THE EFFECTIVENESS OF FAMILY EMPOWERMENT IN THE LATEN TB INFECTION

by Kelana Kusuma Dharma

THE EFFECTIVENESS OF FAMILY EMPOWERMENT IN THE LATENT TB INFECTION TOWARDS TB PATIENTS' OBEDIENCE AND CAREGIVER BURDEN

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ABSTRACT

Tuberculosis (TB) is a disease caused by Mycobacterium tuberculosis, causing coughing, fever, and chest pain. There were 50 people suffering pulmonary TB In Public Health Center in Siantan Hilir Pontianak who must be treated immediately. Intervention is crucial because of many cases of TB recurrence. This study aimed to determine the effectiveness of family empowerment in latent screening for TB Infection based on WHO guidelines on the level of TB patient obedience and family burden. The research method was a quasi experimental study involving 36 people (family) of TB sufferers with consecutive sampling technique. As many as 18 people received empowerment (treatment) interventions, and 18 others were not treated. Before, they given informed consent in each group. The study was conducted for two months and have given three visits therapy during the study for the intervention group. The instruments used were Morisky Medication Obedience Scale-8 (MMAS-8) and Caregiver Burden Scale (CBS). The results showed that there were significant differences related to family empowerment in WHO-based latent screening on TB Infection in increasing patient obedience with p = 0,000 and for caregiver burden with p= 0,000 (p <0.005). It is expected by applying the family empowerment in screening could prevent and reduced the morbidity of TB sufferers. The family empowerment can increase the obedience of patients with pulmonary TB and reduce the burden on the family.

Keywords : Empowerment, Family Burden, Obedience, Screening, Tuberculosis

Introduction

Tuberculosis (TB) is a disease in the air caused by Mycobacterium tuberculosis which usually attacks the lungs which cause coughing, fever, and severe chest pain. Although recent research in the past four years has provided valuable information about TB transmission, diagnosis and treatment much remains to be found to reduce the incidence and ultimately eradicate TB effectively (Nierengarten, 2003).

According to the WHO report in 2013, the prevalence of TB in Indonesia got the third ranks after India and China were almost 700 thousand cases, the death rate is still 27/100 thousand population. Based on the District / City Health Profile in 2015 and the Disease Eradication Health Office of the West Kalimantan, there were 3,801 new cases of pulmonary TB with an incidence rate of 78.18 per 100,000 population. At the same time, the percentage of recovery of patients with pulmonary TB with positive BTA in West Kalimantan was 70.49%, with details of 4,286 patients treated, as many as 3,021 patients were declared cured.

Pulmonary TB disease suffered by individuals in their lives will bring negative impacts, both physically, mentally and socially. According to the Department of Health, RI (2007), around 75% of TB sufferers are the most economically productive age group (15-50 years). It is estimated that an adult TB patient, will lose an average working time of 3 to 4 months. This results in an annual loss of household income of around 20-30%. If he died of TB, then he would lose income for around 15 years. In addition to being economically detrimental, TB also has other adverse effects, socially stigmatized and even ostracized by society. According to Miller (2008) rejection and shame often prevent people from seeking treatment and completing it.

During this time, the implementation of care, treatment and prevention of pulmonary TB transmission is mostly done to TB sufferers themselves. The sufferer must be responsible for all his care and treatment for his recovery. The involvement of family members is still less than optimal or only as a PMO (Drug Swallowing Supervisor).

According to the Indonesian Ministry of Health (2011) families and TB sufferers need to be empowered by providing adequate information about TB and the importance of its prevention and control efforts. The Family empowerment by increasing the provision of information about the care, treatment and prevention of pulmonary TB disease transmission, is expected to change family behaviour which includes growing aspects of knowledge, understanding, changing attitudes and actions, health awareness of family members in the care, treatment and prevention of pulmonary TB disease transmission.

The desired treatment effects include the prevention and early diagnosis of TB, reducing TB morbidity and mortality, reducing transmission, reducing the burden on the family, and saving the cost/family economy. In contrast, undesirable adverse effects include adverse drug toxicity, more family burdens and excessive costs for treating TB patients. Family and patient burdens include demands to comply with TB treatment program recommendations to completion, such as having to undergo more frequent laboratory tests, taking additional drugs, or more extreme choosing treatments that have a high risk of toxicity (Brutnetti, 2013).

The majority of people with TB have latent infections, the development of tools and new diagnosis and screening standards are needed to control this TB disease (Guyatt, 2013). Clear guidance on LTBI (Latent Tuberculosis Infection) management was developed by the World Health Organization (WHO) in response to requests from several countries member. In addition, these guidelines will facilitate the achievement of the WHO TB End Strategy target from a reduction in TB incidence by 90% and a reduction of 95% in TB patient deaths by the year 2035. They will contribute to the elimination of TB in the world (Uplekar, 2015).

The main purpose of screening for active TB is to ensure that active TB is detected early and treatment starts immediately, with the ultimate goal of reducing the risk of poor treatment outcomes, the sequel to health and the adverse social and economic consequences of TB, and also helping to

reduce TB transmission. Usually, people do not seek treatment because they do not have symptoms or do not recognize the existing symptoms and feel healthy, barriers to accessing existing services or other reasons (WHO, 2015).

The results of research on the efficacy of TB screening in improving the level of obedience and completion of TB treatment shows a significant result where the shorter treatment duration is associated with an increase in obedience itself. The completion obedience of LTBI treatment is an essential determinant for sufferers and also the success of TB programs. Although recent studies in the past four years have provided valuable information regarding TB transmission, diagnosis and treatment much remains to be found to effectively reduce the incidence and ultimately eradicate TB in the world (Sterling, 2011).

A preliminary study conducted by researchers on December 5, 2017 at UPTD (Technical Implementation Unit Office) Puskesmas (Public Health Center) Siantan Hilir data from TB patients seeking treatment from January to December 2017 as many as 50 people with 21 new cases, an increase from 2016 which only amounted to 36 people with new cases of TB as many as 22 people (UPTD's Medical Record Siantan Hilir Health Center, 2017). Based on interviews with officials of TB program holders that some patients were not yet compliant in taking new TB drugs for reasons of high mobility, forgetting to take medication, taking drugs twice a month adds to transportation costs, prolonged treatment time (6-9 months) and another reason. The obedience survey rate was above 50%. The case finding/CDR (Case Detection Rate) rate was 39%. Infectious disease eradication programs in Puskesmas have never involved family empowerment in screening LTBI in families with TB sufferers. The data available at the UPTD Puskesmas Siantan Hilir is only based on visits of patients seeking treatment at the Puskesmas unit, while accurate data on latent TB sufferers or those who have been infected but not yet treated in health services are not yet available. These are likely due to families being reluctant to report that another family member has contracted TB, the stigma received by the family and a low level of

knowledge, lack of awareness and willingness to receive TB treatment completely.

This study was applying WHO guideline-based screening techniques regarding LTBI management, which was a guide in handling LTBI using a community/family health approach, explained the disease process, laboratory examinations and LTBI treatment regimens, as well as what diagnostic algorithms should be used specifically for living family members with TB sufferers and children contact under the age of five years. This study uses a module guide that is made by researcher using a family approach. Then an evaluation is done by looking at the patient's obedience with taking medication. Implementation of WHO guidelines bases on the family approach has not yet been done in Indonesia.

It is expected that in the future empowerment of TB patients' families will improve the ability to detect whether there are family members living in the same surroundings infected by TB sufferers through LTBI screening compiled in the form of WHO-based module guidelines. The results of this study are also expected to help health service workers/health centers as the spearhead of health services in the community to get information from families and to capture new TB sufferers so as to reduce morbidity and mortality due to TB. This study aimed to determine the effectiveness of family empowerment in latent screening for TB Infection based on WHO guidelines on the level of TB patient obedience and family burden

Method

This research was carried out in the Pontianak City area, especially in the work area of the Siantan Hilir Health Center, which was conducted in March to October 2018. This research was an experimental study with a Pretest and Post Test Nonequivalent Control Group design. Data collection was carried out by looking at the medical records of patients with Tuberculosis in Siantan Hilir Health Center. The population of this research was the whole family of TB sufferers, were 50 people. The sample consisted of 36 people (families) TB sufferers with a consecutive

sampling technique. As many as 18 people received empowerment (treatment) interventions and 18 others were not treated. Screening LTBI as well as providing WHO modules / guidelines to families of TB patients three times in intervention for 2 months. The study was conducted at the home of TB patients. The data analysis used includes univariate analysis of gender and age. Bivariate analysis is used to explain the independent variables (family empowerment and the Latent TB Infection (LTBI) screening) and the dependent variable (TB patient obedience and family burden in caring for TB sufferers). The effectiveness of empowerment was done by Independent t test and Paired t-test. The instruments used were MMAS-8 (Morisky Medication Obedience Scale) and Caregiver Burden Scale (CBS). TB patient's obedience was done by independent t-tests and Paired t- test. Next, ask for a sample to become a research respondent and if the respondent agrees, the researcher will explain the purpose of the study to find out whether there is an effect of screening on TB patient adherence and family burden in caring for family members with TB. After the respondent understands, then they are asked to sign the informed consent. At this stage, the respondent's confidentiality is explained.

Findings

Table 1. Respondents Characteristics by Gender (n = 38)

Group	Respondent Charecteristics					
	Gender					
	Male		Female		Total	
	n	%	n	%	n	%
a. Intervention	13	72,2	5	27,8	18	100
b. Control	11	61,1	7	38,9	18	100

From this table 1 shows the distribution of respondents by sex / gender the most is male category in the intervention group that is 72.2% and in the control group that is 61.1%. This Study found many male patients than female caused by one of which is smoking.

Table 2. Respondents Characteristics by Age in the Intervention and Control Group in Pontianak in 2018

Group	Respondent Charecteristics		
	Mean	SD	Min-Max
a. Intervention	38,56	14,01	31,59-45,52
b. Control	35,47	19,22	25,91-45,03

From table 2 shows the average age of patients with pulmonary TB is 35.47 years (SD 19.22) in the intervention group and the average age of pulmonary TB patients in the control group is 38.56 (SD 14.01).

Table 3. Respondents Equality Test Characteristics by Gender in Pontianak in 2018 (n = 36)

Group	Respondent Charecteristics				p-Value
	Gender				
	Male		Female		
	n	%	n	%	
a. Intervention	13	72,2	5	27,8	0,494
b. Control	11	61,1	7	38,9	

From table 3 above shows the results of the equality test characteristics of respondents based on sex / gender of significant level of results that is 0.494 greater than 0.05 (p value> 0.05) so that there is no significant difference between the two groups.

Table 4. Respondent Equality Test Characteristics by Age in Pontianak in 2018 (n = 36)

Group	Age Variable			p-Value
	Mean	SD	95% CI	
a. Intervention	35,47	19,22	25,91-45,03	0,586
b. Control	38,56	14,01	31,59-45,52	

Table 4 above shows the results of the respondents' equality characteristics based on age, the significance level results are 0.586, greater than 0.05 (p value> 0.05) so that there are no significant differences between the two groups.

Table 5. Description of Obedience before and after Treatment in the Intervention and Control Groups (n = 36)

Obedience Level	Before Intervention				After Intervention			
	Mean	SD	CI 95%	p value*	Mean	SD	CI 95%	p value*
Intervention Group (n=18)	76,38	9,47	71,67-81,10	0,175	93,75	8,83	89,35-98,14	0,014
Control Group (n=18)	72,91	4,79	70,53-75,30		73,61	5,79	70,68-76,54	
CBS								
Intervention Group (n=18)	81,48	3,01	79,98-82,98	0,090	92,59	2,63	91,28-93,90	0,000
Control Group (n=18)	80,16	1,11	79,60-80,71		80,06	1,19	79,47-80,66	

Table 5 shows the mean obedience value before intervention was 76.38 (SD 9.47) in the intervention group while in the control group, the mean obedience value before intervention was 72.91 (SD 4.79) with a significant value (p value) of .175. While the average value of obedience after the intervention was 93.75 (SD 8.83) in the intervention group while in the control group, the mean value of obedience after the intervention was 73.61 (SD 5.79) with a significant value (p value) of 0.014.

This table shows the mean family burden (CBS) value before intervention was 81.48 (SD 3.01) in the intervention group while in the control group, the mean family burden value (CBS) before intervention was 80.16 (SD 1.11) with significant value (p value) is equal to 0.090. While the mean family burden value

(CBS) after the intervention was 92.59 (SD 2.63) in the intervention group while in the control group, the mean family burden value (CBS) after the intervention was 80.06 (SD 1.19) with a significance value (p value) is 0,000.

Table 6. Obedience Value Before and After Family Empowerment Interventions in TB Infection Latent Screening in the Intervention and Control Groups in Pontianak (n = 36)

Variable	Before Intervention (Pretest)		After Intervention (Posttest)		CI 95%	p Value**
	Mean	SD	Mean	SD		
Obedience						
Intervention Group (n=18)	76,38	9,47	15,33	4,287	-6,40-3,46	0,000
Control Group (n=18)	72,91	4,79	11,67	4,287	-1,61-8,56	0,579

**Paired t-test

- Different test of obedience before and after treatment in the intervention group (p = 0,000)**
- Obedience test before and after treatment in the control group (p = 0.579)**

The differences analysis in the obedience value between before and after treatment in the intervention group conducted by Paired t-test resulted in a probability value of 0,000 (p value <0.05). This shows a significant difference in the value of obedience between before and after the intervention of family empowerment in latent TB Infection screening in the intervention group. Whereas the control group produced a probability value of 0.579 (p value> 0.05), which showed no significant difference in the value of obedience between before and after treatment in the control group. The results of this analysis show that family empowerment in latent TB infection screening effectively increases the value of obedience in pulmonary TB patients

Table 7. CBS Value Before and After Giving Family Empowerment Interventions in the TB Infection Latent Screening in the Intervention and Control Groups in Pontianak (n = 36)

Variable	Before Intervention (Pretest)		After Intervention (Posttest)		CI 95%	p Value**
	Mean	SD	Mean	SD		
CBS						
Intervention Group (n=18)	80,16	1,11	80,06	1,19	-0,10-0,29	0,331
Control Group (n=18)	81,48	3,01	92,59	2,63	-12,20-10,00	0,000

**Paired t-test

The difference analysis in CBS values between before and after treatment in the intervention group performed by paired t-test resulted in a probability value of 0,000 (p value> 0.05). This indicates a significant difference in CBS values between before and after the provision of family empowerment interventions in latent TB Infection screening based on WHO guidelines in the intervention group. Whereas the control group produced a probability value of 0.331 (p value> 0.05), which showed no significant difference in CBS values between before and after treatment in the control group.

Discussion

The results of this analysis also show that family empowerment in latent TB infection screening effectively decreases the value of the Caregiver Burden Scale (CBS) in families of TB sufferers.

This situation is thought to have something to do with the level of work activity and act as a productive worker that allows it to be easily infected with TB germs from sufferers, especially with AFB positive. Higher mobility and social interaction among people aged 15-50 years, who have to work to earn income to meet family needs, allows them to have higher interacted.

Based on the research results on 38 respondents of pulmonary TB in the Siantan Hilir area of Pontianak on family empowerment in latent TB infection screening, it can be seen the comparison between the age of TB affected by the average age of productive age, 35 to 45 years of the total respondents of 38 respondents

. It can be assumed that this age group has very high mobility so that it is likely to be exposed to the large germs of tuberculosis Mycobacterium besides this endogenous reactivation (reactivation that already exists in the body) can occur in old age. According to the Ministry of Health, RI (2011), around 75% of TB sufferers are the most productive age group (15-50 years). It is estimated that an adult TB patient, will lose an average working time of 3 to 4 months. This results in an annual loss of household income of around 20-30%. If he died of TB, then he would lose income for around 15 years. In addition to being economically detrimental, TB also has other adverse effects, socially stigmatized and even ostracized by the community. According to Miller (2008) the existence of rejection and shame often prevents people who seek and complete treatment.

Family support is highly important of patients' success of the pulmonary TB treatment by always reminding patients to eat medicine, giving a deep understanding of patients who are sick and encouraging them to stay diligent in treatment. Family support is needed to encourage pulmonary TB patients by showing care and sympathy, and caring for patients. Family support that involves emotional concern, assistance and affirmation, will make TB patients not feel lonely in dealing with situations and family support can empower TB patients during the treatment period by continuing support, such as reminding patients to take medicines and be sensitive to sufferers Pulmonary TB if they experienced side effects from TB drugs.

According to the Republic of Indonesia Ministry of Health (2011) families and TB sufferers need to be empowered through providing adequate information about TB and the importance of TB prevention and control efforts. Empowering families by increasing the provision of information about care, treatment and prevention of pulmonary TB disease transmission, is expected to change family behavior includes growing aspects of knowledge, understanding, changes in attitudes and actions, health caring awareness of family members, treatment and prevention of pulmonary TB transmission.

The study results indicated a relationship between family burdens experienced by families with family members suffering from TB (p <0.05). Some families mentioned that family member life with TB need routine treatment at the Puskesmas (Public Health Center) so that they incur costs for transportation, time spent and leaving work. The desired treatment effects include prevention and early diagnosis of TB, reducing TB morbidity and mortality, reducing transmission, reducing burden family, and saves family expenses/economy. While undesirable adverse effects include adverse drug toxicity, more family burdens and excessive costs for treating TB patients. Family and patient burdens include demands to comply with TB treatment program is recommended to completion, such as having to undergo more frequent laboratory tests, taking additional drugs, or more extreme choosing treatments that have a high risk of toxicity (Brutnetti, 2013).

According to Hiswani (2009), low income can increase a person's risk of developing tuberculosis. This condition leads to poor housing (room temperature, ventilation, lighting, humidity, sanitation, inadequate) and overcrowding, poor food nutrition and poor working conditions. Humidity in the home facilitates the proliferation of pulmonary TB germs, as well as the state of air ventilation in small rooms (less than 15% of the floor area) is closely related to the incidence of pulmonary TB disease. Ventilation plays a major role in air circulation, especially removing CO2 and hazardous materials such as pulmonary TB germs.

This study shows results where families feel the burden is reduced in terms of funding other than because of free treatment but more to the effectiveness of treatment in the long term, is expected not to repeat again. The research results on the cost benefits and effectiveness associated with systematic screening and LTBI treatment found that the costs and results of the LTBI screening strategy and treatment regimen were very beneficial compared with no screening intervention in the regulation and treatment of community groups with TB. The result is that the additional cost of TB patients each year can be avoided and improved in the patient life quality (Brutnetti, 2013). To develop principles and recommendations

to be systematic specifically for screening active TB patients, WHO established the Guideline Development Group that can be used by health service workers or private units engaged in eradicating this disease (WHO, 2013).

The research results on the efficacy of TB screening in improving the level of obedience and treatment completion of TB sufferers show significant results where the duration of treatment becomes more difficult is associated with an increase in obedience itself. The completion obedience of LTBI treatment is a determining factor itself.

Conclusion

The results showed that there were significant differences related to family empowerment in WHO-based latent TB Infection screening in increasing patient obedience with p = 0,000 (p <0.005). The above research also shows that family empowerment in latent TB Infection screening based on WHO guidelines is effective in increasing TB patient obedience and influencing (reducing) the burden of parents in caring for TB patients in Pontianak in 2018. Limitation in this study that it's shame having a family with the TB, so fear of sending the family with TB to health service. This affect the amount of family support. LTBI screening module makes it easy for puskesmas to reduce latent TB in the community.

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