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Dr. R.K. Sharma
Institute of Medico-legal Publications
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Contents

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Family Factors Associated with Quality of Life in Pulmonary Tuberculosis Patients in Surabaya, Indonesia

Dhian Satya Rachmawati[1], Nursalam[2], Arief Wibowo[3], Astrida Budiarti[4], Riza Agustin[4]

[1]Doctoral Program of Public Health, Faculty of Public Health, [2]Faculty of Nursing, [3]Faculty of Public Health, Universitas Airlangga, Surabaya, Indonesia; [4]STIKes Hang Tuah Surabaya, Indonesia

Abstract

Introduction: Pulmonary TB is an infectious disease caused by *Mycobacterium Tuberculosis*. The physical and pschological changes in patients with pulmonary TB can affect the patients's quality of life. The family is a key factor in relation to supporting successful treatment and recovery. This study aims to analyse the factors related to pulmonary TB patients quality of life.

Method: This research used an analytic observational design with a cross-sectional approach. A total of 73 respondents were recruited via the family members of patients with pulmonary TB using a simple random sampling technique. The data was collected using several questionaires on the sociodemographic characteristics, family development stage, family stress & coping, environmental data and WHOQOL-BREF. The data analysis was performed using a Chi Square test.

Result: The results of this study showed that family factors significantly influence the quality of life of patients with Pulmonary TB, including the type of family (p= 0.000), their level of education (p=0.000), employment (p=0.001) and monthly income (p=0.002). Other factors including the level of stress and coping and environmental health (healthy housing) were also significantly associated with quality of life (ρ <0.01). Only the family development stage had no significant relationship with quality of life.

Conclusion: The significant family factors influence the quality of life among pulmonary TB patients, which reflects the need to strengthen the role of the family in promoting successful treatment. A family with social support from the community would help to improve the quality of life of pulmonary TB patients.

***Keywords**: family, pulmonary TB patients, quality of life, Indonesia*

Introduction

Tuberculosis (TB) is a major communicable disease that claims 100,000 lives worldwide annually.[1] In 2017, Indonesia was ranked the third among listed countries with the highest TB burden.[1] The TB prevalence in Indonesia was estimated to be 600,000 cases with approximately 430,000 new cases per year.[2] The East Java Province was the top second highest district regarding the number of TB cases with a total number of 21,606 cases in 2016.[2] Pulmonary TB is an infectious disease caused by rod-shaped bacteria (basil) known as *Mycobacterium Tuberculosis*. [1] Poor immune system, malnutrition, and HIV positive are among the risk factors of pulmonary TB.[2] According to the Indonesia Ministry of Health (MoH), the highest prevalence of pulmonary TB is among people older than 45 years old, who have a low level of education, and who are unemployed.[3]

TB easily infects other individuals through direct contact, coughing, sneezing, and sputum (droplet nuclei) from TB patients. As a result of living closely to TB patients, their families run the risk of TB infection. Because of worries from getting infected, the other family members may limit their contact with the TB patient which results in the individual feeling isolated, depressed and neglected.[4] TB patients are often socially stigmatised which may affect their adherence to

Corresponding Author:
Dhian Satya Rachmawati
Doctoral Program of Public Health,
Faculty of Public Health, Universitas Airlangga,
Surabaya, Indonesia
Email: dhian.satya.rachmawati-2017@fkm.unair.ac.id

effective treatment.[4] This psychological problem would increase the patient's stress, which affect their quality of life. The physiological changes experienced by TB patients affects their physical abilities and deteriorates their quality of life.[1] The World Health Organisation Quality of Life (WHOQOL) defines quality of life as an individual's perception of life in society in the context of the existing culture and value system, related to their goals, expectations, standards, and concerns.[5] Quality of life is a very broad concept that is influenced by the physical condition of the individual, their psychological state, level of independence, social relations and environmental condition.[5]

Family factors are significant in relation to the TB cases. A previous study reported the significant association between TB and family-related factors, such as the number of adults in the household, having a single marital status, having a family history of TB, and living in a rented house.[6] Understanding the family factors affecting the TB cases would improve the support and interventions required in order to promote the successful treatment of pulmonary TB. Therefore, this study aimed to investigate the relationship between family-related factors and quality of life among pulmonary TB patients.

MATERIAL AND METHOD

We employed an analytical observational design with a cross-sectional approach to investigate the relationship between family factors and the quality of life of patients with pulmonary tuberculosis in Surabaya city. This was a preliminary study carried out from March to July 2017. The study population was made up of the families of TB patients who accompanied the patient to the Perak Timur community health centre, Surabaya city, during the study period. The sampling technique used in this research was non-probability sampling using a simple random sampling technique. A total of 89 people attending the community health centre had a TB positive test. 73 people who had a family member with pulmonary TB were selected and agreed to participate in the study.

The questionnaire regarding sociodemographics, family development stage, family stress and coping, environmental data, and the WHOQOL-BREF instrument was used for the data collection. A bivariate analysis using a chi-square test was applied to test the relationship between the independent variables and quality of life.

RESULTS

The sociodemographic characteristics of the respondents have been presented in Table 1. The majority of the respondents were from a traditional family (86.3%). A traditional family, in this study, represents a nuclear family consisting of two parents and their children, while a non-traditional family reflects a single parent family or extended family.[7] High school was the highest level of education attained by most of the respondents (39.7%). Most of the respondents worked as labourers or factory workers (65.8%), with a monthly income below IDR 1,000,000.

Table 1: Sociodemographic characteristics of the study participants, N = 73

Variables	N (%)
Type of family	
Traditional	63 (86.3)
Non traditional	10 (13.7)
Level of Education	
No schooling	6 (8.2)
Elementary	15 (20.5)
Junior school	14 (19.2)
High school	29 (39.7)
Higher education	9 (12.3)
Employment	
Factory workers	48 (65.8)
Self employed	10 (13.7)
Others	15 (20.5)
Monthly income (IDR)	
< 1,000,000	38 (52.1)
2,000,000-3,000,000	29 (39.7)
> 3,000,000	6 (8.2)

According to Duvall and Milller (1985), family life consists of eight stages, namely 1) new couple, 2) first child birth family, 3) family with pre-school children, 4) family with school children, 5) family with teenage children, 6) family with adult children, 7) middle age family, and 8) elderly family.[8] As displayed in Table 2, most of the respondents were in the fourth family development stage (19.2%) and the fifth stage (17.8%) respectively.

From their answers to the questions related to the level of stress, most of respondents had only a mild level of stress (69.9%), and none of the respondents indicated themselves as having a severe level of stress. The majority of the respondents lived in unhealthy houses (65.8%), but reported having a good quality of life (71.2%).

Table 2: Characteristics of the Respondents Based on the Family Development Stage, Level of Stress, Environmental Health and Quality of Life

Variable	N (%)
Family development stage	
Stage 1	6 (8.2)
Stage 2	3 (4.1)
Stage 3	5 (6.8)
Stage 4	14 (19.2)
Stage 5	13 (17.8)
Stage 6	12 (16.4)
Stage 7	10 (13.7)
Stage 8	10 (13.7)
Level of stress	
Mild	51 (69.9)
Moderate	22 (30.1)
High	0 (0.0)
Environmental health	
Healthy house	25 (34.2)
Unhealthy house	48 (65.8)
Quality of Life	
Poor	21 (28.8)
Good	52 (71.2)

We assessed the family-related variables including the type of family, level of education, employment, monthly income, family development stage, level of stress, and environmental health in relation to quality of life using the chi-square test. From the analysis results shown in Table 3, we found that the type of family, level of education, and monthly income were significantly associated with quality of life. No association was found between the family development stage and quality of life (ρ= 0.328). Both the level of stress and the environmental health variables showed a significant association with the quality of life of TB patients.

Table 3: Bivariate analysis of the sociodemographic characteristics, family development stage, level of stress, environmental health, and quality of life

Variables	Quality of Life		p-value
	Poor (n; %)	Good (n; %)	
Type of family			
Traditional	12 (19.0)	51 (81.0)	
Non traditional	9 (90.0)	1 (10.0)	0.000
Level of Education			
No schooling	6 (100.0)	0	
Elementary	15 (100.0)	0	
Junior school	0	14 (100.0)	0.000
High school	0	29 (100.0)	
Higher education	0	9 (100.0)	
Employment			
Factory workers	10 (20.8)	38 (79.2)	
Self employed	8 (80.0)	2 (20.0)	0.001
Others	3 (20.0)	12 (80.0)	
Monthly income (IDR)			
< 1,000,000	5 (13.2)	33 (86.8)	
2,000,000-3,000,000	15 (51.7)	14 (48.3)	0.002
> 3,000,000	1 (16.7)	5 (83.3)	
Family development stage			
Stage 1	0 (0.0)	6 (100.0)	
Stage 2	2 (66.7)	1 (33.3)	
Stage 3	1 (20.0)	4 (80.0)	
Stage 4	2 (14.3)	12 (85.7)	
Stage 5	5 (38.5)	8 (61.5)	0.328
Stage 6	3 (25.0)	9 (75.0)	
Stage 7	4 (40.0)	6 (60.0)	
Stage 8	4 (40.0)	6 (60.0)	
Level of stress			
Mild	0	51 (100.0)	
Moderate	21 (95.5)	1 (4.5)	0.000
High	0	0	
Environmental health			
Healthy house	1 (4.0)	24 (96.0)	
Unhealthy house	20 (41.7)	28 (58.3)	0.001

Discussion

In our study, several factors including the type of family, level of education, employment, monthly income, level of stress, and environmental health were significantly associated with the quality of life of pulmonary TB patients. Chronic disease affected the physical and mental health, which in turn decreased their quality of life.[9] The quality of life decreased along with

the emergence of the general symptoms of pulmonary TB such as coughing, fever with the exertion of sputum and mucus, and weight loss but improved after the first month of treatment.[2] Therefore, the family has an important role to the patients' adherence to the whole TB treatment.

The type of family is significant in relation to the quality of life among patients with TB. A traditional family is founded based on the union of parents with or without children. Support from a spouse or children may increase the motivation of pulmonary TB patients to comply the treatment. The spouse can monitor the patients in taking their medication correctly and accompany them to the health facility in order to get their disease checked. In line with our study results, a previous study found that being single parent increased the odds of TB cases by 63% compared to being in a married family.[6] The risk of TB cases also increased along with the increased number of adults in the household. Having more than 10 adults in the household increased the risk of TB cases by 2.67%.[6]

Level of education was also a significant factor related to the quality of life among TB patients. This result supported the findings of previous studies stating that level of education had a significant relationship with quality of life among patients with TB.[10,11] Employment is significantly associated with quality of life among the TB patients in our study. Similarly, a previous study in India reported there to be a significant relationship between employment and the quality of life scores of active TB patients after a year of successful treatment.[12] Another factor of income level was significantly related to the quality of life level. In the same vein, a previous study also reported that TB patients considered the level of income as being an important factor in improving quality of life.[13] These two factors are relevant, as having employment would enable the family of the TB patients to receive a certain level income as a form of sustainable financial support. Having a low income constrains some families in being able to afford enough food for the whole family. Moreover, a low income household only has a limited number of choices when fulfilling the nutritional needs of the family. Lack of nutrition affects the immune system, which increases the risk of having an infectious disease.[14]

According to Antonovsky (1979), stress is a response or a mental state from experiencing tension caused by a stressor or unresolved circumstances.[15] Having social support from the social environment would prevent the TB patients from feeling isolated and lower their level of stress.[15] Quality of life has increased in line with the decreasing of the physical symptoms of TB patients. Stress from a chronic disease is not only experienced by patients with active TB, but also patients with latent TB.[16] In latent TB, the TB symptoms are not visible, so the patients tend to be stressed and anxious about the given diagnosis.[16] The results of a previous study in Indonesia also showed a significant relationship between social support and quality of life as reflected in the decreasing of life satisfaction felt not during the initial diagnosis, but after when undergoing the intensive phase of treatment.[17]

A healthy house represents good environmental health. A healthy house has an integrated physical, chemical, biological condition that enables the residents to attain optimal health.[18] Therefore, a healthy house should meet requirements such as to fulfil physiological and psychological needs, and to prevent the transmission of diseases as well as accidents.[18] A healthy house should have adequate lighting, either from natural or artificial light, adequate ventilation for fresh air circulation, and should enable the family members to feel comfort. It also should have a disposal system for garbage and household waste, as well as safe water and food that prevents disease transmission. Having a TB patient in the house increases the risk of TB transmission to other residents. Therefore, having a healthy house would minimise this risk. As reported by a previous study, poor housing conditions significantly reduce the level of quality of life among patients with TB and their families.[1]

Conclusion

Our study results yielded a significant relationship between all of the family related factors and the quality of life among pulmonary TB patients. The type of family significantly affects quality of life. Being educated and engaged in paid employment was significantly associated with quality of life, as was the family level of stress and coping. However the family development stage showed no association with quality of life. Poor housing condition also affects the quality of life of patients with pulmonary TB. Considering the significant family factors, several strategies to improve the quality of life among these patients and their families should be implemented.

First, the patients should have an adequate level of knowledge and understanding about the disease and

the transmission of TB bacteria, so then they follow the treatment procedures and prevent further transmission. Second, the family should continuously provide a supportive environment with the community to help the patients recover from and fight TB transmission. This effort will minimise the stigma felt by the patients and increase their self-confidence. Community social support is very important in speeding up the healing process, and will increase the dignity of the patients and their families living within the community.

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Conflict of Interest: Nil.

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