

DOI: <http://dx.doi.org/10.33846/hn51002>
<http://heanoti.com/index.php/hn>



RESEARCH ARTICLE

URL of this article: <http://heanoti.com/index.php/hn/article/view/hn51002>

Family Support and Prevention of Transmission of Tuberculosis in the Work Area of the Surabaya City Health Center

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ABSTRACT

Family support and factors affecting it are expected to minimize pulmonary tuberculosis transmission. The study aimed was to analyze the factors that influence family support for the prevention of transmission of pulmonary tuberculosis. This study was a cross-sectional study, with a sample size of 110 pulmonary tuberculosis patients who were treated at the public health center in Surabaya. The instrument used for data collection was a questionnaire. The data analysis used was descriptive analysis and *Partial Least Square (PLS)*. The family support everything is good (71%-86.4%). Most and almost of the factors receiving support and supporting factors were in the good category (67.3% and 93.6%). Composition and structure of social networks support from neighbors and friends (95.5%), they have a very close relationship (64.5%). There was a relationship between the factors of recipient support, support providers, composition and structure of social networks on family support in the prevention of pulmonary tuberculosis transmission with p-values of 0.002, 0.000, and 0.000, respectively. Factors of recipient support, support providers, composition and structure of social networks affect family support in the prevention of pulmonary tuberculosis transmission. Nurses must support families in providing support for the prevention of pulmonary tuberculosis transmission.

Keywords: family support; tuberculosis; prevention of transmission

INTRODUCTION

Background

Pulmonary tuberculosis is an infectious disease that is still the most major public health problem in the world because it causes morbidity, disability, and high mortality. Prevention of pulmonary tuberculosis is all health efforts that prioritize promotive and preventive aspects, without neglecting the curative and rehabilitative aspects aimed at protecting public health, reducing morbidity, disability, or death, deciding on transmission, preventing drug resistance, and reducing the negative effects caused by pulmonary tuberculosis⁽¹⁾. The national tuberculosis control program targets are elimination by 2035 and Indonesia free from tuberculosis by 2050.

The World Health Organization (WHO) report in the Global Tuberculosis Report 2015, in 2014 the incidence and mortality rates caused by tuberculosis are still very high and even become one of the five deadly diseases in women aged 20-59 years. Based on the results of the 2013-2014 prevalence survey the prevalence of tuberculosis with bacteriological confirmation in Indonesia was 759 per 100,000 population aged 15 years and over and the prevalence of smear tuberculosis was positive at 257 per 100,000 population aged 15 years and over. Data as of May 17, 2018, shows the number of new pulmonary tuberculosis cases in Indonesia in 2017 amounted to 420,994 cases⁽²⁾. Pulmonary tuberculosis is also the number one cause of death among infectious diseases and ranks third as a cause of death at all ages after cardiovascular disease and acute respiratory infections. The number of pulmonary tuberculosis cases in East Java ranks second in Indonesia after West Java province with the number of tuberculosis case findings as many as 40,185 cases. Cases of pulmonary tuberculosis in Surabaya occupy the highest rank in East Java wherein 2016 found 5428 cases of pulmonary tuberculosis in the city of Surabaya⁽³⁾.

One of the national strategies for the prevention of pulmonary tuberculosis is to increase community independence in tuberculosis control. The activities carried out in tuberculosis control are health promotion, tuberculosis surveillance, controlling risk factors, finding and handling tuberculosis cases, providing immunity, and administering preventive medicine⁽¹⁾. The Healthy Indonesia Program with a family approach is a program

organized by the government in this case the Ministry of Health to realize Indonesian people who behave in a healthy manner, live in a healthy environment, and be aware of the importance of health. There are ten criteria for a healthy family in a healthy Indonesia program with a family approach, namely: following the family planning program, mothers giving birth in a health facility, infants getting complete basic immunizations, infants getting exclusive breastfeeding, infants getting growth monitoring, pulmonary tuberculosis patients getting standardized treatment, sufferers hypertension does medication regularly, people with mental disorders get treatment and are not neglected, no one smokes, becomes a member of National health insurance (JKN), has access to clean water facilities, uses healthy toilets⁽⁴⁾.

As a social system, a family is a small group consisting of individuals who are closely related to each other, interdependent, and organized in a single unit to achieve certain goals⁽⁵⁾. The family is an important component to succeed in the government program in realizing a healthy Indonesian society including the success of a tuberculosis-free Indonesia program. Patients with pulmonary tuberculosis in the family will bring negative impacts both physically, mentally, and socially. This is because the treatment and cure of pulmonary tuberculosis requires a long time and requires attention from other family members. If the pulmonary tuberculosis sufferer in the family is not known and the disease is not treated it will be a source of transmission for those around him, especially family members. It is said once a cough can produce about 3000 sputum sparks and every positive BTA will infect 10-15 other people (Widoyono, 2008) in (Marwansyah, 2015)⁽⁶⁾. It is also said that patients with suspected pulmonary TB who have cough symptoms more than 48 times/night will infect 48% of people who come in contact with patients with suspected pulmonary TB, while patients with suspected pulmonary TB who have coughed less than 12 times/night will infect 28% of people who contact with patients with suspected pulmonary tuberculosis (Ministry of Health of the Republic of Indonesia, 2016) in Siregar PA, et al (2018)⁽⁷⁾. Tuberculosis patients who do not undergo treatment or do not routinely take medication are at risk of experiencing treatment failure and resulting in a higher risk of transmission to others. The low level of drug adherence is one of the obstacles to TB control (Hadifah, 2014) in Marwansyah (2019)⁽⁸⁾.

Family support is verbal or non-verbal information, suggestions, real help or behavior provided by people who are familiar with the subject in their environment or the form of presence and things that can provide emotional benefits and affect the recipient's behavior (Smet, 1994) in (Christine, 2010) as quoted (Munawaroh AA, et al, 2016)⁽⁹⁾. Family support is attitude, action, family acceptance of family members in the form of informational support, appraisal support, instrumental support, and emotional support. Family support in the prevention of pulmonary TB transmission includes information support, assessment support, instrumental support and emotional support in preventing pulmonary TB transmission. One of the factors that influence family support in preventing pulmonary TB transmission is social support which consists of factors such as recipients of support, providers of support, composition and structure of social networks.

Purpose

This research was conducted to determine the factors that influence family support consisting of recipients of support, providers of support, composition and structure of social networks in the prevention of transmission of pulmonary tuberculosis in the working area of the Surabaya City Health Center.

METHODS

The research describes phenomena in the form of a relationship between one phenomenon and another⁽¹⁰⁾. This research was an analytic observational study with a cross-sectional approach, which was conducted from May to October 2019. The population was tuberculosis patients who underwent examinations at the Gading Community Health Center (Puskesmas), Perak Timur and Tambak Rejo Surabaya Indonesia. The sample size was 110 tuberculosis patients who met the inclusion criteria as research subjects. Inclusion criteria were patients who suffer from pulmonary tuberculosis who are actively undergoing treatment at the Gading Community Health Center, Perak Timur and Tambak Rejo Surabaya Indonesia in June -August 2019, aged 20-70 years. The data collection instrument in this study was a questionnaire about characteristics, status in the family, long suffering from pulmonary tuberculosis. Before use, first, the validity and reliability of the questionnaire were tested from 20 pulmonary tuberculosis patients. Instruments regarding patient characteristics include age, gender, education, status in the family, length of suffering. The instrument on pulmonary tuberculosis client's perception of factors related to social support recipients consists of 12 questions and pulmonary tuberculosis client's perception of factors related to social support providers consists of 5 questions which are measured using a Likert scale with choices: strongly agree (3), agree (2), disagree (1), and strongly disagree (0). The total factors related to social support recipients score : 15 - 36 and total factors related to social support providers score: 5 - 15, with higher scores indicating a higher level of related to social support. Pulmonary tuberculosis client's perception of factors related to the composition and structure of social networks consists of 5 questions that are family members/friends who often provide support, number of family members living in the house, the number of special friends you have, number of interactions with family / friends and familiarity of sibling relationships with family/friends. The instrument on family support includes information support, emotional support, instrumental

support, assessment support consisting of 5 questions each which are measured using a Likert scale with choices: always (3), often (2), sometimes (1), never (0). The total family support score: 0 - 15 with higher scores indicating a higher level of family support. The instrument on prevention of pulmonary tuberculosis transmission consists of 10 questions which are measured using a Likert scale with choices: always (3), often (2), sometimes (1), never (0). The total prevention of pulmonary tuberculosis transmission score: 3 - 30 with higher scores indicating a higher level of prevention of pulmonary tuberculosis transmission.

Descriptive analysis including frequency, percentage was used to describe characteristics, pulmonary tuberculosis client's perception of factors related to social support recipients, pulmonary tuberculosis client's perception of factors related to social support providers, pulmonary tuberculosis client's perception of factors related to the composition and structure of social networks, family support and prevention of pulmonary tuberculosis transmission. Data analysis Partial Least Square (PLS) was used to determine the correlation between factors related to social support recipients, factors related to social support providers, factors related to the composition and structure of social networks and family support in the prevention of pulmonary tuberculosis transmission with a p-value <0.05 which was considered significant.

This research had received ethical approval from the Ethical Commission of Poltekkes Kementerian Kesehatan Surabaya No. EA/003/KEPK-Poltekkes_Sby/V/2019

RESULTS

Table 1 shows the results that the age of people with pulmonary tuberculosis ranges from 21 years and almost half are aged 41-50 years and over 50 years, mostly female and mostly as the head of the family. Almost half have primary school and senior high school education levels while the rest have junior high school and college education levels.

Table 2 shows that almost all of the information support, instrumental support and assessment support for pulmonary tuberculosis patients are good (80%, 83.6%, 86.4%) while emotional support is mostly good (71%).

Table 1. Characteristics of patients with pulmonary tuberculosis (n = 110)

| Characteristics | Frequency | Percentage |
|----------------------|-----------|------------|
| Age | | |
| 21 – 30 | 19 | 17.3 |
| 31 – 40 | 21 | 19.1 |
| 41 –50 | 35 | 31.8 |
| > 50 | 35 | 31.8 |
| Gender | | |
| Male | 69 | 62.7 |
| Female | 41 | 37.3 |
| Level of education | | |
| Primary school | 37 | 33.6 |
| Junior High School | 19 | 17.3 |
| Senior High School | 42 | 38.2 |
| College / university | 12 | 10.9 |
| Status in family | | |
| Head of the family | 64 | 58.2 |
| Family members | 46 | 41.8 |

Table 2. Family support of pulmonary tuberculosis patients

| Family support variable | Category | | | Total | |
|-------------------------|------------|------------|----------|-----------|------------|
| | Good | Enough | Less | Frequency | Percentage |
| Information Support | 88 (80%) | 20 (18.2) | 2 (1.8%) | 110 | 100 |
| Emotional Support | 78 (71%) | 27 (24.5%) | 5 (4.5%) | 110 | 100 |
| Instrumental Support | 92 (83.6%) | 12 (10.9%) | 6 (5.5%) | 110 | 100 |
| Assessment Support | 95 (86.4%) | 14 (12.7%) | 1 (0.9%) | 110 | 100 |

Table 3 shows that the recipient factors of support mostly good (67.3%), supporting factors almost all good (93.6%). Table 4 shows the composition and structure of social networks factors of patients with pulmonary tuberculosis. The composition and structure of social networks almost all subjects were accompanied by outsiders (95.5%), most family members were 4-6 people (50.9%), almost half had special friends of 1-3 people (48.2%) and interact more than 5 times a day (38.2%) and most have very close relationships (64.5%).

Table 3. Recipient factors and supporting factors for pulmonary tuberculosis patients

| Recipient factors and supporting factors | Frequency | Percentage | Amount | |
|--|-----------|------------|-----------|------------|
| | | | Frequency | Percentage |
| Recipient of support | | | | |
| Good | 74 | 67.3 | 110 | 100 |
| Enough | 36 | 32.7 | | |
| Less | 0 | 0 | | |
| Supporting factors | | | | |
| Good | 103 | 93.6 | 110 | 100 |
| Enough | 7 | 6.4 | | |
| Less | 0 | 0 | | |

Table 4. The composition and structure of social networks factors of patients with pulmonary tuberculosis

| Social network composition and structure factors | Number (n) | Percentage (%) | Amount | |
|---|------------|----------------|--------|------------|
| | | | Number | Percentage |
| The party who gives support | | | | |
| Main family | 5 | 4.5 | 110 | 100 |
| Neighbors/friends | 105 | 95.5 | | |
| Number of family members living in the same house | | | | |
| 1-3 people | 42 | 38.2 | 110 | 100 |
| 4-6 people | 56 | 50.9 | | |
| > 6 people | 12 | 10.9 | | |
| The number of special friends | | | | |
| 1-3 people | 54 | 49.0 | 110 | 100 |
| 4-6 people | 29 | 26.4 | | |
| > 6 people | 27 | 24.6 | | |
| Number of interactions with family/friends | | | | |
| < 3 times a day | 31 | 28.2 | 110 | 100 |
| 3-5 times a day | 37 | 33.6 | | |
| > 5 times a day | 42 | 38.2 | | |
| Relationship intimacy | | | | |
| Not familiar | 8 | 7.3 | 110 | 100 |
| Ordinary | 31 | 28.2 | | |
| Very familiar | 71 | 64.5 | | |

The results of the PLS test showed a significant effect with p values of 0.002, 0.000, and 0.000 (<0.05). These results indicate that there is a significant influence between supporting recipient factors, supporting factors, composition factors and social network structure on family support in preventing transmission of pulmonary tuberculosis.

DISCUSSION

Family Support in Preventing Pulmonary TB Transmission

Family support for family members including support for family members who suffer from pulmonary tuberculosis is important for people with pulmonary tuberculosis. Family support is all forms of assistance received by family members of pulmonary tuberculosis patients both in the context of treatment and prevention of pulmonary tuberculosis transmission. Family support for pulmonary tuberculosis patients includes information support, emotional support, instrumental support and assessment support.

Appraisal support provided by the family to patients with pulmonary tuberculosis in the form of attitudes shown in the form of accepting the patient's condition, respect, give confidence, praise, and enthusiasm for pulmonary tuberculosis sufferers. In implementing this support it is not too difficult to do so the results obtained tend to be good. While the instrumental support provided by families to patients with pulmonary tuberculosis in the form of concrete actions, among others, by preparing facilities both facilities, energy, time, and money. In providing this support, not all families can likely do so given the limitations possessed by family members in the form of limited knowledge, and socio-economic limitations. The results of this study are no different from the results of a study conducted by Herawati C et al (2020) which showed most of the families support pulmonary tuberculosis sufferers⁽¹¹⁾. Other research conducted by Kusumoningrum TA. et al (2020) showed no different

results where information support, appreciation support, and instrument support tended to be in a good category, except for more emotional support in the less category⁽¹²⁾. Family support provided to pulmonary tuberculosis sufferers in the form of information support, assessment support, instrument support, and emotional support⁽¹³⁾. Family support, which involves emotional concern, assistance, and affirmation, will make pulmonary tuberculosis patients not lonely in dealing with situations and family support can empower pulmonary TB patients during the treatment period by continuing support, such as reminding patients to take drugs and be sensitive to pulmonary tuberculosis sufferers if they experience side effects from pulmonary tuberculosis drugs. What is meant by a family, in this case, is family members themselves, neighbors /live nearby, voluntarily provide support to patients with pulmonary tuberculosis. Family support is one of the important factors that influence adherence to pulmonary tuberculosis treatment, where the nuclear family and extended family function as a support system for family members⁽¹⁴⁾.

Appraisal support gets the best results compared to other support. Assessment support includes accepting the situation, respecting pulmonary tuberculosis sufferers, giving trust, giving praise and encouragement to family members who suffer from pulmonary tuberculosis. These results indicate mutual respect and provide trust, enthusiasm, and praise among family members both healthy and suffering from pulmonary tuberculosis. Emotional support gets the most results compared to other supports. Emotional support includes: accompanying sufferers when they are in control of a health facility, giving special attention, listening to complaints, participating in feeling. These results indicate that not all members of the nuclear family can accompany family members of pulmonary tuberculosis patients both at the time of control to the facility or at home, not all family members can pay special attention and share what is experienced by pulmonary tuberculosis sufferers. Instrumental support gets the most results compared to other support. Instrumental support includes: preparing facilities, costs, time, place, and finding solutions to overcome the problem of pulmonary tuberculosis transmission. These results indicate limitations, especially socio-economic limitations in the family so that it has difficulty in providing instrumental support to family members who experience pulmonary tuberculosis problems.

Factors that Influence Family Support in the Prevention of Pulmonary TB Transmission

Family support in preventing transmission of pulmonary tuberculosis is influenced by the support recipient factor, the supporting factor and the composition and structure of social networks factors. The support recipient factor is a family member who suffers from pulmonary tuberculosis while the supporting factor is another family member who does not suffer from pulmonary tuberculosis. Factors in the composition and structure of social networks among others family members who often provide support, the number of family members who currently live at home, the number of special friends they have, the number of interactions with their families, and the intimate relationship with their families. A good perception is shown by family members who suffer from pulmonary tuberculosis as recipients of support and family members who do not suffer from pulmonary tuberculosis as support providers. Similarly, based on the composition and structure of the social network, more support is given by neighbors or friends, but the relationship is very close. This condition shows a positive thing for the family in supporting the treatment and prevention of pulmonary tuberculosis transmission. These results are not much different from the results of research conducted by Tristiana et al (2019) who found that the experience of pulmonary tuberculosis clients during treatment requires a variety of support from themselves, others (family, neighbors, friends, and health workers)⁽¹³⁾. Results This is somewhat different from the results of research conducted by Mujahidin (2015) where the practice of preventing pulmonary TB transmission that is closing the mouth when sneezing/coughing and spitting practice in special places that have been given disinfectant and closed conducted by pulmonary tuberculosis sufferers is still lacking⁽¹⁵⁾. Even with different cases, a similar study was conducted by Safitri MG and Citra AF (2019) with the results which stated that there was a large enough social support to cause high breastfeeding self-efficacy for breastfeeding exclusive breastfeeding⁽¹⁶⁾. The theory of social support illustrates the influence of the factors of recipient support, factors of support, and social networking as an inseparable part of a person. Social support obtained by an individual comes from himself, close family members, friends, relatives, health workers, members of other social groups such as churches and communities⁽¹⁷⁾. Another theory says that the characteristics of social support are also influenced by social networks including the number of members of social networks that are felt to be supported emotionally, instrumentally, and financially, if there are members of a support network experiencing health problems. It was also said that social support came from non-kin social networks friends, neighbors, godparents, godchildren, friends at work⁽¹⁸⁾.

Social support felt by someone is influenced by himself as a recipient of support, others as a factor providing support, and the composition and structure of social networks. In this case, the recipients of support are patients with pulmonary tuberculosis and the providers of support are family members/friends/neighbors. The results showed that the perception of support both as recipients of support and perceptions of providers of support tended to be in a good category. This is because pulmonary tuberculosis sufferers have adapted to their illness so that they feel they can overcome the problem including implementing preventive measures for pulmonary

tuberculosis disease transmission. Besides, pulmonary tuberculosis sufferers feel that many family members support themselves in carrying out prevention measures for pulmonary tuberculosis. Related to the composition and structure of social networks, the results of the study show that those who provide support are dominated by neighbors/friends. This is related to the mindset, where someone tends to be closer and free to ask help from friends or neighbors compared to the nuclear family. The bustle of the nuclear family may also be one of the reasons that tuberculosis sufferers feel the support from neighbors/friends rather than the nuclear family.

The Influence of Receiving Support Factor, Providing Support Factor, Composition and Structure of Social Networks Factors on Family Support in the Prevention of Pulmonary Tuberculosis Transmission

There is a significant influence of recipients of support for family support. The results of this study do not differ greatly from findings in research conducted by Kamenov K, et al (2016) which says that social support is influenced by recipient factors of support : gender, age, and accompanying illness⁽¹⁹⁾. According to Crofton, et al (2007) in Noviyani E, et al (2015) prevention of pulmonary tuberculosis transmission by pulmonary tuberculosis sufferers, among others, covering their mouths when coughing or sneezing, adhering to the treatment program⁽²⁰⁾. Wahyuningsih (2016) found a relationship between perceptions of pulmonary tuberculosis patients about the prevention of transmission and efforts to prevent transmission of pulmonary tuberculosis. The more positive perception of pulmonary tuberculosis sufferers the better the prevention of transmission efforts undertaken. Ivancevich et al (2006) in Wahyuningsih (2016) said that perception involves knowledge with a process that starts from interpreting objects, symbols, and people based on experience so that they can influence behavior and shape attitudes⁽²¹⁾. The significant influence between the factors receiving support for family support in the prevention of pulmonary tuberculosis transmission is due to the optimal understanding of pulmonary tuberculosis sufferers about transmission prevention. This is reinforced by the support of the health center that provides special services to provide health education to patients with pulmonary tuberculosis.

There is a significant influence of support providers on family support in preventing pulmonary tuberculosis transmission. The results of this study are not much different from the results of research conducted by Nastiti AD (2020) which states that there is a relationship between family support and compliance with pulmonary tuberculosis treatment control⁽²²⁾. Another study conducted by Skiles MP, et al (2018) found a positive impact of providing social support to tuberculosis patients who were not compliant with treatment⁽²³⁾. In research on HIV prevention, it is found that peer support is important to combat social isolation, support access to knowledge, and prevention of HIV⁽²⁴⁾. It is said that patients with pulmonary tuberculosis who get high family social support are 20 times more likely to be obedient than respondents who get low family social support (Muna & Soleha, 2014) in (Putri MH, 2020)⁽¹⁸⁾. In this case, all family members play a role in providing support social to patients, such as reminding control, taking medicine on time, and paying attention to patient complaints. This form of support makes individuals feel comfortable, confident, cared for, and loved by the family so that individuals can deal with problems well⁽¹⁸⁾. Lenders of support in this study were nuclear family members, friends/neighbors, work colleagues. The results showed the perception of support from the provider of support was greater (93.6%) than recipients of support (67.3%). This can occur relationships and a high level of intimacy between the sufferer with his social environment both with family members and with friends/neighbors.

There is a significant influence on the composition and structure of social networks on family support. The results showed that almost all pulmonary tuberculosis sufferers were accompanied by neighbors/friends (95.5%), the number of family members was mostly 4-6 people (50.9%), almost half had special friends of 1-3 people (48.2%), and interact more than 5 times a day (38.2%) and most have very close relationships (64.5%). According to Cohen & Hoberman (in Isnawati & Suhariadi, 2013), as quoted by Adnan AZ, et al (2016) social support refers to the various resources provided by a person's relationships. Ties and friendships with others are considered aspects that provide emotional satisfaction in an individual's life. According to Sarafino (1994) in Adnan AZ, et al (2016), social support is the provision of comfort, care, appreciation, or assistance felt by an individual received from another person or group. Social support makes individuals feel comfortable, loved, valued, and helped by others or a group. Social support is the provision of information both verbally and non-verbally, providing behavioral assistance or material obtained from close social relationships, which makes individuals feel cared for, valued, and loved⁽²⁵⁾.

The composition of social networks in this study includes the number of family members who live at home and the number of special friends owned by pulmonary tuberculosis sufferers. The structure of the social network in this study includes and the structure of the social network includes the number of interactions and the level of familiarity between patients with pulmonary tuberculosis with family members and neighbors/friends. The influence of the composition and structure of social networks on family support is likely due to frequent interactions between sufferers and their social environment. This is reinforced by the very high level of familiarity between people with pulmonary tuberculosis and the social networks that support it.

CONCLUSION

Family support is influenced by the support recipient factor, the support factor and the composition and structure of social networks factors is an important part that affects the prevention of transmission of pulmonary tuberculosis both among family members and in the community. Health workers must play an active role to support patients and their family to support each other in preventing the transmission of pulmonary tuberculosis.

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