knowledge as many studies also reports.[21,22] Active health promotion is critical. Strengthening promotion through community health workers (CHWs) may resolve this problem instead of waiting people coming to health care services.

People may perceive TB as humiliating or excommunicated disease despite their good level of knowledge. This study brings out issue of disconnection between knowledge and perception. Good level of TB knowledge is not necessarily associated to proper perception of TB. Potential of excommunicating TB patient remains in the community and requires some interventions including strengthening health promotion and optimizing CHWs' role. Unresolved problems of misperceptions causes delayed seeking care of suspected patients.[23] Suspected patients may resist to seek care or to undergo diagnostic examinations

because they worry of being identified as TB patient. Health education can reduce the ignorance that may lead to social stigma,[24] despite unclear evidence of stigmatization in Jakarta population.

Belonging health saving was not an important social determinant, but having health insurance, Askes in particular, may determine level of knowledge of TB and perception about TB. A high proportion of uninsured household is a potential problem. People much more rely on out-of-pocket spending for their health care, whereas majority of uninsured people does not prepare health savings. A widening coverage of social health insurance may stimulate people to utilize health care service,[25,26] so that provides positive impacts on TB knowledge and perception.

In conclusion, people in urban area of Jakarta have good level of knowledge about TB, but it does not necessarily lead to proper perception of TB. Age, education level and having health insurance determined level of knowledge, while TB perceptions were determined much more by education level and family income. TB control program should consider these determinants prior to developing a comprehensive strategy. In addition to deploying proper and sufficient information, promoting health saving and reducing financial constraints, such as providing social insurance, will be a critical strategy.

Conflict of interest

The authors hereby affirm that there is no conflict of interest in this study.

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