



FAMILY EFFORTS TO PREVENT TB TRANSMISSION IN EAST SUMBA, INDONESIA

Yosephina Elizabeth Sumartini Gunawan

Nursing Study Program of Waingapu, Poltekkes Kemenkes Kupang

ABSTRACT

Family has an important role in carrying out TB treatment and control as well as preventing its transmission among family members or community. This study aimed to identify family efforts in preventing TB transmission in East Sumba District, Indonesia. This study was a qualitative study with a phenomenological approach with a total of 16 participants purposively determined. Data were collected by conducting structured interviews and analyzed by content analysis techniques. The research themes were 7 consecutive themes as follows: The Concept of TB, Maintaining Hygiene, Covering the Mouth When Coughing or Sneezing, Spitting in the Provided Container, Supporting TB Care, Improving Nutritional Status and Isolating TB Patients. Although the family did not fully understand the concept of TB, various efforts have been made by the family to prevent the TB transmission, such as maintaining cleanliness, reminding patients to cover their mouths when coughing / sneezing and not spitting carelessly. The family also supported care programs by acting as Drugs-Taking Supervisors and paying attention to nutritional intake for TB patients. Another effort took by the family was to isolate patient.

Keywords: Family efforts, Prevention of transmission, Tuberculosis

ABSTRAK

Keluarga memiliki peranan penting dalam perawatan dan pengobatan TB serta pencegahan penularan didalam keluarga ataupun masyarakat. Penelitian ini bertujuan untuk mengidentifikasi upaya keluarga dalam mencegah penularan penyakit TB di Wilayah Kerja Puskesmas Kawangu Kabupaten Sumba Timur. Penelitian ini merupakan penelitian kualitatif dengan pendekatan fenomenologi dengan jumlah partisipan sebanyak 16 orang yang ditentukan secara purposif. Data dikumpulkan dengan melakukan wawancara terstruktur dan dianalisis dengan teknik content analysis. Tema penelitian yang diperoleh adalah sebanyak 7 tema berturut-turut sebagai berikut: Konsep Penyakit TB, Menjaga Kebersihan, Menutup Mulut Saat Batuk Atau Bersin, Membuang Ludah Pada Tempatnya, Mendukung Pengobatan Penyakit TB, Peningkatan Status Gizi dan Menempatkan Penderita Secara Terpisah. Walaupun keluarga belum sepenuhnya memahami konsep Penyakit TB tetapi berbagai upaya telah dilakukan oleh keluarga untuk mencegah penularan penyakit TB seperti menjaga kebersihan, mengingatkan pasien untuk menutup mulut saat batuk/bersin dan tidak membuang ludah sembarangan. Keluarga juga mendukung program pengobatan dengan berperan sebagai PMO serta memperhatikan asupan gizi bagi pasien TB. Upaya lain yang dilakukan keluarga adalah menempatkan penderita secara terpisah.

Keywords: Upaya keluarga, Pencegahan penularan, Tuberculosis

BACKGROUND

Tuberculosis (TB) is an infectious disease caused by infection of the bacterium *Mycobacterium tuberculosis* through droplets of people who have been infected with tuberculosis bacilli (Indonesia Ministry of Health, 2014). According to World Health Organization ([WHO], 2016), TB is a global concern and remains the target of the Sustainable Development Goals (SDGs). The SDGs for 2030 adopted by the United Nations (UN) in 2015 had some goals; one of which was to end the global TB epidemic. Indonesia is included in six countries which accounted for 60% of new cases including India, China, Nigeria, Pakistan and South Africa. In 2015, there was an estimation of 10.4 million new cases worldwide, of which 5.9 million (56%) were men, 3.5 million (34%) were women and 1.0 million (10%) were children. There were around 1.4 million deaths in Indonesia in 2015, and an additional 0.4 million were deaths from TB disease among people living with HIV. Although the number of deaths from TB dropped by 22% between 2000 and 2015, it remained one of the 10 causes of death worldwide in 2015.

East Sumba District is one of the districts in NTT Province which is included in the category of underdeveloped regions in the Eastern region of Indonesia, which has 22 Public Health Centers with a variety of TB diseases in several Public Health Centers. Data obtained from the East Sumba District Health Office showed that TB was ranked third of the 10 most common diseases in East Sumba District in 2013. It was reported that the number of new cases in 2014 was 396 consisting of 278 with positive smear cases, 97 with Negative AFB, six with extra pulmonary TB, 14 with cases of TB in children, and one case of transfer. The number of new cases in 2014 spread over the areas of five Public Health Centers in East Sumba District, namely in the Waingapu, Kawangu, Kambaniru, Melolo and Lewa Public Health Center. Although there was a decrease in the number of new cases in 2014 compared to that in 2013, the number of suspected TB in 2014 was 1795 people.

Patient with smear positive TB is a source of tuberculosis transmission. Coughing or sneezing from TB patients spreads germs into the air in the form of droplet nuclei (sputum). Approximately 3000 sputum spills are produced at one time cough. Sprinkling sputum that stays long in a room will facilitate the transmission of TB. The amount of sparks can be reduced by ventilation or adequate air flow for the germs of *Mycobacterium tuberculosis* will die when exposed to direct sunlight. In dark and humid environment, sputum spills can last for several hours (Ministry, Pedoman Nasional Penanggulangan Tuberkulosis, Edisi 2, 2006)

The risk of transmission of pulmonary TB in families is high, especially in toddlers and the elderly who have lower immune system. This high transmission risk is similar to people with HIV whose immune system in the body is damaged. In the prevention of transmission of family pulmonary TB, family has a very important role since one of the health tasks of a family is to care for the sick family members and prevent the transmission to the healthy family members (Jaji, 2014). The importance of family role during the treatment of TB patient at home was also examined by Kabongo & Mash (2010) who explained that the at home treatment of TB patients (home base DOTS) had a more significant influence on the healing process. A similar study was also conducted by Horter, et al. (2014), Truzyan, et al., (2013), and Raza, Sarfaraz, & Ahmad (2012). The results of these studies were in line with the opinion of Nursalam (2013) who suggested that families are driving factors that reinforce behaviors manifested in attitudes and lifestyles that meet the health status of individuals and society. Families have a very important role in the TB care and treatment, as well as prevention of TB transmission in the family or community. This study aimed to identify family efforts in preventing transmission of TB in East Sumba District, Indonesia.

METHODS

This study used a qualitative

research design with a phenomenological approach, which is a scientific method to describe certain phenomena as experiences of human life. The type of phenomenology chosen was descriptive phenomenology, which is a method for directly exploring, analyzing and describing certain phenomena as independent as possible from untested estimations (Speziale & Carpenter, 2003). This research was carried out independently without being influenced by the family efforts to prevent transmission of TB by making informant subjectivity a research point of view. Meanwhile, the concepts and results from the existing researches strengthen the results of the study. Researchers wanted to explore and describe family efforts to prevent TB transmission through in-depth interpretation of the subjectivity of informants who were directly involved, so that understanding and meaning of these phenomena could be obtained. The efforts made by each family were unique in accordance with family characteristics so that this phenomenon could not be explained quantitatively. Therefore, the researcher used qualitative research with a descriptive phenomenology approach.

Research informants

The informants in this study were 16 people who were purposively determined in relation to data saturation. The inclusion criteria in the selection of informants were: families that had at least one family member suffering from pulmonary TB who underwent treatment for Category one pulmonary TB for at least one month, had at least one family member who was able to read and write and willing to cooperate and participate in the study. Meanwhile, families whose members suffering from TB were untreated was excluded from this study.

Research location

This research was conducted in Kawangu Public Health Center Working Area which is one of the Public Health Centers in East Sumba Regency with a high number of new TB case since 2014.

Ethical considerations

Before conducting research, researchers first submitted research permits to relevant parties in accordance with existing procedures. When collecting research data, the researcher gave an explanation regarding the purpose of the study, the research methods and procedures including the advantages and disadvantages for the informants in this study. Informants who were willing to be involved in this study gave approval as verified by the informant's signature on the informed consent sheet. Each informant got an identity code that guaranteed confidentiality. Treatment was given to each informant by paying attention to the element of justice and avoiding frightening threats.

Data collection

This research was conducted from September to November 2016. In this study, the process of data collection was carried out after obtaining permission and recommendations from the Kupang Ministry of Health Polytechnic. These permits and recommendations were then submitted to the East Sumba Regency Licensing and Investment Agency (BPMPP) to report and obtain research permission. After obtaining permission from BPMPP, the researcher proceeded to the East Sumba District Health Office. Once completed, the researcher selected prospective informants based on the inclusion criteria and determined the sampling technique to then collected data with the following steps:

1. The researcher went to the Kawangu Public Health Center which had been chosen as the research location to get information regarding the address of pulmonary TB patients.
2. The researcher visited the family who had been chosen as an informant to give explanation regarding the research and asked for approved consent once the family understood and was willing to be informant.
3. The chosen family was then interviewed using structured interview guidance.

Data analysis

The process of data analysis in phenomenological qualitative research was carried out in several ways. This study used a nine-step data interpretation method according to Collaizi (1978) in (Speziale & Carpenter, 2003). This method was chosen because of its simplicity, clarity and specifies. The stages that have been carried out in this study included describing the phenomenon under study; collecting descriptions of phenomena through the opinions of informants. Researcher conducted interviews and wrote every word to get description of family efforts to prevent transmission of tuberculosis; read all the descriptions of the phenomena that have been conveyed by the informant. The researcher read the verbatim results three to four times until the researcher was confident that he understood the family's efforts to prevent transmission of tuberculosis; reread the transcript of the interview results and quoted a meaningful statement; described the meaning in a significant statement. The researcher reread the identified keywords and tried to find the essence or meaning of the keywords to form a category; organized collections of meanings were formulated into theme groups. The researcher read all existing categories, made comparison and looked for similarities between categories, and lastly grouped the same categories into sub-themes, sub-themes and themes; wrote a full description. The author collected the themes found during the data analysis process and wrote them in an in-depth description of family efforts to prevent transmission of tuberculosis; met the informant to validate the description of the results of the analysis; and combined the validation results data into the description of the analysis results.

Trustworthiness

The validity of the research process was validity and reliability in qualitative research. Qualitative research results can be trusted when they display the informant's experience accurately. The steps taken to prove the validity of this study were credibility, dependence,

certainty, and transfer. Researcher performed credibility, which is a way to prove that the results of research can be trusted, namely when the informant acknowledged the findings of the study. In this study, informants were asked to reread verbatim and the results from the theme analysis box, then were asked to provide feedback. Based on the feedback, researcher then revised the results and then validated them to the informants. Informants who had approved the transcripts of the interview results were asked to sign the word by word sheet. Researcher also carried out dependence which is a form of data stability carried out by conducting audit investigations, namely the audit process carried out by external reviewers to check the accuracy of data and documents that support the research process. The external reviewer in this study was an expert assigned by the Institute who examined the methods and results of the study and gave emphasis and direction in using the research data that has been obtained so that it could be used accordingly during the data analysis process.

Another form of validity that was carried out was confirmation; that is the neutrality of the data obtained depends on the agreement of several people regarding the views and opinions of the research findings. This was conducted by applying audit trails, when immediately after the data was obtained external reviewers conducted comparative analysis to ensure the objectivity of the research. Confirmation in this study was conducted by asking the informant to confirm the results of the interview. The researcher collected all the materials and the results of the research documentation, namely the recording files, interview transcripts, field notes and submitted them to the thesis supervisor as an external observer for further comparison analysis to ensure the objectivity of the research results.

RESULTS

Characteristics of Informants

The participants in this study were sixteen people with various characteristics based on age, gender,

education level, religion, occupation and relationship with patients. In general, the characteristics of the informants in this study were as follows: most of the informants were women (11 people, 68%) and the youngest informant's age was 19 years while the oldest was 80 years. The majority of the informant's occupation is farmers (12 people, 75%), and three people never attended school, while the highest education level is secondary

school (5 people). The majority of the informants were Protestant Christianity (11 people, 68%), while the relationship between informants and patients varied from informants as patients' mothers, siblings, wives, children, grandchildren, to patients' son or daughter.

The general characteristics of the informants in this study are explained as follows :

Table 1. General Characteristics of Participants (n=16)

Code	Age (years)	Gender	Education level	Relationship with Patient	Religion	Employment
P1	69	Female	NS	Mother	CP	Farmer
P2	47	Female	PS	Son in Law	CP	Farmer
P3	61	Female	NS	Daughter	M	Farmer
P4	51	Male	PS	Brother	CP	Farmer
P5	63	Male	PS	Brother	M	Farmer
P6	40	Female	JHS	Son in Law	M	Housewife
P7	23	Female	SHS	Daughter	CP	Farmer
P8	42	Male	JHS	Brother	C	Farmer
P9	80	Female	NS	Mother	M	Farmer
P10	43	Male	PS	Wife	CP	Fisherman
P11	25	Male	SHS	Grandson	CP	Farmer
P12	30	Female	SHS	Son in Law	CP	Honor teacher
P13	43	Female	PS	Daughter	CP	Housewife
P14	19	Female	SHS	Daughter	CP	Farmer
P15	19	Female	JHS	Daughter	CP	Farmer
P16	32	Female	SHS	Wife	CP	Farmer

Notes: F=Female, M=Male, NS=No School, PS=Primary School, JHS=Junior High School, SHS=Senior High School, CP=Christian Protestant, C=Catholic, M=Marapu (local belief)

The research themes obtained from the results of thematic analysis of 16 verbatim results of interviews in the treatment group were 7 themes as follows: The Concept of TB, Maintaining Hygiene, Covering the Mouth When Coughing or Sneezing, Spit in the Provided Area, Supporting Treatment of TB, Improving Nutritional Status and Isolating the Patients.

1) Theme 1: The concept of TB

The concept of tuberculosis revealed by informants consisted of 3 sub-themes namely definition, etiology and mode of transmission. In the sub-theme of the definition it could be identified that informants understood TB in several

categories, such as TB was a lung disease, TB was an infectious disease, TB was a disease of blood vomiting, TB was a cough and TB was a chest pain disease

"... TB disease is a continuous coughing making the sufferer becomes thin ..." (P11)
 "... TB is a disease that attacks the lung, lung infections" (P14)
 "TB is an infectious disease" (P5)

In the etiology of TB disease sub-themes, informants stated that TB disease suffered by their family members was caused by polluted air, dirty environment, sufferer's sputum, excessive physical activity, side effects of contraceptive use and itching on the neck. The range of categories can be

seen from the following informants' expressions:

"TB is a bacterium caused by air contaminated by bacteria that entered human organs ..." (P13)

... "At first we didn't feel anything because it immediately itched from the inside of the throat; it coughed up blood at once ..." (P5)

"Influenced by other people because of contraceptive implant that caused TB disease, and because of menstrual bleeding pattern problem due to contraceptive implant use so the blood came out from the mouth ..." (P1)

Similarly, the method of TB transmission revealed by informants could occur because the patient did not cover his mouth when coughing, the patient spit carelessly and the bacteria was spread by the wind and sharing utensils as stated in the excerpts of the following informants:

"Anyone could suffer from TB, either because they did not cover their mouths when coughing or when sneezing" (P2)

"...because of the wind, if you spit carelessly and the wind transmitted it to other people or to grandchildren ..." (P1)

"Because the dinner plate was not separated so it's infected ..." (P16)

2) Theme 2: Maintain Cleanliness

The sub theme of maintaining cleanliness consisted of environmental cleanliness and personal hygiene. Environmental hygiene intended by informants was to dispose garbage in trash, dry the mattress and clean the house, while personal hygiene including food hygiene maintenance, hand washing and personal hygiene maintenance. Following are the expressions of informants regarding the theme of maintaining cleanliness:

"In order to prevent tuberculosis, food must be clean, the environment must be clean, the tissue we have used must be disposed-off in the trash" (P9)

"... had to live in a clean environment so as not to get ash / dust" (P16)

"Before eating we had to wash our hands with soap" (P13)

3) Theme 3: Covering the Mouth When Coughing or Sneezing

The theme of covering the mouth when coughing or sneezing is described in the sub-theme of family efforts to remind TB patients to cover their mouths when coughing using their palms or tissue, as stated by the following informants:

"Advise the patient to cover their mouths when coughing" (P15)

"If you sneezed you also have to use a handkerchief. What else after it? Wear a facemask, or mom (the patient) so far did like this (showing an action of covering mouth using palm)" (P12)

"Cover your nose and mouth with tissue" (P9)

4) Theme 4: Spit in the provided area

Efforts made by the next family were to remind the patient to spit in the area provided and prepared sputum pots or used cans which were converted as a site for spitting.

"... mom often reprimands (the patients) not to spit carelessly ..." (P10)

"... use pot to keep your spit or sputum, to avoid the transmission of your (the patient) disease to the family" (P5)

"What do you use? Used can with soil inside or *Bayclin* (a brand of bleaching product) with water, but we do not use it here, sometimes mom (the patient) spits carelessly ..." (P12)

5) Theme 5: Supports Treatment of TB

Other efforts carried out by the family were to support the treatment of TB, which was divided into sub-themes of medical treatment and traditional medicine. The sub-theme of medical treatment consisted of several categories, these are accompanying patients to get treatment, taking medicine at the public health center and reminding them to take medication. The informant's expression related to these categories as follows:

"... Accompanying mom (the patient) to visit the public health center for treatment..." (P2)

"When the medicine ran out, I soon get them from the public health center" (P1)

"Support for taking medicine to prevent transmission to other people" (P1)

The sub-themes of traditional medication consisted of categories of visiting indigenous medical practitioner for treatment and drinking traditional herbs, as expressed by one of the following informants:

"We went to the indigenous medical practitioner first and then to the public health center. There is an indigenous medical practitioner who helps us too ... we also looked for traditional medicine such as leaves and wood roots which were specifically for TB medication so there could be a slight progress ..." (P5)

6) Theme 6: Increased Nutritional Status

Improving the nutritional status of the informants meant to serve healthy and nutritious foods which were described in the following categories:

"Pay attention especially to healthy food for patients" (P9)

"Eat less fatty foods, such as fat in meat or fried foods" (P7)

"... maintain eating and drinking pattern, ..." (P1)

"... it is important to improve nutritional status and health services" (P13)

7) Theme 7: Isolating the Patients

Another effort taken by the family was to isolate patients. This was explained in the sub-theme of separating sufferers' eating utensils and bedroom. What was meant by separating tableware was separating meals, eating and drinking utensils from other family members. Likewise with rooms or beds for sufferers, even sufferers were prohibited from being close to children, especially when coughing / sneezing. This was revealed by the informants as follows:

"... for utensils (belonging to patients) separated from us, so as not to be infected TB ... the patient should sleep separately from other family members ..." (P4)

" the utensils (belonging to patients) such as glass spoons were separated, should not be mixed with those ones for children and other family members ... avoid coughing in front of children," (P12)

" glasses (belonging to the patient) were also separated from those used for other family members. We tried to keep the patient away from TB recurrence."(P6)

DISCUSSION

The results showed that there were some informants who did not fully understand the concept of TB and ways to prevent the TB transmission. It was seen in the first theme (the concept of TB) in this study where informants described the meanings, causes and methods of TB transmission in their own view and that was not in accordance with the theory of TB. This is in line with the results of a study conducted by Gunawan (2015) on family independence in carrying out health care for family members suffering from TB at the Kawangu Health Center, East Sumba (an Ethnographic study). The study involved 15 informants who were determined purposively consisting of 7 families as the main informants and 8 other informants; namely doctors, laboratory officers, the person in charge of the TB program at the public health center, Religious Leaders, Tradition Leaders, and Government Officials. Gunawan wrote that many factors could influence a person's ability to absorb information obtained, such as education level, interests and learning habits of East Sumba people, as well as informants in this case were health workers. Therapeutic communication skills were needed in providing counseling or education to patients, families, and community. The information provided was adjusted from the perspective of the patient, family or community without excluding the socio-cultural values.

The results of this study were similar to the qualitative research findings conducted by Rundi (2010) in Sabah

about people's understanding of TB where 96% of informants did not know about the cause of TB. The informant described TB as a pain characterized by a dry cough or weight loss. Another study conducted by Vukovic, Nagorni_Obradovic, & Bjegovic (2008) in Serbia showed similar results that only 22.9% of informants knew about TB correctly, and 8.2% of informants knew that TB is an infectious disease but did not know how it spreads. Rundi (2010) explained that several reasons for insufficient knowledge of TB in families with members suffering from TB were lack of access to information and inadequate health education. This is in line with the statement of Vukovic et al (2008) that lack of knowledge about TB leads to the development of misconceptions about this disease and allows patients and families to look for alternative treatments. According to Notoatmojo (2007), education is one internal factors that affects a person's knowledge, together with interests, experience and age. The higher level of one's education, the higher their knowledge. This could be a basic consideration for health workers in providing education to the community. Knowledge about TB is including the family's understanding of the importance of completing TB treatment in order to be fully cured. Therefore, avoiding transmission within the family is important that it must be presented clearly and thoroughly by health workers such as doctors and family nurses. An adequate information submission narrowed down the possibility of family misperceptions and community trust about TB. Efforts could be made by the public health center to improve understanding so that misperceptions about TB can be diminished by involving community leaders in East Sumba. East Sumba culture which still adheres to a system of classifications or distribution of social strata could be an opportunity for health workers or policy makers in implementing health programs. The tendency to listen to the respected people's words in East Sumba customs could be empowered by involving the participation of significant cross-sectoral elements. Therefore, the public health

center and the policy makers regarding the government program should consider the need for the respected and alluded people in the community to understand the importance of TB concept and its transmission. Informants in the interview said that they had tried to act as what being taught by the health workers for instance, reminded patients not to spit carelessly, prepared containers/pots for sputum, asked patients to cover their mouths when coughing or sneezing, and paid attention to environment and patient hygiene. This is in line with the kind of social support suggested by Cohen & Syme (1985) who classified social support into four categories: information support, emotional support, instrumental support, and award support. The form of information support provided by the family in this study was to remind and give medication to family members who suffered from TB. The meaning of "reminder" information support in this study was to remind patients about taking medication, not spitting carelessly, not smoking and covering their mouths when coughing.

The role of the family as drugs-taking supervisor is crucial for the success of treatment. This could only happen if the drugs-taking supervisor is carefully chosen by health workers and patients. Jayawardena & Medagedara (2009) found that the role of supervisors in taking medicine is to provide adequate instructions to patients for medication compliance, and monitor the progress of treatment carried out by patients. Another effort taken by the family is to pay attention to the nutritional intake consumed by the patient, such as maintaining clean and healthy foods, and preventing TB family members from consuming fatty foods. The informant said this was done so that TB patients would not cough as a result of consuming fatty food. The informant also said they were happy to see patients gain weight during TB treatment. This finding is in line with research on nutritional status of TB patients conducted by Hutari, Wongkar, & Langi (2014) and Arsin, Wahiduddin, & Ansar (2013). Hutari (2014) found a

significant correlation between family knowledge and increased BMI of patients during TB treatment programs, while Arsin, Wahiduddin, & Ansar (2013) found that TB patients were commonly found in groups of people with poor nutritional status.

Previous study by Pratomo, Burhan, & Tambunan, (2012) revealed that malnutrition and tuberculosis were two interconnected problems that still occurs in developing countries. Poor nutrition status is still common in active TB patients compared to healthy people. TB infection itself causes nutritional disorders such as anorexia, malabsorption of nutrients and micronutrients and metabolic disorders, resulting in a decrease of muscle mass and fat. This is in line with the WHO (2016) Global Tuberculosis Report which issued five guiding principles as regulations that must be adhered by health care providers as a basis for fulfilling the nutrition of TB patients to assist healing process and prevention of transmission. One of the key points in the guideline is that TB patients with malnutrition must be assessed for nutritional status and other related data which support the achievement of nutrition goals including weight control and fulfillment of adequate nutrition including macro and micro nutrition.

Ethnographic research conducted by Pratiwi, Roosihermiate, & Hargono (2012) assessed the independence of community in the prevention behavior of pulmonary TB transmission in three districts in Indonesia including Rote Ndao District in NTT Province which has similar characteristics to the community in East Sumba. Pratiwi stated that the prevention behavior of TB transmission was influenced by one of the variables studied, excluding health, which consisted of aspects of poverty, social, slum, humidity and cleanliness. Sanitation is closely related to the transmission of disease. Houses with good lighting and ventilation make germs difficult to grow because ultra violet rays can kill germs, and good ventilation reduces the concentration of germs.

This is similar to the characteristics of the informants in this study, where aspects of poverty, social, slum, humidity and cleanliness were still dominant in the daily lives of informants in rural areas. In addition, the distance between houses and health care facilities, limited transportation and poor terrain become the obstacles for the community to obtain adequate additional information. Demographically, East Sumba Regency is a mountainous region that has a tropical climate where rainfall is very low. This causes East Sumba a dry, hot and dusty area. The author noted that although health workers have tried to implement an optimal TB prevention and treatment program, education and demographic factors contributed to the success of TB treatment. The authors hoped that changes in community behavior, reflected from preventing TB transmission efforts, could be maintained by continuing to provide health education in various methods such as health counseling, training and refreshing health squads and involving community leaders and other cross-sectors.

CONCLUSION

Although the family did not fully understand the concept of TB, there had been efforts made by the family to prevent TB transmission such as maintaining cleanliness, reminding patients to cover their mouths when coughing and not spitting onto public place. The family also supported treatment programs by acting as Drugs-Taking Supervisor and calculating nutritional intake for TB patients. Another effort by the family was to isolate patient. It is crucial to provide health education to the community so that the family role and function as a support system could be further enhanced, especially in controlling TB transmission.

ACKNOWLEDGEMENT

I would like to thank "the Health Human Resources Education Center, Human Resources Development and Empowerment Agency, the Ministry of Health of the Republic of Indonesia" and "the Ministry of Health Polytechnic in

Kupang" for the research grants with Decree Letter number: HK.02.04 / III .1 / 03523/2016.

REFERENCES

- Arsin, A. A., Wahiduddin, & Ansar, J. (2013). Gambaran Asupan Zat Gizi dan Status Gizi Penderita TB Paru di Kota Makasar. <http://repository.unhas.ac.id>.
- Cohen, S., & Syme, S. (1985). *Social Support and Health*. San Fransisco: Academic Press.
- Gunawan, Y. E. (2015). The Autonomy of Family in Caring its Member with TB at Kawangu's Health Center, east Sumba - an Ethnography research. *Jurnal Info Kesehatan*, 1029-1043.
- Horter, S., Stringer, B., Reynolds, L., Shoaib, M., Kasozi, S., Casas, E. C., . . . Cros, P. d. (2014). Home is where the patient is": a qualitative analysis of a patient-centred model of care for multi-drug resistant tuberculosis. *BMC Health Services Research*, Volume 14:81.
- Hutari, S., Wongkar, M., & Langi, Y. A. (2014). Relation Between the Level of Education, Knowledge, Nutritional Status With Treatment of Pulmonary Tuberculosis in Health Center Tuminting. *JURNAL E-CLINIC (ECL)*, <https://ejournal.unsrat.ac.id/index.php/eclinic/article/view/3721>, Vol 2, No 1.
- Jaji. (2014). Upaya Keluarga dalam Pencegahan Penularan Tuberkulosis (TB) Paru ke Anggota Keluarga Lainnya di Wilayah Kerja Puskesmas Sidorejo Pagaralam Tahun 2010. *Jurnal PSIK FK Unsri*.
- Jayawardena, K., & Medagedara, D. (2009). Involving Family Members in the delivery of TB Care. *SAARC Journal of Tuberculosis, Lung Diseases & HIV/AIDS*, Vol.VI (ed.1), p.12-15.
- Kabongo, D., & Mash, B. (2010). Effectiveness of Home-based Directly Observed Treatment for Tuberculosis in Kweneng West Subdistrict, Bostwana. *African Journal Of Primary Health Care & Family Medicine*, 1-6.
- Ministry, I. H. (2006). *Pedoman Nasional Penanggulangan Tuberkulosis, Edisi 2*. Jakarta: Departemen Kesehatan republik Indonesia.
- Ministry, I. H. (2014). *Pedoman Nasional Pengendalian TB*. Jakarta: Direktorat Jenderal Pengendalian Penyakit dan penyehatan Lingkungan.
- Notoatmojo. (2007). *Promosi Kesehatan dan Ilmu Perilaku*. Jakarta: Rineka Cipta.
- Nursalam. (2013). *Metodologi Penelitian Ilmu Keperawatan: pendekatan praktis*. Jakarta: Salemba Medika.
- Pratiwi, N. L., Roosihermiate, B., & Hargono, R. (2012). Faktor Determinan Budaya Kesehatan Dalam penularan Penyakit Paru. *Buletin Sistem Kesehatan Vol.15 No.1 Edisi Januari*.
- Pratomo, I. P., Burhan, E., & Tambunan, V. (2012). Malnutrisi dan Tuberkulosis. *Artikel Pengembangan Pendidikan Keprofesian Berkelanjutan (P2KB)*, *Journal of Indonesian Medical Association.*, Volum: 62, Nomor: 6, Juni 2012, p.230-236.
- Raza, S., Sarfaraz, M., & Ahmad, M. (2012). Practice of family and non-family based directly observed treatment for tuberculosis in Pakistan: A retrospective cohort study. *the Health Journal*, Volume 3, Issue 2, p.39-44.
- Rundi, C. (2010). Understanding Tuberculosis: perspective and experiences of the people of Sabah, East Malaysia. *Journal of Health*

Population & Nutrition (JHPN)
Vol.28, 114-123.

Speziale, H., & Carpenter, D. (2003).
*Qualitative rearch in nursing:
Advancing the humanictic imperative
imperative. 3 ed. . Philadelphia,*
Lippincot: Williams & Wilkins.

Truzyan, N., Harutyunyan, T.,
Koshkakaryan, M., Grigoryan, R.,
Tadevosyan, M., Martirosyan, H., . . .
Petrosyan, V. (2013). *Household TB
Infection Control Pilot Project:
Counseling for TB Patients and Their
Family Members.* Yerevan: Center
for Health Services Research and
Development, School of Public
Health, American University of
Armenia .

Vukovic, D., Nagorni_Obradovic, L., &
Bjegovic, V. (2008). Knowledge and
Misconceptions of Tuberculosis in
the General Population in Serbia.
*European Journal of Clinical
Microbiology Infectious Disease,*
Vol;.27, 761-767.

WHO. (2016). *Global Tuberculosis Report
2016.* Switzerland: WHO.