

Understanding social context on TB cases

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2017 J. Phys.: Conf. Ser. 801 012035

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Understanding social context on TB cases

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Abstract. Tuberculosis (TB) nowadays still becomes one of the world's deadliest communicable disease. More than half were in South-East Asia and Western Pacific Regions, including Indonesia. As developing country, Indonesia remains classic problems in overcoming TB, that is discontinuation on treatment. Most of discontinuation on treatment among TB patients are affected by diagnostic delay that caused by patient delay. These phenomena occur in many areas, rural to suburb, coastal to plantation, and so on, and they are related with social context among community that could be social capital for each community to deal with TB. Jember as one of county in East Java is known as plantation area. It also has a high prevalence of TB. This study focused on understanding about social context among community, especially on plantation area. This cross-sectional study involved in three districts of Jember, those are Tanggul, Pakusari, and Kalisat. The data were obtained directly from the TB patients, local community, and Primary Health Care (PHC) where the patients recorded. Spatial analysis and social network analysis (SNA) were applied to obtain health seeking behavior pattern among the TB patients coincide the community. Most of TB patients had already chosen health professionals to lead the treatment, although some of them remained to choose self-medication. Meanwhile, SNA showed that religious leader was considered as main part of countermeasures of TB. But they didn't ever become central figures. So it can be concluded that there are other parts among community who can contribute due to combatting on TB.

Keywords: social context, social network analysis, spatial.

1. INTRODUCTION

Tuberculosis (TB) is an infectious disease. Early in Europe TB is known as "consumption" and is considered a hereditary disease. Then once known etiological agent, the agent of tuberculosis known by a variety of new term, Koch bacillus (due in 1882 discovered by bacteriologists Germany, Robert Koch), *bacillus tuberculosis (tubercle Bacille)*, and the last *Mycobacterium tuberculosis*. These bacteria easily mutate, spread from person to person, most often through inhalation of aerosols and droplets of sputum that is emitted from a cough. In the majority of cases, infection causes lesions in the respiratory tract, although it does not show any symptoms of these evidences by immune reactions (eg skin test / Mantoux)(1).

Indonesia also appears to be a serious problem. World TB report by the World Health Organization (WHO) in 2006, placing Indonesia as the third-largest contributor of TB in the world after India and China with approximately 539,000 new cases and approximately 101,000 deaths per year. This position is still persisting in 2007 so as to make the region as a region with the largest TB burden (55%). Data



derived from the Basic Health Research in 2007 for pattern cause of death in all age puts TB as a second cause of death by 7.5% after a stroke (15.4%). And became the leading cause of death (27.8%) in the group of death from infectious diseases [1] [2].

TB is always linked to the social context. It cannot be resolved on the side of health care, but also requires empowering people to participate in combatting TB. TB patients have a tendency to consider the spatial aspects in the search for treatment [3]. The tendency of late patients found to be caused away from health services. Reviews Recent medical literature has begun to note the importance of social networks on health outcomes [4].

Jember is one of district in East Java that has 329,333.94 Ha wide area and more than 11% area are plantation area. There are so many inhabitants that drape their livelihood to this field. These areas are plateau with a high rainfall and humidity, which is not only suitable for plantation, but also for spreading of TB. TB is also known as one of infectious diseases that many inhabitants suffered from it [5].

The classic problem of combatting on TB, including on Jember, is the highest drop out of TB treatment and also the highest of diagnostic delay which is caused by patient delay. The highest of diagnostic delay could lead to increasing of TB transmission among inhabitants. The endemics of TB that followed by the increasing of MDR-TB cases in Jember, had made it become urgent to be researched in order to identify in combatting TB.

As stated before, combatting TB doesn't only recline on medical treatment that provided by health care provider, but also community to get involved in it. If combatting TB efforts didn't do comprehensively by involving the community, the transmission of TB would become uncontrollable, which in turn could reduce the quality of life of TB patients. This could result in poverty. Therefore, this research aimed to identify the social capital among community, especially on plantation area, in combatting TB.

2. METHOD

A cross-sectional study was conducted at the three sub districts of Jember, i.e. Tanggul, Pakusari, and Kalisat, that known as areas with high prevalence of TB. There were 38 TB patients that invited to participate in this research on April 2015. They were chosen randomly based on the PHC's records.

We defined TB patients as persons who had been diagnosed with TB by PHC's TB officer. They were asked about preferences of information resources, preferences of supporting treatment resources, as well as role model that they embrace. The questionnaire also covered the position, geographical position, of each TB patients and also the supporting treatment resources. All of the geographical positions were analyzed spatially using Social Network Analysis (SNA) to get seeking treatment behavior pattern of TB patients and supporting treatment pattern among neighborhood.

3. RESULTS

A total of 38 TB patients were invited to participate in this research. All of them are completing in answering the questionnaire. Demographic and socio-economic characteristics are summarized in Table 1 and 2.

Table 1 shows that TB is more on male than female. It may be possible because male have more activities outside the home than female. Therefore, male is more at risk on TB. Furthermore, most of TB patients have less education. Less than 25% of them have a higher educational level. It means that the capability of them in adopting the information, including information of TB, are very low. They couldn't adopt about what TB is, how TB transmitted, and how TB could be prevented. With less information they have, they even couldn't have any capability in managing their environment as one of efforts in preventing TB.

Table 1. Socio-demographic characteristics of TB patients

Characteristics	n	%
Sex		
Male	26	68.0
Female	12	32.0
Formal education level		
No education	14	36.8
Elementary	12	31.6
Junior high school	4	10.5
Senior high school	6	15.8
Under graduate	2	5.3
Occupation		
No occupation	4	10.5
Housewife	2	5.3
Scavengers	2	5.3
Farm workers	4	10.5
Farmer	11	28.9
Self-employment	9	23.9
Pensionary	3	7.9
State officer	1	2.6
Others	2	5.3

Less education attainment on TB patients can cause they have no choices in taking the desired job. Most of them worked informally, such as farm workers, scavengers, etc. Therefore, they have less income with more expenditure. That's why they have more debt insured while have no savings at the same time. By looking at the distribution of income, expenditure, savings, and debt insured among TB patients, it is known that its composition isn't equal. Most of them have debt insured so it can diminish the expenditure of TB treatment. Although the cost of TB treatment on PHC is free, but accessing PHC isn't free for them. This condition is compounded by the absence of any savings and the absence of any health insurance on more of them.

Table 2. Economic characteristics of TB patients

Characteristics	Minimum	Maximum	Median	Mean	Standard deviation
Income	200,000.00	6,000,000.00	950,000.00	1,462,500.00	1,29,436.34
Expenditure	300,000.00	6,000,000.00	900,000.00	1,284,210.53	1,136,025.87
Savings	0	2,000,000.00	88,947.37	0	340,736.80
Debt insured	0	113,000,000.00	600,000.00	4,872,368.42	18,296,786.37

Furthermore, it is given information about seeking treatment behavior pattern among TB patients until fourth phase. The distribution of educational level on TB patients according to seeking treatment behavior pattern are given on Table 3a until 3d respectively. Each table shows the frequency of TB patients by educational level on each phase of seeking TB treatment.

From the four tables below, it is known that PHC and hospital are chosen by most of TB patients on first phase. But on first phase it also knows that there are 15 TB patients that have already chosen another way for treating TB, i.e. self-medication by consuming the drugs that bought at nearest drug store or others. On second phase, the number of TB patients that choose self-medication and other way for treating TB is declined. This continues until the next phase.

On third and fourth phase, it is known that there are no one who choose self-medication and other way for treating TB. All of TB patients here come to PHC or hospital to get more treatment. In this phase, they become more realize that TB should be cured by health professionals. It may be possible because of the pain that they felt.

Table 3a. Characteristics of TB patients according to seeking treatment behavior pattern on first phase

	Self-medication	PHC	Hospital	Others
No attainment	2	9	1	2
Elementary*	2	6	1	3
Junior high school*	0	0	2	2
Senior high school*	0	1	1	4
Under graduate	0	1	1	0
Total	4	17	6	11

*of the same level

Table 3b. Characteristics of TB patients according to seeking treatment behavior pattern on second phase

	Self-medication	PHC	Hospital	Others
No attainment	0	4	3	3
Elementary*	1	2	4	2
Junior high school*	0	1	3	0
Senior high school*	0	3	2	1
Under graduate	0	0	2	0
Total	1	10	14	6

* of the same level

Table 3c. Characteristics of TB patients according to seeking treatment behavior pattern on third phase

	PHC	Hospital	Others
No attainment	3	3	1
Elementary*	2	2	0
Junior high school*	2	0	1
Senior high school*	0	1	0
Under graduate	1	1	0
Total	8	7	2

* of the same level

Table 3d. Characteristics of TB patients according to seeking treatment behavior pattern on fourth phase

	PHC	Hospital	Others
No attainment	2	0	1
Elementary*	1	1	0
Under graduate	1	0	0
Total	4	1	1

* of the same level

Next session of the results is given explanation about the role model that being referred by TB patient in seeking TB treatment. All of TB patients had mentioned for about four types of role model they referred. They are explained bravely in table 4. From the table, it is known that more of TB patients had mentioned the religious leaders as their role model for seeking TB treatment than any other role model. Most of them that mentioned the religious leaders came from Kalisat than any other sub district.

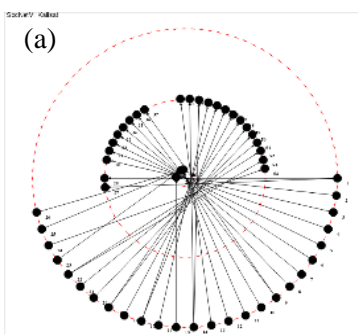
Table 4. The typical of role models that referred

Role Model	Kalisat	Pakusari	Tanggul	Total
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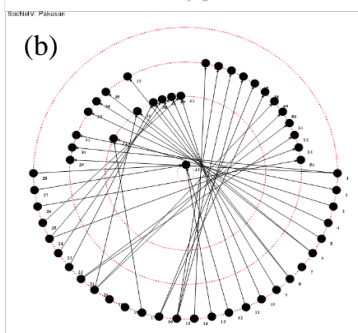
	n	%	n	%	n	%	n	%
Government figures	4	14,3	6	23,1	4	21,1	14	19,2
Religious leaders	22	78,6	14	53,8	13	68,4	49	67,1
Neighbors	2	7,1	4	15,4	2	10,5	8	10,9
Others	0	0	2	7,7	0	0	2	2,8
Total	28	100	26	100	19	100	73	100

Results of SNA provides an overview for researchers, who's a role model are should be involved in TB control at the district level. Degree Prestige Index analysis (DPI) used as SNA approach for this research. It is used for making nodes that represent both of TB patients and the role models. Then we made hypyens between nodes that represent preference of the role model they referred. This analysis is conducted using Socnetv. The results then could describe how central figure who serve as role models there.

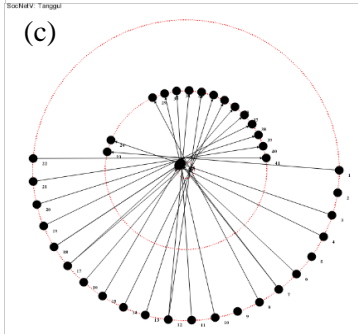
The mean nodal indegree on Pakusari is 0.648 and the DP classes is 4, which is the highest DP class among the others. The GDP on Pakusari is about 0.0644, which close to zero, either the others. They mean that there is no role model among the three sub districts that are really as central figures. Each of the role model has DP of the same level. More comprehensive explanation about these findings can be seen on graph 1a –c below.



(a)
 Mean Nodal InDegree = 0.593
 InDegree Variance = 0.39
 Max DP' = 0.0377
 Min DP' = 0
 DP classes = 3
 GDP = 0.0271



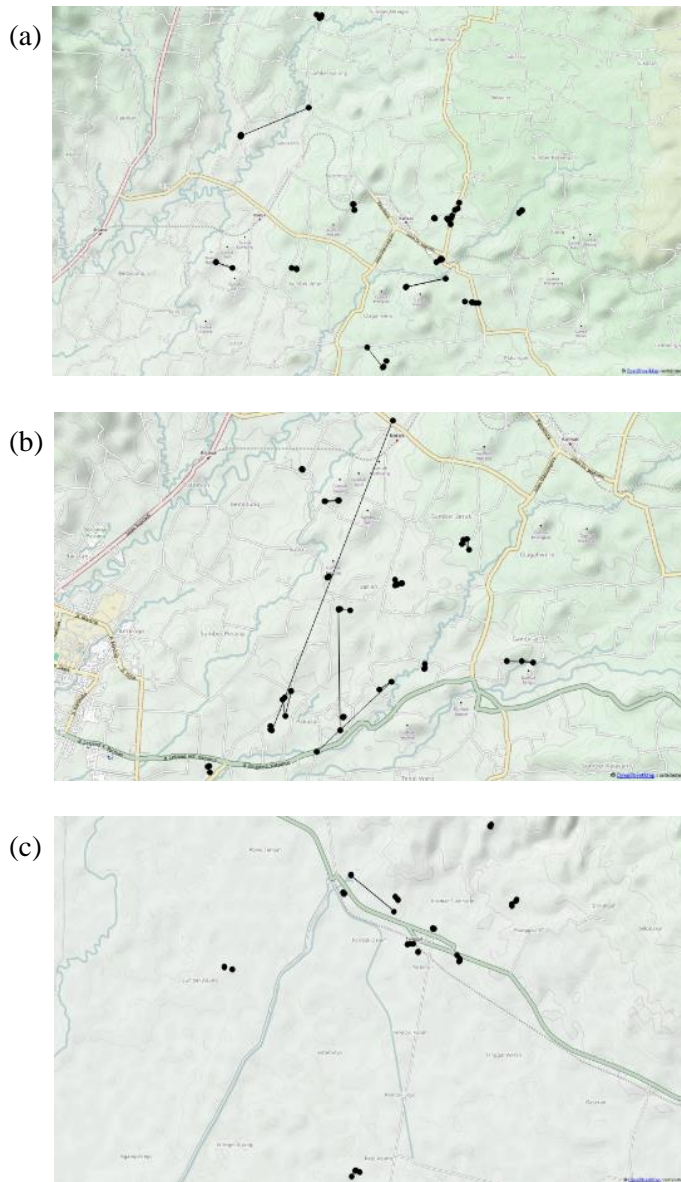
(b)
 Mean Nodal InDegree = 0.648
 InDegree Variance = 0.672
 Max DP' = 0.0755
 Min DP' = 0
 DP classes = 4
 GDP = 0.0644



(c)
 Mean Nodal InDegree = 0.561
 InDegree Variance = 0.441
 Max DP' = 0.05
 Min DP' = 0
 DP classes = 3
 GDP = 0.0369

Graph 1. Overview of connected points and DPI results between TB cases and their Role models each sub-district: (a) Kalisat; (b) Pakusari; (c) Tanggul

From the DPI analysis above, we then want to describe how spatial network analysis describing whether line characterizations among the three sub districts are spatial centralized or separated. All of node here are plotted, including the node of their models that referred. Then we analyzed these plotted nodes using Quantum GIS. The results show that the reach of the role model on Pakusari is further than other area. It means that the role model there had influenced as many as TB patients to get TB treatment from health care provider, i.e. PHC or hospital.



Graph 2. Overview of Spatial network analysis between TB cases and their Role models each sub-district: (a) Kalisat; (b) Pakusari; (c) Tanggul

Then we complete those graphics with several calculations of their properties, such as minimum and maximum reach, mean and standard deviation of reach, and also their median. The complete results are presented on table 5 below.

Table 5. Properties of spatial network analysis

Properties	Kalisat	Pakusari	Tanggul
	In kilometers		

Mean	0.259743	0.492603	0.134851
Standard deviation	0.382777	1.253340	0.279709
Median	0.127110	0.148520	0.084841
Minimum	0.010030	0	0
Maximum	1.862790	7.098130	1.417830

Based on the results of SNA and spatial analysis above, we describe that there is no central figure at the district level, but more scattered in each village. Therefore, TB control interventions and community mobilization program are not quite done at the sub-district level, but it must be entered each village to be effective.

4. CONCLUSIONS

We have shown that there still remains problem in combatting TB among community. The problem here is related to diagnostic delay which is caused by patient delay. We also have known that these such of problem can cause increasing of TB transmission among community. In order to minimize the diagnostic delay, we need more media or such instruments to intensify TB case findings among community. The community, especially in plantation area, has many components who are movable to intensify TB case findings. There are religious leaders, government figures, neighbors, and others who considered as role models for TB patients in seeking TB treatment. Eventually this kind of seeking TB treatment is adopted by TB patients and being patterned. However, these role models have not played role as central figures in Sub District level. There is a tendency for people in Jember personifying religious leaders as role models. On the other side we also need to identify other components on community that can be mobilized and empowered for contributing in combatting TB.

5. ACKNOWLEDGEMENT

We thank to the DP2M DIKTI Ministry of Research Technology and Higher Education and the Research Center of University of Jember for funding this research using HIBER scheme on 2015.

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