Original Research

The Effect of Health Education through Family-Centered Care on the Motivation and Behavior of Tuberculosis Patients in Tuberculosis Recovery

Petrus Belarminus¹, Sh elfi Dwi Retnani Putri Santoso¹*, & Dessy Natalia Riti¹

¹Poltekkes Kemenkes Kupang, Kupang, Indonesia

Abstract

Introduction: Tuberculosis is an infectious disease that continues to be a global health concern and problem. Based on the findings of the 2018 National Riskesdas, the prevalence of pulmonary TB was 1,017,290 cases, in NTT there were 20,599 cases, and in West Sumba Regency there were 1,066 cases. The study aims to determine the effect of health education through family-centered care on the motivation and behavior of Tuberculosis patients in Tuberculosis Recovery in West Sumba Regency.

Methods: This research is a quasi-experimental research with a pre-test and post-test with control group design with consecutive sampling. A total of 40 respondents were divided into 2 groups, namely the intervention group and the control group. This study used the Wilcoxon test and independent t-test.

Results: The motivation value shows a value of p = 0.228, and the post-test shows a value of p = 0.749, the results of the paired t-test statistical test in the treatment group have a value of p = 0.000, and the value of p = 0.011 in the control group. The statistical result of the Wilcoxon test before and after the intervention in the treatment group was p = 0.000, while in the control group, it obtained p = 0.180.

Conclusion: Health education through family-centered care can be used as an approach to increase TB patient’s motivation and compliance in taking medication. Family support is a significant factor in encouraging patients to comply with TB treatment.

*Corresponding Author:
e-mail: shelfi.dr.putri@gmail.com

This work is licensed under a Creative Commons Attribution 4.0 International License.
INTRODUCTION

Tuberculosis (TB) is an infectious disease that continues to be a global concern and health issues [1]. One-third of the global population has been infected with TB[2], and most sufferers are of productive age (15-55 years). It affects the health of millions of people every year and is the second leading cause of death from infectious diseases worldwide, after HIV/AIDS. Tuberculosis is a global public health emergency that has been declared by the World Health Organization (WHO) [3]. Based on the results of National Risikesdas in 2018, the prevalence of pulmonary TB in Indonesia was 1,017,290 cases [4]. NTT is one of the provinces with a high prevalence of TB, with 20,599 cases [5]. In West Sumba Regency, there were 1066 cases of TB [6], [7]. The government has made a breakthrough against Tuberculosis towards a TB-free Indonesia by finding TB cases, treatment, and monitoring with the DOTS strategy [8]. However, three factors contribute to the high number of TB cases in Indonesia: the relatively long TB treatment period and the possibility of dropout, feeling healthy before the treatment period ends, and exacerbated by the increasing prevalence of HIV/AIDS infections [9].

Due to the high prevalence of pulmonary TB in Indonesia, treatment efforts must go beyond simple medical interventions. The government is instrumental in ensuring that patients have access to high-quality care and providing knowledge about TB prevention. However, the family also has an irreplaceable role in ensuring the success of pulmonary tuberculosis treatment. They can provide moral support, monitor treatment compliance, and create an environment that supports the patient's recovery [10].

The availability of a model that will be utilized as a guide and a point of reference when providing nursing services may be necessary for the family empowerment method to be optimized. A model will have a positive impact if it is developed based on the needs of health service providers and users, especially the family nursing profession. It is consistent with the concept of empowerment in family-centered nursing, which clarifies that the family has the power and responsibility to provide care [11]. Therefore, Family-centered nursing is one of the nursing profession’s service approaches. According to the literature [12], family support helps patients with pulmonary TB adhere to their therapy, which affects their prognosis. Therefore, the researcher was interested in conducting a research entitled "The Effect of Health Education through Family-Centered Care on the Motivation and Behavior of TB Patients in TB Recovery in West Sumba Regency".

METHODS

Design, Participants and Study Setting

The research was conducted from January 1st, 2023, to August 31st, 2023, using a quasi-experimental pretest-posttest control group approach [13]. Convenience sampling was used to select the sample, and the inclusion criteria were: (1) age between 21 and 60 years; (2) pulmonary TB patients receiving
treatment for 1-2 months; (3) no other comorbid conditions; and (4) the patient has capacity for hearing and understanding instructions. Meanwhile, the exclusion criteria include (1) patients classified as MDR-TB, (2) patients who encounter complications, and dropout criteria if the patient dies before the study is completed or before the post-test stage. The total respondents included in this study were 40 patients, consisting of 20 patients in the treatment group and 20 patients in the control group obtained from two Community Health Centers in the West Sumba Region, namely Puskesmas (Community Health Center) Puuweri and Puskesmas Weekaro.

Measures

After the pre-test and two months of treatment, the intervention in the treatment group was carried out twice [14] in the form of education on a family-centered care basis. The control group did not get any treatment. After the sixth month of therapy, pulmonary TB patients underwent the post-test of motivational and recovery behavior scores as seen from adherence to treatment.

Data Analysis

The differences in pre- and post-intervention motivation scores in the treatment and the control group were analyzed using a paired t-test. Meanwhile, the analysis of differences between the treatment and control groups was carried out by an independent t-test, provided that the data scale used was numerical with a normal distribution. Meanwhile, differences in healing behavior scores in the treatment and control groups were analyzed using the Wilcoxon Signed-Ranks Test. The Wilcoxon Signed-Ranks test was used to analyze differences in behavioral variables before (pre) and after (post) intervention, both in the control and treatment groups with a significance level $\alpha = 0.05$. If $p \leq 0.05$, the research hypothesis ($H_0$) is rejected.

Ethical Aspect

This research passed ethics on January 27, 2023, which was issued by STIKes Bahrul Ulum Jombang with number 139/EC/KEPK-BU/I/2023.

RESULTS

Description of Motivational Data on Pulmonary TB Before the Intervention of Health Education Through Family-Centered Care

Table 1 shows that the provision of health education based on family-centered care increases motivation. In the treatment group during the pre-test, there were 15 patients (75%) who had less motivation, and 5 patients (25%) had intermediate motivation, changed to 12 patients (60%) who had good motivation, and 7 patients (35%) had intermediate motivation, at the time of the post-test. In the control group, there were 15 patients (75%) had less motivation, 5 patients (25%) had intermediate motivation, and 7 patients (35%) had intermediate motivation, at the time of the post-test. In the control group, there were 15 patients (75%) had less motivation, 5 patients (25%) had intermediate motivation, changed to 10 patients (50%) had sufficient motivation, and 3 patients (5%) had good motivation. Table 2 shows the distribution of
motivation scores before the intervention, with the equality test results of $p > 0.05$, indicating that there is no difference/homogeneity in the motivation scores, while the results of the normality test using Shapiro-Wilk show 0.489, indicating that the data distribution is normal, so it can determine the analysis of differences before and after using the t-test. The mean value was 46.20 for the treatment group and 48.95 for the control group. Meanwhile, the minimum and maximum values are 31-63 for the treatment group and 35-63 for the control group. In conclusion, there was no difference in motivation scores before the intervention between the treatment group and the control group. The distribution of motivation scores after intervention and assessment after the 6th month starting from the first day of treatment with a mean score of 70.45 for the treatment group and 55.55 for the control group. While the minimum and maximum values are 58-80 for the treatment group and 40-76 for the control group. There was an increase in the average motivation score in both groups. However, compared to the control group, the treatment group's mean motivational value was substantially higher. It is known that the results of the independent t-test for the pre-test motivation score show a value of $p = 0.228$, indicating that there is no difference in motivation scores between the treatment group and the control group before the intervention. Meanwhile, the results of the independent t-test for the post-test motivation score showed a p-value = 0.749, meaning there was no difference in motivation between the treatment group and the control group after the intervention.

The results of the paired t-test in the treatment group, with a p-value = 0.000, indicate that there is a significant difference in motivation before and after the intervention. The control group has a p-value = 0.011, indicating that there is no difference in motivation before and after the intervention.

**Description of Recovery Behavior**

**Data Characterized by Adherence to Taking Medication Before and After the Interventions of Health Education Through Family-Centered Care**

Table 3 shows the results of adherence to taking medication before the intervention, including the most common categories were non-adherent, both the treatment group 15 patients (75%) and the control group 16 patients (80%). Then, recovery behavior characterized by adherence to taking medication after the intervention, and an assessment was carried out after the 6th month, starting from the first day of treatment, with the majority of respondents of the treatment group were adherent, as many as 18 respondents (95%), while in the majority of the control group were non-adherent, as many as 13 respondents (65%). One patient in the treatment group dropped out/died before the post-test.

Based on Table 4, the statistical results of the Wilcoxon test before and after the intervention in the treatment group showed a result of $p = 0.000$, indicating that there was a significant difference in the value of recovery behavior marked by adherence with taking medication before and after the intervention.
Meanwhile, in the control group, \( p = 0.180 \), indicating that there was no significant difference before and after the intervention.

**Table 1**  
Distribution of motivation in pulmonary TB before and after the intervention of health education through family-centered care

<table>
<thead>
<tr>
<th>Variable</th>
<th>Group</th>
<th>Pre-test</th>
<th>Post-test</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Treatment</td>
<td>n</td>
<td>%</td>
</tr>
<tr>
<td>Motivation</td>
<td>Less</td>
<td>15</td>
<td>75</td>
</tr>
<tr>
<td></td>
<td>Intermediate</td>
<td>5</td>
<td>25</td>
</tr>
<tr>
<td></td>
<td>Good</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>20</td>
<td>100</td>
</tr>
<tr>
<td>Control</td>
<td>Less</td>
<td>15</td>
<td>75</td>
</tr>
<tr>
<td></td>
<td>Intermediate</td>
<td>5</td>
<td>25</td>
</tr>
<tr>
<td></td>
<td>Good</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>20</td>
<td>100</td>
</tr>
</tbody>
</table>

**Table 2**  
Analysis of motivation in pulmonary TB before and after the intervention of health education through family centered care

<table>
<thead>
<tr>
<th>Variable</th>
<th>Treatment group</th>
<th>Control group</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Before</td>
<td>After</td>
</tr>
<tr>
<td></td>
<td>Mean</td>
<td>Median</td>
</tr>
<tr>
<td>Motivation</td>
<td>46.20</td>
<td>46</td>
</tr>
<tr>
<td></td>
<td>48.95</td>
<td>51</td>
</tr>
<tr>
<td>Mean</td>
<td></td>
<td>2,750</td>
</tr>
<tr>
<td>Difference</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Independent t test</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Table 3**  
Distribution of recovery behavior data characterized by Adherence in taking medication before the interventions of health education through family center care

<table>
<thead>
<tr>
<th>Variable</th>
<th>Test result</th>
<th>Treatment group</th>
<th>Control group</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Before</td>
<td>After</td>
</tr>
<tr>
<td></td>
<td></td>
<td>n</td>
<td>%</td>
</tr>
<tr>
<td>Adherent in taking medicine</td>
<td>Adhere</td>
<td>5</td>
<td>25</td>
</tr>
<tr>
<td></td>
<td>Non-adherent</td>
<td>15</td>
<td>75</td>
</tr>
<tr>
<td></td>
<td></td>
<td>16</td>
<td>80</td>
</tr>
</tbody>
</table>
Table 4

Recovery behavior scores characterized by adherence to taking medication in the Treatment Group and Control Group based on the Wilcoxon Signed Ranks Test Results

<table>
<thead>
<tr>
<th>Variable</th>
<th>Test Result</th>
<th>Treatment Group</th>
<th>Control Group</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Pre-test</td>
<td>Post-test</td>
</tr>
<tr>
<td>Adherence in taking</td>
<td>f    %</td>
<td>f    %</td>
<td>f    %</td>
</tr>
<tr>
<td>medication</td>
<td></td>
<td>Adherent</td>
<td>Non-Adherent</td>
</tr>
<tr>
<td></td>
<td></td>
<td>5  25</td>
<td>18  90</td>
</tr>
<tr>
<td></td>
<td></td>
<td>15 75</td>
<td>1  5</td>
</tr>
<tr>
<td>Total</td>
<td>20 10 0</td>
<td>19 95</td>
<td>20 100 20 10 0</td>
</tr>
</tbody>
</table>

Wilcoxon p-value

0.000 0.180

**DISCUSSION**

The statistical results of the Wilcoxon test before and after the intervention in the treatment group showed p = 0.000, indicating a significant difference in the recovery behavior score characterized by adherence to medication before and after the intervention. Family support is crucial, especially for those with pulmonary TB, which falls under the chronic illness category and requires long-term medicine use. The family plays an essential role in assisting patients in overcoming their health issues and enhancing their health condition [15]. In addition, the family's function in this situation is to encourage, educate, and inspire vulnerable family members to take good care of their health [16], such as those with chronic illnesses like pulmonary tuberculosis.

They serve as optimal motivation providers (OMPs), as well as information providers. The family has a crucial role to play in helping members of the family who are coping with the disease, including supporting the patient's therapy [17] so that they will be cooperative in receiving treatment [18].

In line with the results of the paired t-test in the treatment group, the value of p= 0.000, indicates a significant difference in motivation before and after the intervention. Patients with low motivation are more likely to discontinue their pulmonary TB therapy than patients with strong motivation, which is one of the causes contributing to treatment failure for these patients. Before the intervention, the mean value for the treatment group was 46.20, and for the control group, it was 48.95. It was categorized as being undermotivated. Additionally, the treatment and control groups had significant rates of non-adherence to medication before the intervention, with 15 (75%) and 16 (80%) respondents, respectively. A person's motivation is a drive that pushes them to engage in particular behaviors. Lack of motivation in a person prevents that person from having the inner drive to complete an activity. The goal of the patient's motivation is to ensure that they can recover from the pulmonary tuberculosis they have [19]. Health education to increase knowledge through counseling, either individually or in groups, can increase optimal knowledge to achieve changes in individual behavior in an effort to realize optimal levels.
of health [20]. Motivation is one of the factors that supports behavior change for the better. One of the factors that can influence motivation is knowledge, good family knowledge can increase patient motivation in taking TB treatment [21].

The family-centered, care-based health education approach emphasizes health education and increases intrinsic motivation in changing health behavior. Support from the family can affect a patient’s intrinsic motivation [11]. Based on recent perspectives, treating patients with chronic diseases like pulmonary tuberculosis must include family health education. As a result, the family could better understand their role and offer support.

CONCLUSION

A strategy to boost TB patients’ motivation and adherence to taking medication is to provide health education through family-centered care. The patient’s compliance with TB treatment is significantly affected by family support.

CONFLICT OF INTEREST

The author states that there is no conflict of interest in writing this article.

FUNDING

This research is a research grant funded by the Ministry of Health of the Republic of Indonesia.

ACKNOWLEDGEMENT

We want to convey our gratitude to the individuals and organizations that have offered moral and material support, such as the West Sumba Health Service, Poltekkes Kemenkes Kupang, and the Ministry of Health of the Republic of Indonesia.

REFERENCES


