



DEVELOPMENT MODEL OF HOUSEHOLD CONTACTS AS A PEER SUPPORT TO DECREASE THE PREVALENCE OF PULMONARY TUBERCULOSIS

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Abstract

Tuberculosis is a global threat, caused mortality of 15 million people in 2014. Drug supervisor is the main strategy in patient adherence. Hence, the need for strengthening the strategy testing and counseling patients by a household contact as a peer support in overcoming the disease. Non randomized one-group pretest-posttest design was used. The identification of the characteristics of the household contact person who will be peer support was done through focus group discussions. Seventeen household contacts became a model of peer support that accompanied each individual patient. Differences in results were used the Wilcoxon test. There was a significant increase of knowledge (p value = 0.03), adherence (p value = 0.02), prevention practice of transmission by patients (p value = 0.03), and the prevalence of pulmonary TB was decreased by 41% after peer support intervention. Peer support model can be used as an alternative to increase the role of drug supervisor.

Introductions

Year 2015 is the deadline of target achievement for infectious disease programs, especially tuberculosis. Those target is written in the framework Millennium Development Goals (MDG's) target achievement. Hence that year was an important milestone in the prevention of tuberculosis. Globally, it is estimated 43 million people suffered tuberculosis since 2000 until 2014, there have been a declining of tuberculosis incidence by 1.5% each year since 2000 and the incidence in 2014 was 18% lower than year 2000. However in 2014, tuberculosis became a serious problem because it killed about 1.5 million people (WHO, 2015).

Until 2012, there were 4,297 MDR-TB suspects with 1,005 patients. One of the reasons is patient defiance to consume the drugs.

According to WHO report in 2013, Indonesia was in third position of tuberculosis case after India and China with total 700 thousand cases. The mortality rate was same with year 2011 that is 27 per 100.000 people, however the incidence was decrease to 185 per 100.000 people in year 2012 (WHO, 2013). One of the cause of MDR-TB occurrence is inadequate treatment history (Nugraheni, 2015).

Early detection case is one of pillar in eliminating tuberculosis with DOTS strategy. It is for increase patient treatment effectiveness and avoiding transmission from contact people which including subclinical infection. In fact in Semarang, the data shows suspect case number was still far from elimination target. Since 2009 until first quartile of 2011, the number of suspect case was only 53%. It is far from the target, so it

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is estimated that tuberculosis transmission will more widely spread (Health Office of Semarang City, 2012).

The number of pulmonary tuberculosis patients in Puskesmas Mijen Semarang from first quarter was 12, second quarter was 13, third quarter was 25, and fourth quarter was 34 patients in 2013. Unpleasant stigma in society and poor treatment compliance are the problems that faced by pulmonary tuberculosis patient. Therefore, it is need for intensive treatment considering the large number of patients.

Pulmonary tuberculosis patient is needed to be facilitated with the drugs availability and affordable health facility, also social support to reduce economy burden, unpleasant stigma, and nescience of their illness. They can get social support from some elements, such as family, parents, and peers who are also suffer pulmonary tuberculosis. Unfortunately, the role of public figure in village is not supporting the prevention and elimination of pulmonary tuberculosis. The role of health provider as pulmonary tuberculosis coordinator is still limited in implementing treatment, counseling, and not yet actively search for new case (Suharyo, 2013). Therefore, it is need for developing the program or study about peer support from family member who live with pulmonary tuberculosis patient. It is also need to study regarding that matter because there are still limited information about it.

This study aimed to describe characteristic of family contact who live with pulmonary tuberculosis patient in Mijen Semarang from their individual, social, and residential environment characteristic, the potency of household contact with pulmonary tuberculosis patient as a peer support to suppress prevalence number of pulmonary tuberculosis in Mijen, Semarang, also developing peer support model from family contact for reducing prevalence of pulmonary tuberculosis. Effectiveness of peer support from household contact will be measured in order to decrease prevalence number of pulmonary tuberculosis especially in Mijen, Semarang.

Method

This study was a qualitative and quantitative study. In first year of study,

qualitative method was used to describe and analyze the characteristic and potency of family contact to pulmonary tuberculosis patient in Mijen District using in-depth interview. The information about problem faced by pulmonary tuberculosis patient and their household contact, such as knowledge, treatment adherence, healthcare facility, potency of peer support and possibility of faced obstacles. Focus Group Discussion (FGD) was performed in designing model for solve those problems.

In second year we used quantitative method with quasi experimental using non randomized one group pretest-posttest design to describe the difference between before and after model implementation. Qualitative method also been used in this step to collect some information during study execution, so we could reveal the phenomena and interaction from the study subjects which produced from implemented peer support model.

The study target was household contact and pulmonary tuberculosis patient. Household contact was selected subjectively with the criteria: they had already lived with pulmonary tuberculosis patient for minimum 1 year, able to communicate well, had the age of 15 or more, not being severely ill (from doctor examination), and agreed to be a study subject. We found 17 active patient in the pulmonary tuberculosis treatment, so we also gathered 17 people of household contact according to criteria. Data collection was done using interview.

Results and Discussion

Peer support model using household contact is an activity model which performed by contact people to accompany the program of patient treatment and prevention of tuberculosis transmission. Peer support model for tuberculosis patient was developed by data searching from existing document in Puskesmas Mijen or Health Office of Semarang City about tuberculosis patient data in working area of Puskesmas Mijen, Semarang City. After that, brainstorming using FGD was conducted and participated by pulmonary tuberculosis patient, household contact, and Puskesmas Mijen staffs, facilitated by investigator team and Health Office of Semarang City, to unveiled

obstacles during implementation of previous tuberculosis prevention activities. Therefore, peer group intervention was designed systematically (including the activity) based on suggestion that have been gathered from brainstorming step. Then, guidebook for peer support implementation was made. It was used by household contact for conducting their task, role, and function as peer support for tuberculosis patient, requirement household contact with peer support, working target of peer support, role of peer support, activity of peer support, supporting resources for peer support activity, and role of health institution in tuberculosis elimination program, especially strengthening treatment and transmission prevention. Before trial of this model, socialization and training for model implementation was performed for the target, family and Puskesmas officer. The trial was conducted for 3 months. After the implementation had been completed, the evaluation was conducted about levels of knowledge, treatment adherence, transmission prevention, and prevalence evaluation of pulmonary tuberculosis in Puskesmas Mijen Semarang City.

In this study, peers were household contact or someone who lived in one house with pulmonary tuberculosis patient and they had individual characteristic which could well communicated with them. The potency that the patient had was they well already knew about tuberculosis including causes, signs, method and discipline of treatment, method of transmission and prevention, sputum management, coughing method, and handling management. There were 2 patients who did not have medication supervisor (PMO). They also had similar household contact such as communication (handphone), vehicle, and television as an information source.

Study subject of household contact were mostly husband or wife from tuberculosis patient (77%), there were 2 mothers and 2 fathers of the patient. Most of them were 50 years old or older, only 1 who were 30 years. As many as 82.3% only graduated from junior high school, 1 patient was high school graduates, and 2 were not pass from elementary school. Occupation status of the subject was mostly merchants or entrepreneur, only 1 patient was

a teacher. According to occupation status of patient or their partner, the subjects were mostly from middle-to-low economy status. However, all the subjects had already sufficiently fulfilled their nutritional status, each day they had 3 times daily intake.

Household contact was a population who had high risk of tuberculosis transmission as seen from their IFN gamma (Indreswari, SA & Suharyo, 2014). Based from their individual characteristics, they are not far different from the patient so it can be good potency to support the communication and accompaniment for pulmonary tuberculosis patient. Even they have better knowledge of tuberculosis. This situation is profitable so the household contact can give motivation and strengthening adherence of treatment for the patient in order to increase their recovery and prevent multi drug resistance (MDR). This is in line with the benefit of increasing motivation and treatment adherence for prevention of MDR (Sarwani, 2012).

Most of pulmonary tuberculosis patient were 30-60 years of age (74%), there were 2 children with age of 4 and 5 years old. More than 60% patients were women, and 70% of them were laborers. There were only 2 patients who work in private sector of furniture industry and 1 patient who were still junior high school student. Most of them (88.2%) were only junior high school graduate, there was 1 patient who never receive formal education, and 1 patient who graduated from high school. Those patients were a new patient in 2016.

There was a change in characteristics of pulmonary tuberculosis patient, which is in 2012 most of the patient were male (Suharyo, 2013) but recently it is change to female. That is shown vulnerability of women to bear the burden of tuberculosis, mostly in suburban area. Age, type of occupation, and education status were not significantly change compared to year 2012. According to WHO report in 2015, most of tuberculosis patient are productive age, especially the laborers and their education are not so high (WHO, 2015).

From FGD results, it is concluded the problem and obstacles faced by most household contact are skills of support giving and mentoring still not yet good as needed. They have no investment and financing planning

for tuberculosis treatment. The belief of health as a main modal for activity is not yet fully well. Knowledge about patient care including nutrition of pulmonary tuberculosis patient is not good. They have low skill of early detection pulmonary tuberculosis. The information about pulmonary tuberculosis is only sourced from television, so accuracy and continual information cannot be accessed by household contact.

These constraints need to be considered in drafting the peer support model. Peer support is expected being capable and skilled to provide assistance among pulmonary tuberculosis patients. Therefore, it is necessary to prepare the candidate of peer support either through training or short education and facilitate the information about tuberculosis disease. Companion personnel are expected to have standardized training, supervision, and the purpose or expectation of their role as peer support (Maclellan, J, et al 2015)

Considering the condition of pulmonary tuberculosis patients, the potential, constraints and problems possessed of household contact, the design of house contact person as peer support for patients outlines some requirements, performance or performance targets, roles, and activities that should be done as well as facilities that can support the work as peer support. The requirements of household contact as peer support need to be established under several conditions. Terms include. 1) Have a high commitment and responsibility to help the successful treatment of tuberculosis patients. 2) Have good knowledge about tuberculosis and its treatment. 3) Household contacts are considered as role models or as important person in life of tuberculosis patients. 4) Have sufficient education to be able to perform the task as peer support. Related to the performance that must be achieved by household contact as peer support, among others. 1) The completion of treatment of tuberculosis patients as recommended by health personnel. 2) Detection of pulmonary tuberculosis among family members and neighbors. 3) Prevention of transmission of pulmonary tuberculosis in the family.

Roles to be performed by household contact as peer support include. 1) As a

motivator for pulmonary tuberculosis patients. 2) As the supervisor of treatment of pulmonary tuberculosis patients. 3) As an officer of early detection of pulmonary tuberculosis disease in family and surrounding area. 4) As a manager of pulmonary tuberculosis patients. While the activities that must be done by household contact people as peer support include. 1) Provide advice and strengthening for pulmonary tuberculosis patients. 2) Conduct supervision of treatment schedule and when taking medication from pulmonary tuberculosis patients. 3) Monitoring the nutrition of pulmonary tuberculosis patients. 4) Conduct supervision of patient behavior in cough and sputum management. 5) Monitoring the condition of the home that may affect the treatment or transmission of pulmonary tuberculosis patients. 6) Conduct consultation with health officer if encountered problems or obstacles in the treatment of the patient. 7) Provide facilities needed by the patient in undergoing treatment program. 8) Ensure pulmonary tuberculosis patients to access treatment. 9) Arrange availability of all financing needed by patient in its treatment. 10) Early detection of family members and neighbors around if there is an indication of contracting pulmonary tuberculosis disease. 11) To educate patients, family members and neighbors about pulmonary tuberculosis disease. Facilities needed to be provided to support the activities of people in household contact as peer support, at least include. 1) An accurate and easy to understanding formation media about pulmonary tuberculosis. 2) Monitoring treatment program media of pulmonary tuberculosis patients. 3) Instruments for early detection of pulmonary tuberculosis. 4) Education media of pulmonary tuberculosis disease. Besides, the role of health institution (Puskesmas or health office) is necessary in supporting the activity of home contact people as peer support, as facilitator to increase the capacity of people in household contact as peer support, and as effort in treatment and prevention of pulmonary tuberculosis.

The treatment adherence of pulmonary tuberculosis patients will be good in small and practical measures such as promotion among the patient group (Massaut, S, & Kwaak, AVD, 2014). The design of peer support model

Table 1. The Distribution of Knowledge Category about New Pulmonary Tuberculosis Patients

Knowledge category	Before Peer Support Assistance		After Peer Support Assistance	
	Sum	%	Sum	%
Poor	6	35.3	1	5.9
Good	11	64.7	16	94.1
Total	17	100.0	17	100.0

Source : Primary Data

Table 2. Distribution of Tardiness Category in Drug Taking among Pulmonary Tuberculosis Patients

Tardiness category in drug taking	Before Peer Support Assistance		After Peer Support Assistance	
	Sum	%	Sum	%
< 1 week	3	17.6	1	5.9
>1 weeks	3	17.6	0	0.0
On time	11	64.8	16	94.1
Total	17	100.0	17	100.0

Source: Primary Data

already has the minimal elements that exist in the motivation and promotion of motivation programs for patients. It has even suited the needs of the potential patients, and the habits or cultures possessed by the house contact persons. Research in five countries including Indonesia shows that with a little effort as initiation of health programs and health services it can start to change patient responses in the efforts of regular treatment (Massaut, 2014). Peer support design, also includes the skills of early detection which is indispensable in Indonesia which has a high risk tuberculosis contracting population. Understanding of early tuberculosis diagnosis is necessary, for the success of the new cases discovery through contact tracing (Cresweel, 2014).

The results of test about implementation of assistance model using peer support among pulmonary tuberculosis patient showed the following results.

At the time prior to assistance by peer support, most (64.7%) patients have known about pulmonary tuberculosis disease by mentioning the disease as a contagious, lung disease, with symptoms of coughing. But there are still 35.3% of subjects who answered not knowing about tuberculosis disease. Most of the informants did not know about the cause

of tuberculosis, only a few know, with only mentioning bacteria as the cause and result of infected from other patients. After a period of assistance, there was an increase in the knowledge among pulmonary tuberculosis patients. Regarding with symptoms and signs of tuberculosis, almost all people already knew by mentioning such as chronic cough, heat and fever, do not want to eat, and weight loss. Most patients already knew the method of transmission and treatment of tuberculosis. They mentioned that the transmission of tuberculosis is transmitted through the air, direct contact, and talk closely with the patient. Treatment of tuberculosis mentioned by the informants is by routine treatment, taking routine medication and following the doctor's suggestion until the treatment finished. But there were still informants who mentioned by drinking jamu (herbal drinks) first prior visiting the doctor. Almost all patients knew how to prevent tuberculosis, they mention that tuberculosis can be prevented by boosting immunity, exercise, opening the ventilation in the morning, proper cough etiquette, stop smoking, eat fruits, take vitamins, and wear masks. After intervention of peer support there was a significant increase (p value = 0,03) in good knowledge category to 94.1%.

Table 3. Distribution Prevention Practice in Pulmonary Tuberculosis Transmission

Category of Prevention Practice in Transmission	Before Peer Support Assistance		After Peer Support Assistance	
	Sum	%	Sum	%
Poor	8	47.1	2	11.8
Good	9	52.9	15	88.2
Total	17	100.0	17	100.0

Source: Primary Data

Compliance on drug taking at the Puskesmas greatly affects overall medication adherence. If drug taking is late it will affect the stock of drugs that should be drunk by the patient. Data on intervention results with assistance by peer support indicate that there was a significant decrease of 17.6% who are late taking the drug more than one week to 0.0% (p value = 0.02).

Prevention practice of tuberculosis transmission carried out by pulmonary tuberculosis patients before assistance performed, are mostly just by covering the nose with a mask, and even then it is often forgotten and only in public places such as in Puskesmas, because the patients feel ashamed about wearing a mask while at home or elsewhere. After counseling by peer support there was an increase in prevention practice from 52.9% to 88.2% (p value = 0.03).

At the beginning of the study there were 17 tuberculosis patients who are still active taking medication at the Puskesmas Mijen, Semarang City. Since patients have been accompanied by peer support, there has been an increase in good patient behavior including knowledge and prevention practices. At the beginning of August 2016 there were already 41% who had completed treatment and declared negative result (cured). Therefore there was a decrease in prevalence at the end of the study.

Peer support plays more than just family support. Peer support performs education, mentoring and consultation for patients. In the case of the treatment drop out, good family support was not able to cope with the incident (Randhy, 2011). Increased knowledge of tuberculosis and prevention practice of transmission by patients is proof that the peer support design by household contact can overcome the problem of family support

functions and PMO program. This is in line with the study's conclusion that education and psychological support activities can help raise awareness of pulmonary tuberculosis patients for regular treatment and prevention of transmission of disease to people around them (Agarwal, 2014). This peer support model also has the potential to be developed by considering the ease of procedure, the completeness of the service, minimizing discrimination, and providing support according to the needs of tuberculosis patients belonging to adolescents (Nugroho, 2017). The role of peer support in providing social support for tuberculosis patients in this study, the result is not different from the social support model given in the development of infant which has positive impact (Suryanto, 2014).

Conclusion

Household contacts are very potential to be peer support for pulmonary tuberculosis patients and contact tracing in the environment around their house. The requirement to become a potentials peer support are, have sufficient knowledge about tuberculosis, have sufficient authority in making decisions in the family, have the motivation and good communication, and have both material resources and good empathy attitude to health, especially against tuberculosis patients. These potentials can systematically support the process of treatment, the provision of facilities and infrastructure, dietary regulation, and motivational strengthening in patients with tuberculosis.

After test study of tuberculosis patients by peer support according to the design, the results showed a significant increase of knowledge (p value = 0.03), adherence (p value = 0.02), and prevention practice of transmission by pulmonary tuberculosis patients (p value = 0.03) after accompanied by peer support. In

addition, there was a 41% decrease in prevalence after peer support intervention.

Assistance model of tuberculosis patients by peer support can be used as an alternative method of increasing the role of companion to take medicine for pulmonary tuberculosis patients. The need for a system in a mobile-based network that can help the peer support work to be more effective.

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