

# Relationship of Family Empowerment with Prevention of TB Transmission on Patients in Area of Puskesmas Siabu Mandailing Natal, Indonesia

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**Abstract:** The Role of family empowerment in decreasing causes TB is very important. Family empowerment program of TB family is always called as supervisor of taking medicine. Tuberculosis (TB) is a chronic infectious disease, the caused by the Mycobacterium tuberculosis. Results of a preliminary study conducted in Puskesmas Siabu found that new TB cases in 2016 reached 112 cases and 135 cases of TB in 2017, it had increased. One factor that caused the high number of new TB cases every year in controlled is the transmission of TB cases that are not controlled. The study is the quantitative research with cross-sectional analytic to analyze the empowerment family with the prevent, transmission of TB in the work area Puskesmas of Siabu. The relation was determined the value of the ratio of prevalence (RP). The sample of this study is 61 the empowerment of the family of patients who have TB. Sample examined in the consecutive sampling of data, analysed used Chi-square test and logistic regression performed with real  $\alpha = 0.05$  standard. The result of the research show that knowledge ( $p = 0.00$ ;  $p < 0.05$ ; RP.14,5), communication ( $p = 0.04$ ;  $p < 0.05$ ; RP.5,81), information ( $p = 0.040$ ;  $p < 0.05$ ; RP.11,1), participation ( $p = 0.030$ ;  $p < 0.05$ ; RP.8,26). From the analysis it can be concluded that there is a relationship of knowledge, information, communication, spreading with Tb infection precautions on family empowerment.

## 1 INTRODUCTION

Tuberculosis (TB) is a chronic infectious disease caused by the Mycobacterium tuberculosis. Based on data from the World Health Organization (WHO) in 2013 there were 9 million people worldwide have been infected with the TB germ. In 2014 there were 9.6 million people worldwide have been infected by TB (WHO, 2014). The highest number of cases of pulmonary tuberculosis were in the African region (37%), South East Asian region (28%), and the Eastern Mediterranean (17%) (WHO, 2015).

In North Sumatra in 2012, TB cases found to be still relatively high in as many 15 614 cases. Based on data from a national pulmonary tuberculosis, North Sumatra until the third quarter of 2012 came in seventh with the highest number of pulmonary tuberculosis patients after Gorontalo, Maluku, northern Sulawesi, Southeast Sulawesi, Bangka Belitung and Jakarta (Riskesdas, 2013).

Based on data from the Health Profile of North Sumatra Provincial Health Office in 2015 showed that the number of patients with pulmonary tuberculosis in 2013 and then declined as much as 21 954 cases in 2014 to 19 062 cases, and increased again in 2015 to 23 002 cases. The cure rate of treatment cases in 2013 by 91%, decreased in 2014 by 87.1%, 87.9% in 2015 and has met the targets set by the government in the amount of 85% (provincial health office. Sumatra, 2015).

In Mandailing Natal, the number of pulmonary tuberculosis patients from year to year the figures show increases. The number of patients with pulmonary TB in Mandailing Natal in 2013 amounted to 2623 cases, as many as 2886 cases in 2014 and 2015, 2992 cases (Profile Mandailing Natal, 2015). While the cure rate of TB in the same time period (2013-2015) in a row is estimated at 2086 cases, 2011 cases and 2244 cases.

According to Bomar (2014) family duties in the health sector among others, is to know family health

issues, determine an appropriate action to care for family members who are experiencing health problems, modify environment that supports health and wellness facilities can utilize. Family members need to be empowered (empowerment) in carrying out the task of family health in order to avoid mistakes in the care of patients at home and therefore do family empowerment by involving health professionals and supporting systems of patients with pulmonary tuberculosis.

Helpless means the ability to achieve the goals set. Helpless means a person has the competence, access, participation, and communicate well to achieve the goals that have been set (Woodall, 2010)

Results of research Fred (2014) found that a lack of knowledge and access to information causes a person has limited knowledge about the behavior of TB prevention in the family and society. Lack of knowledge and information leads to lack of motivation in preventing transmission of TB.

Results of a preliminary study conducted in Puskesmas Siabu found that new TB cases in 2016 reached 112 cases with a cure rate of 78%. The incidence of these TB cases, in 2017 increased to 135 cases, an increase of 31.2% from 2016. When compared with the target level of recovery treatment of TB cases in Indonesia by 85%, the cure rate of TB cases in Puskesmas Siabu still below national target figures. One of the factors that led to the high number of new TB cases from year to year is the transmission of TB cases that are not controlled. According to the CDC (2013) the higher transmission TB cases in the population due to patient non-compliance with the treatment and the high drop-out rates of TB patients who are undergoing treatment. In Indonesia, in 2013 the dropout rate case is estimated to reach 4 to 4.1% (Risksedas, 2013). In the city of Medan, in Indonesia TB (2009) dropout rate reached 14.3%..

The aim of this study to correlate empowerment families (competence or knowledge, the source information, participation, and communication) with prevention of TB transmission on patients in Puskesmas Siabu.

## 2 METHOD

This research is quantitative research, analytical and cross-sectional approach to analyze the relationship between family empowerment with precaution transmission of TB in Puskesmas Siabu Mandailing Natal on February until Mei 2018. The samples in this research are 61 adult TB patient. The sampling

in this research is done by using purposive sampling technique. This study used a family empowerment questionnaire who have been validated.

The family empowerment relationship with TB preventive action is determined by the value of the prevalence ratio (PR) and analysed by chi-square test and logistic regression.

## 3 RESULTS

Table 3.1. Distribution of Family Empowerment: Knowledge, Communication, Information, Participation and Action in Puskesmas at 2018.

Variables	n	%
<b>Knowledge</b>		
Good	39	63.9
Less	22	36.1
<b>Communication</b>		
Good	47	77.0
Less	14	23.0
<b>Information</b>		
good access	24	39.3
less access	37	60.7
<b>Participation</b>		
Good	41	67.2
Less	20	32.8
<b>Precautions Transmission of TB</b>		
Good	43	70.5
Less	18	29.5

Table 3.2 Relationship between the Knowledge with TB Transmission Precautions in Puskesmas Siabu 2018.

Characteristics	Preventive Measure				Amount			
	Good		Less		n	p	RP	
n	%	N	%					
<b>Knowledge</b>								
Good	34	87.2	5	12.8	39	0.00	2.13	95% CI
Less	9	40.9	15	59.1	22			(1.2 to 3.57)

Based on the above table it can be seen that the transmission of tuberculosis prevention measures found to be higher in good knowledge of 34 of 39 from Family member as a TB Drug observer (TB Family PMO) (87.2%) compared with less knowledge is equal to 9 out of 22 TB Family PMO (40.9 %). The test results showed the statistical

correlation with the knowledge of precaution transmission of tuberculosis ( $p = 0.000$ ) at the significance level  $\alpha = 0.05$ . The results also showed the prevalence ratio = 2.13 (95% CI; 1.27 to 3.57).

Table 3.3. Relationship between Communication aspect with to TB Transmission Precautions on TB Family PMO in Puskesmas Siabu 2018.

Characteristics	Preventive Measure				n	p	RP	95% CI
	Good		Less					
	n	%	n	%				
<b>Communication</b>								
Good	38	80.9	9	19.1	47	0.05	2.26	95% CI
Less	5	35.7	9	64.3	14			(1.1 to 4.6)

From the table above it can be seen that the transmission of tuberculosis prevention measures both at TB Family PMO found to be higher in good communication by 38 of 47 (80.9%) compared with less communication pattern that is equal to 5 of 14 TB Family PMO (35.7%). The results of statistical tests indicate there is a communication link with precaution transmission of tuberculosis ( $p = 0.004$ ). The results also showed the prevalence ratio = 2.26 (95% CI; 1.1 to 4.6).

Table 3.4. Relationship between Availability Information with Transmission Tuberculosis Precautions On TB Family PMO in Puskesmas Siabu 2018.

Characteristics	Preventive Measure				Amount	n	p	RP	95% CI
	Good		Less						
	n	%	n	%					
<b>Information</b>									
Good	21	87.5	3	12.5	24	0.04	1.47	95% CI	
Less	22	59.5	15	40.5	37			(1.08 to 1.99)	

From the table above it can be seen that the transmission of tuberculosis prevention measures both found to be higher availability of easily accessible information for 21 of the 24 TB Family PMO (87.5%) compared PMO TB Family with less access to information availability by 22 of 37 TB family PMO (59.5%). The test results showed statistical correlation information access relationship with precaution transmission of tuberculosis was statistically significant ( $p = 0.04$ ) The results also showed the prevalence ratio = 1.47 (95% CI; 1.08 to 1.99).

Table 3.5. Participation Distribution Transmission Precautions According to the PMO Family TB in Puskesmas Siabu 2018.

Characteristics	Preventive Measure				n	p	RP	95% CI
	Good		Less					
	n	%	N	%				
<b>Participation</b>								
Good	33	80.5	8	19.5	44	0.03	1.6	95% CI
Less	10	50.0	10	50.0	17			(1.01 to 2.56)

From the table above it can be seen that the TB Family PMO with both tuberculosis infection prevention measures are higher in TB family PMO with good participation by 33 of the 44 (80.5%) than in the TB Family PMO with less participation amounting to 10 from 17 Family PMO TB (50.0%). The results of statistical tests show the relationship of participation with precaution transmission of tuberculosis ( $p = 0.03$ ). The results also showed the prevalence ratio = 1.6 (95% CI; 1.01 to 2.56).

Table 3.6. Logistic Regression Analysis

Variables	B	p	RP	95% CI	
				Lower	Upper
Knowled ge	2,67	0,002	14.5	2.64	80.5
Communi cation	1.76	0,047	5.81	1.02	33.1
Informati on	2.41	0,023	11.1	1.38	89.3
Participat ion	2.11	0,020	8.26	1.39	48.9
Constant	-5.10	0,000			

From the above table can be seen there is a relationship of knowledge with precaution transmission of tuberculosis in TB Family PMO ( $p = 0.002$ ) in the evident level  $\alpha = 0.05$ . The analysis also showed the value of  $RP = 14.5$  and statistically significant (95% CI = 2.64 to 80.5). This means that a TB family PMO likely to take precautions TB tuberculosis infection either 14.5 times greater in the PMO friendly with a good knowledge of TB compared to less aware of knowledge regarding TB. There is the relationship patterns of communication with tuberculosis infection precautions in TB Family PMO. The analysis also showed the value of  $RP = 5.81$  and statistically significant (95% CI = 1.02 to 33.1). This means that a TB family PMO likely to take precautions TB tuberculosis infection either 5.81 times greater in TB Family PMO with good

communication system compared with TB Family PMO less communication system. Other than that, the availability of access to information is also associated with tuberculosis infection precautions in TB Family PMO ( $p = 0.023$ ) on real standard  $\alpha = 0.05$ ,  $RP = 11.1$  and statistically significant (95% CI = 1.38 to 89.3). This means that a family PMO likely to take precautions TB tuberculosis infection either 11.1 times greater in the PMO TB Families with access to information compared with TB Family PMO lack of access to information. Furthermore, this analysis shows the correlation between participation with precaution transmission of tuberculosis in TB Family PMO ( $p = 0, 02$ )  $RP = 8.26$  and statistically meaningful (95% CI = 1.39 to 48.9).

## 4 DISCUSSION

Results of research Fred (2014) found that a lack of knowledge of family PMO TB causes limited knowledge about TB prevention behaviors within families and communities. Results of several studies have found a strong relationship between knowledge about tuberculosis with tuberculosis preventive measures on family members. Likewise, the same thing in his research on the influence of family knowledge of tuberculosis preventive measures.

Knowledge of tuberculosis is a member family or PMO knowledge about the causes, symptoms and signs, treatment, transmission, and prevention (WHO, 2014). Knowledge of a person cognition relative element is attached and can be implemented or reproduction in the face of a condition in the form of a specific action (CDC, 2014). The family member or PMO knowledge about tuberculosis is essential considering the family members or the PMO is the person most instrumental in providing care for patients with tuberculosis. These actions can be of assistance in TB patients such as preparing meals, providing medicine, clean bedrooms, set diet, and so forth.

The importance of communication between health workers with patients from the aspect of openness, empathy, being supportive and equality so that nurtured relation indirectly support can create positive reception of information in preventing pulmonary TB in the family. The results of the same study found Yulianingsih (2011); Linda (2011) in his research found that the transmission of tuberculosis preventive measures depends on the form and frequency of communication established between the health workers and the PMO.

According to the CDC (2014) deals with information provider communication, and improve knowledge of TB patients and families and make them helpless in expressing needs and take action. In the same way, encourage providers to more accept the wishes and views of TB patients and family members against TB services that are more responsive to community needs. Efforts responsive will be able to develop communication techniques and effective education such as using words that are simple, provide the necessary information over and over again, listening to the feedback by way of empathy, and build a harmonious interaction between families, health care workers and people with TB.

Relationships access to information with tuberculosis infection prevention measures is essential. In essence, the more information that was obtained from PMO family, the higher the knowledge to be possessed.

Notoadmodjo (2007) said information influence on a person's knowledge. Even though a person has a low level but if you get better access to information from a variety of media such as a TV, radio, or newspaper then it will be able to improve one's knowledge. Facilities for obtaining information may help expedite a person to acquire new knowledge. Facility or facilities can also increase the knowledge of a person based on resources from newspapers, internet television and that today can be easy to access.

According to the CDC (2024), information provided healthcare workers to patients and families regarding pathogenesis TB patients, the benefits of treatment, side effects of medication, treatment response, and prevention of disease transmission. Information obtained from the assessment TB family patients have to guide sustainable health education efforts. Soon after health officials to cooperate with the family of TB, it is important to ask PMO what is understood and believed about the disease and prevention of TB. If the PMO does not understand the reason for preventing the transmission of tuberculosis, termination of transmission chain will be difficult. If too much information is given at one time, PMO may not remember everything. To avoid that, the information provided should be organized in order of importance.

PMO participation in tuberculosis prevention measures is essential. Martin (2015) also found the same thing on the importance of the participation of family members in the prevention of tuberculosis transmission. WHO (2005) has established a central

role in tackling the problem of TB family PMO of tuberculosis in TB control strategy globally.

Participation in tuberculosis prevention is an essential element in the process of preventing the transmission of tuberculosis, especially in the sphere of the family. Prevention of transmission cannot simply be imposed on the patient itself for reasons of a poor physical condition, fatigue, psychological problems, coping with weak and low self-concept (CDC, 2014). With such conditions, tuberculosis patients in need of assistance in the prevention and healing process. This assistance may include the provision of information, reminding to take medication, diet prepare, monitor behaviors that increase risk, keeping environmental sanitation, preparing rooms with good ventilation, and prepare handkerchiefs and spittoon.

## 5 CONCLUSION

There is a relationship of knowledge, communication, acces to information TB, and paticipation with precaution transmission of tuberculosis in the TB Family PMO. The most dominant factor is Knowledge aspect from TB family PMO, the prevalence ratio is 14,5 (95% CI, 2,64; 80,5).

## REFERENCES

- Bomar PJ, 2014. Promoting Healthin Families: Applying Family Research and Theory to Nursing Practice. Elsevier Health Sciences
- CDC, 2013. Core Curriculum On Tuberculosis. National Center for HIV/AIDS, Viral Hepatitis, STD, and TB Prevention, Division of Tuberculosis Elimination
- CDC, 2014; *Managing TuberculosisPatients and Improving Adherence*.U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES, Centers forDisease Control and Prevention, National Center for HIV/AIDS, Viral Hepatitis, STD, and TB Prevention, Division of Tuberculosis Elimination.
- Dinas Kesehatan Mandailing Natal, 2015; Profil Kesehatan Kabupaten Mandailing Natal.
- Dinas Kesehatan Sumatera Utara, 2015, Kasus Penderita TB paru di sumatera utara, Dinkes Sumut, Medan.
- Fred J, Grede N.,Mehra D,. 2014; The Enabling Effect of Food Assistance in Improving Adherence and/or Treatment Completion for Antiretroviral Therapy and Tuberculosis Treatment: A Literature Review. Springer Science+Business Media New York
- Dinas Kesehatan Mandailing Natal, 2015; Profil Kesehatan Kabupaten Mandailing Natal.
- DinasKesehatan Sumatera Utara, 2015, KasusPenderitaTBparu di sumaterautara, DinkesSumut, Medan.
- Fred J, Grede N.,Mehra D,. 2014; The Enabling Effect of Food Assistance in Improving Adherence and/or Treatment Completion for Antiretroviral Therapy and Tuberculosis Treatment: A Literature Review. Springer Science+Business Media New York.
- Linda, 2011. Hubungan Antara Sikap Dengan Perilaku Keluarga Tentang Pencegahan Penyakit Menular Tuberkulosis. Jurnal Keperawatan Tahun 2011.
- Martin, L., Williams, S., Haskard, K., DiMatteo, R,. 2015; The Challenge of Patient Adherence, Department of Psychology, La Sierra University, CA, USA; 2 Department of Psychology, University of California, Riverside, CA, USA.
- Notoatmodjo S, 2007 Pendidikan Kesehatan dan Ilmu Perilaku. Cetakan Kedua. Jakarta; Rineka Cipta. 2007.
- WHO, 2014. Global Tuberculosis Report 2014. Switzerland
- WHO, 2014; WHO *Guidelines For The Programmatic Management Of Drug-Resistant Tuberculosis*. WHO, Janeva
- Woodall J, 2010. Empowerment And Health &Well-Being, Centre for Health PromotionResearch,Leeds Metropolitan University.
- Yulianingsih, 2016. Pelaksanaan Pencegahan Penularan Tuberculosis Paru oleh Keluarga di UPTD Kesehatan Puskesmas Sukamulya Kabupaten Ciamis Tahun 2016. Jurnal Kesehatan Stikes Muhammadiyah Ciamis Tahun 2016.