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Self-Management Education for the Quality of Life of Patients with Pulmonary Tuberculosis

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Abstract---*Treatment for pulmonary tuberculosis (TB) may become a problem when the patients show no adherence to the treatment and feel bored with its long duration. This condition may lead to drop out in the treatment. Therefore, this study aimed to analyze the effects of self-management education on the quality of life of patients with pulmonary TB. The design of this study was quasi-experimental, conducted in 3 Puskesmas (Perak Timur, Sawahan, Kebonsari), in which 150 respondents were divided into 2 groups: 75 respondents in the control group and 75 respondents in the treatment group. They were chosen as the sample by using a simple random sampling technique. The data were collected by conducting a pretest to identify the quality of life, interventions through self-management education, and finally providing a posttest. Furthermore, the data were analyzed using the Mann Whitney U test and Wilcoxon signed rank test. Change in the phsycal health domain, psychological domain, social domain and an enviroment domain that was effect self-management education the right place for the treatment is puskesmas, and a high hope for a cure needs supports from the family and medical workers. Self-management education increases the quality of life of patients with pulmonary TB. Future research is expected to analyze their life expectancy more deeply.*

Keywords--- *Quality of Life; Pulmonary TB; Life Expectancy*

I. INTRODUCTION

Tuberculosis (TB) is an infectious disease which is a global problem, mostly found in developing countries [1],[2],[3],[4]. Problems related to TB are exacerbated by the presence of cormobidities, which cause inhibiting factors in the treatment in the treatment period [5] [4] [6].

TB control in Indonesia through the national TB program has long been carried out in line with the implementation of short-term treatment strategies and direct monitoring (Directly Oberserved Treatment Short-course, DOT) carried out in puskesmas (health primary) stage [7] [8] [9].

The elimination tuberculosis is also one of the 3 main focuses of the government in addition, in the health sector, to reducing stunting and increasing the coverage and quality of immunizations [10]; [8]; [5]. The vision relation build to this disease world is free tuberculosis, zero deaths, illnesses, and suffering caused by tuberculosis [11]; [7]; [12].

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The world hopes to be free of tuberculosis, so the quality of life in TB sufferers needs to be investigated so that the treatment process can be run optimally and continuously [13]; [14]; [1]; [15]. Quality of life as an individual's perception is related to their goals, hopes, standards and concerns [14]; [5]; [2]; [16]; [17].

Factors affecting quality of life are physical health, psychological conditions, personal beliefs, social relationships and their relationship with important factors in their environment [18]; [14]; [1]; [17]. Patients with drug resistant TB have different quality of life compared to non-drug resistant TB patients; non-drug resistant TB patients have a better quality of life than drug resistant TB patients [6]; [3]; [19]. The difference in quality of life is the general quality of life (global quality of life), global health, psychological health, and environmental quality of life [3]; [7]; [20]. Aspects of physical health and social relationships do not show any difference between drug resistant TB patients and patients who are non multiple drug resistant [21]; [22]; [7]; [23].

Self management education in pulmonary TB patients involves 3 steps: process creation, peer group discusion, transfer and sharing process [15]; [17]; [19];[3] The purpose of this study was to investigate the relationship of self-management education to quality of life in patients with pulmonary TB.

II METHODS

A quasi-experimental research design was used with one group intervention approach and one control group . The sample came from 3 puskesmas in Surabaya City, and included 150 respondents divided into 2 groups: 75 respondents in the control group and 75 respondents in the treatment group.

Treatment given by researchers involved family empowerment including counseling, guidance / counseling and demonstrations related to TB, how to care, how to prevent transmission and treatment of pulmonary TB involving patients and families for approximately 1 hour for each meeting every week for 6 weeks, in agreement with the respondents. Supporting instruments in the research were booklets, flip sheets and demonstration materials for pulmonary TB independent care [24]; [25]; [26].

The *World Health Organization* (WHO) has developed instruments measuring quality of life consisting of four domains, namely: physical, psychological, social and environmental. The questionnaire was given during the pre-test and post-test. The research process was carried out for 1 month, divided into 2 weeks for the control group and 2 weeks for the treatment group. Analysis was undertaken using the statistical Wilcoxon signed rank test, level of significance $\alpha = 0.05$. That means, if (p) = 0.05, then H1 is accepted; this would means that there is an influence of self-management education on Quality of Life (QoL) among pulmonary TB sufferers. Different test control group and treatment were the Mann Whitney U, test level $\alpha = 0.05$.

III. RESULTS

Respondents' demographic data are the characteristics of respondents which included: 1) gender, 2) age, 3) occupation, 4) education, 5) duration of treatment for pulmonary tuberculosis and the results obtained are shown in Table 1. Quantitative research results (with the Wilcoxon signed rank test and the Mann Whitney U test) obtained the results in Table 2. Statistical test results used the Wilcoxon signed rank test, treatment group (groups that received self-management education treatment) were $p = 0.003$ on the physical health domain means $p = 0.05$, then the hypothesis is accepted meaning there is a significant effect of self-management education on improving quality of life (physical health domain) in patients with pulmonary TB. The statistical test result using the Wilcoxon Signed Rank test, in the control group (groups that didn't get self-management education) was $p = 0.317$ in the physical health domain which means there was no difference in quality of life (physical health domain) in patients with pulmonary TB between *pretest* and *posttest*. Difference in average quality of life (physical health domain) at pretest in the treatment group and the control group using the *Mann Whitney U Test* was $p = 0;167$; this shows that there was no

average difference between the control group and the treatment group. Difference in mean quality of life (physical health domain) at posttest in the treatment group and the control group using the *Mann Whitney U Test* was $p = 0.000$; this shows that there were differences in the mean improvement in quality of life (in the physical health domain) between the treatment group (the group that got SME) and the control group (the group that did not get SME).

For the psychological domain, the statistical test results using *Wilcoxon Signed Rank test*, in the treatment group was $p = 0.003$ means it $p = 0,05$ then the hypothesis is accepted meaning there was a significant effect of self-management education on improving the quality of life (psychological domain) in patients with pulmonary TB. The value control group $p = 0.317$ means it $p = 0.05$ then the hypothesis is rejected meaning that there is no improvement in the quality of life (psychological domain) in patients with pulmonary TB. Difference in average quality of life (psychological domain) at pretest in the treatment group and the control group using *Mann Whitney U test* gave $p = 0.167$; this shows that there was no average difference between the control group and the treatment group. Difference in average quality of life (psychological domain) at posttest in the treatment group and the control group using the *Mann Whitney U Test* gave $p = 0.000$; this shows that there were differences in the mean improvement in quality of life (psychological domain) between the treatment group (the group that received SME) and the control group (the group that did not receive SME).

The social domain, statistical test results used the *Wilcoxon signed rank test*, the treatment group $p = 0.046$ means it $p = 0.05$ then the hypothesis is accepted meaning that there was a significant effect of self-management education on improving the quality of life (social domain) in patients with pulmonary TB. The social domain using *Wilcoxon signed rank test*, in the control group gave $p = 0.157$ meaning there was no difference in quality of life (social domain) in patients with pulmonary tuberculosis. Difference in average quality of life (social domain) at the pretest in the treatment group and the control group using the *Mann Whitney U test* gave $p = 0.061$; this shows that there was no average difference between the control group and the treatment group. Difference in average quality of life (social domain) at posttest in the treatment group and the control group using the *Mann Whitney U test* gave $p = 0.015$; this shows that there were differences in the mean improvement in quality of life (social domain) between the treatment group (the group that received SME) and the group control (groups that did not receive SME).

The environmental domain, statistical test results use *Wilcoxon signed rank test*, in the treatment group is $p = 1.000$ means it $p = 0.05$, the hypothesis is rejected meaning that there was no significant effect of self-management education (SME) on improving quality of life (environmental domain) in patients with pulmonary tuberculosis. The tatistical test results using the *Wilcoxon signed rank test*, in the control group was $p = 0.564$ meaning that there was no significant difference in quality of life (environmental domain) between pretest and posttest in patients with pulmonary tuberculosis. Differences in the average quality of life (environmental domain) during the pre-test in the treatment group and the control group using the test the *Mann Whitney U test* didapatkan $p = 0.101$; this shows that there was no average difference between the control group and the treatment group. The average difference in quality of life (physical health domain) at the posttest in the treatment group and the control group using *Mann Whitney U Test* gave $p = 0.167$; this shows that there was no difference in the average improvement in quality of life (environmental domain) between the treatment group (the group that received SME) and the control group (the group that did not receive SME).

Table 1 Table Distribution Responden on Caracteristic Demografic

Respondent Demographics	F (Control group)	% (Control group)	F (Treatment group)	% (Treatment group)
Gender:				
Male	22	29.3 %	22	29.3 %
Famale	53	70.7 %	53	70.7 %
Total Respondent	75	100%	75	100%
Age:				
>25 - ≤ 35	15	20 %	17	22.6 %
>35 - ≤ 45	24	32 %	32	42.7 %
>45 - ≤ 60	36	48 %	26	34.7 %
Total Respondent	75	100%	75	100 %
Profession:				
Housewife	11	14.7 %	15	20 %
Private sector / Employee	28	73.3 %	23	30.7 %
Entrepreneur	12	16 %	17	22.7 %
Driver	27	36 %	10	13.3 %
Does not work	3	5 %	10	13.3 %
Total Respondent	75	100 %	75	100 %
Education level:				
No school	11	14.7 %	12	16 %
Elementary school	15	20 %	17	22.7 %
Junior high school	23	30.7 %	27	36 %
Senior high School	19	25.3 %	18	24 %
College	7	7.3 %	0	0
Total respondent	75	100 %	75	100 %
Duration of treatment:				
1-2 months	13	17.3 %	34	45.3 %
2-3 months	37	49.3 %	17	22.7 %
3-4 months	25	33.3 %	24	32 %
Total Respondent	75	100 %	75	100 %

Table 2 Distribution quality of life (physical health domain)

No	Physical Health Domain	Treatment Group				Control group			
		Pre test		Post Test		Pre test		Post Test	
		f	%	f	%	f	%	f	%
1	Had sufficient	15	20 %	10	13.3 %	18	24 %	17	22.7 %
2	Sufficient	18	24 %	12	16 %	35	46.7 %	32	42.7 %
3	Good	23	30.7 %	29	38.7 %	15	15 %	19	25.3 %
4	Very good	19	25.3 %	24	32 %	7	9.3 %	7	9.3 %
	Total	75	100 %	75	100 %	75	100 %	75	100 %
	Wilcoxon Signed Rank Test	*P* = 0.003				*P* = 0.317			
	Mann-Whitney Test	Pretest *p* = 0.167 Posttest *p* = 0.000							

Table 3 Distribution quality of life (psychological domain)

No	Psychological Domain	Treatment Group				Control group			
		Pre test		Post Test		Pre test		Post Test	
		f	%	f	%	f	%	f	%
1	Less stable	12	16 %	9	12 %	15	20 %	12	16 %
2	Fairly stable	27	36 %	15	20 %	27	36 %	27	36 %
3	Stable	25	33.3 %	30	40 %	20	26.7 %	21	28 %
4	Very stable	16	21.3 %	21	28 %	13	17.3 %	15	20 %
	Total	75	100 %	75	100 %	75	100 %	75	100 %
	Wilcoxon Signed Rank Test	*P* = 0.003				*P* = 0.317			
	Mann-Whitney Test	Pretest *p* = 0.167 Posttest *p* = 0.000							

Table 4 Distribution quality of life (social domain)

No	Social domain	Treatment Group				Control group			
		Pre test		Post Test		Pre test		Post Test	
		f	%	f	%	f	%	f	%
1	Not active enough	12	16 %	5	6.6 %	23	30.7 %	20	26.7 %
2	Quite active	29	38.7 %	20	26.7 %	30	40%	30	40%
3	Active	27	36 %	42	56%	17	22.7 %	20	26.7 %
4	Very active	7	9.3 %	8	10.7 %	5	6.6 %	5	6.6 %
	Total	75	100 %	75	100 %	75	100 %	75	100 %
	Wilcoxon Signed Rank Test	*P* = 0.046				*P* = 0.157			
	Mann-Whitney Test	Pretest *p* = 0.061 Posttest *p* = 0.015							

Table 5 Distribution quality of life (environment domain)

No	Social domain	Treatment Group				Control group			
		Pre test		Post Test		Pre test		Post Test	
		f	%	f	%	f	%	f	%
1	Inadequate	12	16 %	12	6.6 %	17	22.7 %	15	20 %
2	Enough adequate	32	42.7 %	30	36 %	39	52 %	43	56 %
3	Adequate	23	30.7 %	25	42.6 %	19	25.3 %	18	24 %
4	Very adequate	8	10.7 %	8	14.7 %	0	0	0	0 %
	Total	75	100 %	75	100 %	75	100 %	75	100 %
	Wilcoxon Signed Rank Test	*P* = 1.000				*P* = 0.564			
	Mann-Whitney Test	Pretest *p* = 0.101 Posttest *p* = 0.167							

IV. DISCUSSION

Psychologically, and socially for pulmonary tuberculosis sufferers at the Community Health Center in Surabaya. There was no significant difference in the environmental domain of quality of life in the pretest and posttest treatment groups using the Wilcoxon test and the Mann Whitney test resulting in H1 being rejected. There was no effect of self-management education on improving quality of life. This shows that the intervention given by the researcher had an effect on the improvement of the quality of life of patients with pulmonary tuberculosis. Pulmonary tuberculosis is one of the deadliest diseases in the world caused by Mycobacterium Tuberculosis and is contagious [29]; [30]; [31]. The disease causes health problems in millions of people every year and ranks second to infectious diseases that cause death after the Human Immunodeficiency Virus (HIV) [31]; [26]; [32].

Pulmonary tuberculosis is a threat to the Indonesian population. The disease is a chronic disease that can affect the quality of life of sufferers. Pulmonary tuberculosis raises serious problems in the concept of quality of life consisting of aspects of physical, psychological, social, and environmental health [33]; [34]; [35]. The impact of psychological burden on pulmonary tuberculosis patients will worsen physical health so that it will reduce the quality of life patients. The helplessness of pulmonary tuberculosis patients will lead to changes in adaptation to the psychological, social, and spiritual response so that it will affect the quality of life of sufferers.

This is in accordance with the quality of life measurement data conducted by researchers. In this study, out of 75 respondents in the treatment group, 10 people had sufficient physical health status, 12 people sufficient physical health status, 29 people good physical health status and 24 people very good physical health status. In the control group, 17 people had sufficient health status, 32 people sufficient health status, 19 people good health status and 7 people very good physical health status. Items on physical health included pain (coughing and tightness in pulmonary TB, dependence on drug ingredients and medical assistance, energy and fatigue, mobility, sleep satisfaction, ability to move, and ability to work) [7]; [10]; [12].

For the psychological domain, out of 75 respondents in the treatment group, 9 people had a less stable psychological status, 15 people a fairly stable psychological status, 30 people a stable psychological status and 21 people had a very stable psychological status. [8], [17], [5] state that self-management education is a person's ability to manage strengths greater than oneself. For the control group, 12 people had a less stable psychological status, 27 fairly stable, 21 had a stable status and 15 people had a very stable psychological status. Items in psychological terms included positive feelings, appreciation for life, concentration, body appearance, self-esteem, and negative feelings [17]; [2]

For the social domain, out of the 75 respondents in the treatment group, 5, respondents were not active enough, 20 respondents had quite an active social status, 42 respondents had an active status in the social domain and 8 respondets had a very active social status. In the control group, 20 respondents had a less active social status, 30 respondents had a quite active social status, and 5 respondents had an active social status.

In the environmental domain, out of 75 respondents in the treatment group, 12 people had an inadequate environmental status, 30 people had an adequate enough environmental status, 25 people had an adequate environmental status and 8 people had an adequate environmental domain. In the control group out of 75 respondents in the group, 15 people had an inadequate environmental status, 43 people had an adequate enough environmental status, 18 people had an adequate environmental status and 0 people had an adequate environmental domain.

The treatment group in Table 2 showed an increase in quality of life (physical health domain) in almost all respondents. While the control group did not experience a significant difference, because, based on research conducted by (2), (17) and (38), in the article it has been proven that self-management education affects the improvement of individual health.This supports the result that the control group that was only given standard treatment in the form of OAT alone without accompanied self-management education measures found no significant differences in aspects of physical health.

The treatment group in Table 3 showed an increase in quality of life (psychological doamin). Out of 75 respondents in the treatment group, 9 people had a less stable psychological domain status, 15 people had a fairly stable psychological domain status, 30 people had a stable psychological domain status and 21 people had a stable psychological domain status. In the control group, out of 75 respondents, 12 people had a less stable psychological domain status, 27 people had a fairly stable psycological domain status, 21 people had a stable psychological domain status and 15 people had a stable psycological domain status. Self-management education is education to manage the ability of the self effectively to improve the welfare of the respondent's life where this action will be more focused on the ability of the self to understand the illness, transmission, prevention and treatment that must be engaged in by TB lung sufferers so that TB lung sufferers are able to accept conditions of the illness; good conditions and acceptance will improve the quality of life [8]; [36] The control group did not experience a significant difference, because the psychological aspects of pulmonary tuberculosis patients who were only given standard therapy by the puskesmas showed no significant changes. This will cause psychological resistance which will lead to low psychological well-being [32];

The treatment group in Table 4 showed an improvement in quality of life (social domain) for almost all respondents to the active social domain. Social welfare is a system of life and social life, both material and spiritual, which includes a sense of safety, decency, and inner peace to carry out the fulfillment of physical, spiritual, and social needs as well as possible for themselves, families, and society by upholding the rights and human rights obligations [37]; [7]. This supports that education is one of the important aspects in the realization of social welfare. Educational aspects can be built by growing 5 aspects in a person, namely: knowing, understanding, understanding, analysis and synthesis. These five aspects are requirements that must be built when taking self-management education actions.

The treatment group in Table 5 did not show a significant improvement in quality of life (environmental domain). The environmental domain consisted of financial resources, freedom, security, physical comfort, health, and social care (accessibility and quality), home environment, opportunities to obtain new information and skills, participation and opportunities for recreation, and physical environment (pollution and noise) [38]; [39]. Financial difficulties are a component that is not influenced by actions of self-management education. This is based on the understanding that self-management education is education given to pulmonary TB patients so that patients are able to manage their abilities [32]; [5]. The target of self-management education is to increase the intensity of emotions, and to have a dramatic impact on both emotional and physical changes [29]; [8]. Self-management education does not include actions to overcome one's finances [8]; [32]. Self-management education that has been undertaken will cause emotional strength for patients, so patients will positively receive pulmonary tuberculosis through determination, hope of recovery, and be able to make decisions. This will improve the quality of life of tuberculosis patients, with indicators of improvement in physical, social, and psychological aspects.

V. Conclusions

Self management education can lead to change in the quality of life in the physical health domain, psychological domain, social domain but not in the environmental domain. Self-management education can be used as an alternative method to improve the independent care of people with pulmonary tuberculosis at home.

Conflict Of Interest

No conflicts of interest have been declared.

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