

The Effect of a Self-Care Practice-Based Supportive Educative System on Knowledge, Self-Efficacy, and Medication Compliance in Pulmonary Tuberculosis Patients in Blitar Regency, Indonesia

As'ad Faishal¹, Indasah², Joko Prasetyo³

^{1,2,3} Department of Postgraduate Health Sciences, STRADA University of Indonesia

Corresponding Author: faishal@gmail.com

ABSTRACT

Prevention of Pulmonary Tuberculosis in Indonesia has become an important agenda because the number of sufferers is increasing. Regencies in Indonesia, including Blitar Regency, are highly endemic for Pulmonary Tuberculosis, so mitigation is necessary for sufferers. This disease can be cured, provided that sufferers have knowledge about their disease, have the motivation to recover and comply with health recommendations, namely regularly taking medication. This study was conducted in Blitar Regency, East Java Province, Indonesia with a sample of 85 patients with Pulmonary Tuberculosis. Patients were divided into two groups, where the first group was given minimal treatment according to government regulations, while the second group was given additional treatment. *Supportive Educative System Based Self Care Practice*. The result is that *Supportive Educative System Based Self Care Practice* can provide patients with knowledge about the disease they are suffering from, thus motivating them to recover and raising awareness among these patients to comply with taking medication, so that patients can be cured.

Keywords: Tuberkulosis, Supportive Educative System, Self Care Practice

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INTRODUCTION

Pulmonary Tuberculosis is an infectious disease that most often affects the lung parenchyma, caused by the *Mycobacterium Tuberculosis* bacterium. Pulmonary Tuberculosis can spread to almost any part of the body, including meningitis, kidneys, bones, and lymph nodes. It is an active disease due to a decreased immune system response (Brunner & Suddarth, 2019). Pulmonary Tuberculosis is a disease caused by *Mycobacterium Tuberculosis*, which usually attacks the lungs and then spreads throughout the body. Infection lasts for 2-10 weeks, and after 10 weeks, disease manifestations will appear in patients due to impaired immune response. However, the active process of Tuberculosis also lasts for a long time (Kardiyudiani & Susanti, 2019).

The World Health Organization (WHO, 2020) confirmed that Indonesia ranks third in the world for the highest burden of pulmonary tuberculosis after India and China, with 824,000 cases and 93,000 deaths, equivalent to 11 deaths per hour (Ministry of Health, 2021). This data indicates that tuberculosis remains a serious public health problem in Indonesia and requires comprehensive efforts involving health workers, families, and the community. Blitar Regency, East Java Province, Indonesia, is one of the areas still endemic for tuberculosis. According to a report from the Blitar Regency Health Office (2021), there were 4,906 suspected cases of pulmonary tuberculosis and 481 positive cases, or approximately 18.7% of the national target, with 28 patients dying due to treatment failure in 2025. This condition indicates that the burden of pulmonary tuberculosis cases in Blitar Regency remains high and requires special attention, as it is an area with limited access to health services.

Lack of knowledge in pulmonary tuberculosis patients impacts treatment success and increases the risk of transmission. This occurs because patients do not understand the positive effects of medication adherence and are unaware of the importance of completing therapy (Dewi et al., 2020). Factors such as self-efficacy and support from healthcare professionals have been shown to influence adherence behavior. The higher the self-efficacy and support from healthcare professionals, the higher the patient's adherence to pulmonary tuberculosis therapy (Herawati, 2020; Tukayo et al., 2020).

This study will measure the extent to which patient knowledge, self-efficacy, and patient compliance in undergoing health therapy and taking

medication influence the suppression of tuberculosis rates and its transmission in Binangun District, Blitar Regency, East Java, Indonesia. The method used is a Quasy Experimental with a pre-post test control group design approach. This design seeks to reveal causal relationships by involving a control group in addition to the intervention group (Nursalam, 2020). In this design, the intervention group was given treatment in the form of a Supportive Educative System Based on Self-Care Practice, while the control group was given an intervention according to community health center standards. In both groups, a pre-test questionnaire was administered to measure the level of knowledge. After administering the treatment to the intervention group, a re-measurement (post-test) was conducted on both the intervention and control groups.

METHOD

This research is a quantitative research. The research design uses *Quasy Experimental* with the approach *pre post test control group design*. This plan seeks to reveal causal relationships by involving a control group in addition to the intervention group (Nursalam, 2020). In this design, the intervention group was given treatment in the form of a Supportive Educative System Based on Self-Care Practice, while the control group was given intervention according to community health center standards. Both groups began with a pre-test questionnaire to measure their level of knowledge. After administering the treatment to the intervention group, a post-test was conducted.

In the intervention group and the control group. Sampling in this study adopted the following Slovin formula.

$$n = N / (1 + (N \times e^2))$$

Information:

n = Number of samples

N = Population size

e = Percentage of tolerance for inaccuracy (precession) due to sampling errors that is still tolerable, namely 5% (e=5%)

The independent variable in this study is a supportive educative system based on self-care practice. The dependent variables in this study are knowledge, self-efficacy, and medication adherence.

RESULTS AND DISCUSSION

The results of the statistical analysis explain that before being given the Self Care Practice-based Supportive Educative System intervention, the majority of pulmonary Tuberculosis patients in both groups showed a level of knowledge that was still considered sufficient, namely 60.0% in the control group (which did not receive the intervention) and 67.5% in the intervention group. Similarly, the level of self-efficacy of respondents in both groups was dominated by the sufficient category, respectively at 47.5% in the control group and 50.0% in the intervention group. In terms of medication adherence, the majority of respondents were also in the sufficient category, namely 57.5% in the control group and 55.0% in the intervention group. These results indicate that before the intervention was given, both the control and intervention groups had relatively balanced characteristics, with most respondents not yet achieving optimal levels of knowledge, self-efficacy, and adherence to pulmonary Tuberculosis treatment.

Table 1. Characteristics of Knowledge, Self-Efficacy, and Medication Compliance Before Self-Care Practice-Based Supportive Educative System Intervention in Pulmonary Tuberculosis Patients in Blitar Regency

| Variables | Category | Control Group | % | Interventi on Group | % | Total (n) |
|--------------------------|------------|---------------|------|---------------------|------|-----------|
| Level Knowledge | Good | 7 | 17,5 | 8 | 20 | 15 |
| | Enough | 24 | 60 | 27 | 67,5 | 51 |
| | Not enough | 9 | 22,5 | 5 | 12,5 | 14 |
| | Total | 40 | 100 | 40 | 100 | 80 |
| Self-Efficacy | Good | 8 | 20 | 5 | 12,5 | 13 |
| | Enough | 19 | 47,5 | 20 | 50 | 39 |
| | Not enough | 13 | 32,5 | 15 | 37,5 | 28 |
| | Total | 40 | 100 | 40 | 100 | 80 |
| Compliance Take medicine | Good | 7 | 17,5 | 8 | 20 | 15 |
| | Enough | 23 | 57,5 | 22 | 55 | 45 |
| | Not enough | 10 | 25 | 10 | 25 | 20 |
| | Total | 40 | 100 | 40 | 100 | 80 |

Source: Primary Data, 2025)

After A Self-Care Practice-based Supportive Educative System intervention was conducted in the intervention group, showing a significant improvement compared to the control group that did not

receive the intervention. Most respondents in the intervention group had a good level of knowledge of 82.5%, significantly higher than the control group at 32.5%. Similarly, the level of self-efficacy in the good category reached 77.5% in the intervention group, while in the control group it was only 22.5%. Regarding medication adherence, 80.0% of respondents in the intervention group showed good adherence, while in the control group only 20.0%. These findings indicate that the implementation of a Self-Care Practice-based Supportive Educative System is effective in improving knowledge, self-efficacy, and medication adherence in pulmonary Tuberculosis patients. This can be seen in Table 2 below.

Table 2. Characteristics of Knowledge, Self-Efficacy, and Medication Compliance After Self-Care Practice-Based Supportive Educative System Intervention in Pulmonary Tuberculosis Patients in Blitar Regency

| Variables | Category | Control Group | % | Intervention Group | % | Total (n) |
|-----------------|------------|---------------|------|--------------------|------|-----------|
| Level Knowledge | Good | 13 | 32,5 | 33 | 82,5 | 46 |
| | Enough | 26 | 65 | 7 | 17,5 | 33 |
| | Not enough | 1 | 2,5 | 0 | 0 | 1 |
| | Total | 40 | 100 | 40 | 100 | 80 |
| Self-Efficacy | Good | 9 | 22,5 | 31 | 77,5 | 40 |
| | Enough | 18 | 45 | 9 | 22,5 | 27 |
| | Not enough | 13 | 32,5 | 0 | 0 | 13 |
| | Total | 40 | 100 | 40 | 100 | 80 |
| Compliance | Good | 8 | 20 | 32 | 80 | 40 |
| | Enough | 28 | 70 | 7 | 17,5 | 35 |
| | Not enough | 4 | 10 | 1 | 2,5 | 5 |
| | Total | 40 | 100 | 40 | 100 | 80 |

Source: Primary Data, 2025

In the overall statistical analysis, namely the results of the MANOVA test, it was found that the intervention did not have a significant effect on the knowledge variable ($p = 1.000$), but had a significant effect on self-efficacy ($p = 0.000$) and compliance ($p = 0.000$). The high F values for the self-efficacy variable ($F = 41.798$) and compliance ($F = 34.546$) indicate that the intervention had a strong effect on improving both variables. The coefficient of determination (R^2) value of 0.349 for self-efficacy and 0.307 for compliance indicates that the intervention explained approximately 34.9% and 30.7% of the variation in changes in these variables, respectively. Thus, the intervention was proven effective in increasing

respondents' self-efficacy and compliance, although it did not have an impact on increasing knowledge. This can be seen in Table 3 below.

Table 3. Hasil Uji MANOVA (Tests of Between-Subjects Effects)

| Source of Variation | Dependent Variable | Mean Square | F Count | Mr. (p) | Information |
|---------------------|----------------------|-------------|---------|---------|-----------------|
| INTERVENTION | Knowledge | 0 | 0 | 1 | Not significant |
| INTERVENTION | <i>Self Efficacy</i> | 15,313 | 41,798 | 0 | Significant |
| INTERVENTION | Compliance | 9,113 | 34,546 | 0 | Significant |

Source: Primary Data, 2025

DISCUSSION

Before the implementation of the Self-Care Practice-based Supportive Educative System intervention, both groups had relatively similar characteristics, and the knowledge, self-efficacy, and medication adherence levels of pulmonary Tuberculosis patients were suboptimal. These findings align with several previous studies in Indonesia that have shown a strong relationship between knowledge, self-efficacy, and medication adherence in pulmonary Tuberculosis patients.

Research conducted by Hlim et al. (2023) showed a significant relationship between knowledge and adherence to anti-tuberculosis (OAT) medication in pulmonary Tuberculosis patients, where the better the patient's knowledge, the higher their adherence to treatment. This emphasizes the importance of a proper understanding of the disease and treatment to improve medication adherence. Furthermore, research by the UPI Repository (2022) on self-efficacy in pulmonary tuberculosis patients in West Java Province, Indonesia, showed that more than half of respondents ha high self-efficacy.

This study underscores the crucial role of self-efficacy in the success of long-term Tuberculosis therapy, as self-confidence influences an individual's ability to maintain consistent and disciplined treatment behaviors. Meanwhile, research by Trishela, Dewi Amir, and Lidiyawati (2024) found that health education significantly improved medication adherence in pulmonary Tuberculosis patients in Sukabumi Regency. Targeted and ongoing education helps patients understand the importance of adherence and strengthens their motivation to complete treatment.

Based on the results of the field analysis, it can be concluded that the majority of respondents before the intervention were still in the "sufficient" category for knowledge, self-efficacy, and adherence. This condition illustrates the real need for more comprehensive educational interventions and behavioral guidance. Pulmonary Tuberculosis patients face a long treatment period that requires high commitment, so simply having "sufficient" knowledge or self-confidence is not enough to maintain long-term adherence. Interventions that include health education, increased self-motivation, social support, and self-care practices are essential so that patients not only know what to do but also have the confidence and motivation to carry it out consistently. Furthermore, equivalence of baseline conditions between the control and intervention groups is an important foundation for this study, as it ensures that changes occurring after the intervention can be objectively attributed to the effects of the Self-Care Practice-based Supportive Educative System program, rather than to differences in baseline characteristics.

After the intervention was implemented, there were quite striking changes in the intervention group compared to the control group. These findings indicate that the implementation of the Self-Care Practice-based Supportive Educative System intervention clearly increased the proportion of respondents in the best ("good") category across all three variables in the intervention group compared to the control group. Research in Indonesia has shown that increased knowledge, strengthened self-efficacy, and health education interventions can directly encourage adherence to pulmonary Tuberculosis treatment.

A study by Sinurat, Saragih, and Derang (2025) found a significant relationship between self-efficacy and medication adherence in pulmonary Tuberculosis patients. Patients with high levels of self-efficacy tended to be more consistent in following long-term treatment regimens. This suggests that self-efficacy plays a crucial psychological role in determining patient treatment behavior. This study emphasizes the need for healthcare professionals to consider the psychological aspects of patients, not just their knowledge, to support the success of pulmonary Tuberculosis therapy (Sinurat et al., 2025).

Another study conducted by Fadhilah (2025) in Bukittinggi City reinforced these findings by showing that educational interventions designed to improve the self-efficacy of pulmonary Tuberculosis patients

significantly influenced their motivation and treatment behavior. The interactive education provided through counseling and group discussions helped patients better understand the importance of taking their medication regularly and increased their confidence in dealing with the side effects of treatment. These results indicate that supportive educational interventions that focus on the cognitive and affective aspects of patients can improve the success of pulmonary Tuberculosis treatment programs (Fadhilah, 2025). Furthermore, Efendi (2023) found in his research that psychoeducational therapy combined with a Tuberculosis management program had a positive impact on improving the self-efficacy and treatment outcomes of pulmonary Tuberculosis patients.

This approach emphasizes the importance of emotional support and patient understanding of their disease through group education sessions, behavioral guidance, and ongoing evaluation. Efendi's findings indicate that integrating psychological interventions with medical education can strengthen patients' commitment to completing treatment (Efendi, 2023). Based on the fact that the intervention group showed a significant increase in the "good" category across all three variables after the intervention, the Self-Care Practice-based Supportive Educative System program has proven highly relevant and effective as an intervention approach in the context of pulmonary Tuberculosis patients.

This program not only increases knowledge but also strengthens patients' self-efficacy to consistently undergo treatment, which ultimately leads to medication adherence. This is crucial considering that pulmonary Tuberculosis treatment is long-term and patients often stop taking their medication prematurely due to fatigue, side effects, or decreased motivation. Therefore, interventions that encompass education, motivation, skills, and behavioral support are essential so that patients not only "know" but also "are able" and "interested" in completing treatment. The success of this intervention group also signals the need for primary health care services (such as community health centers) to strengthen self-care education programs and patient support as an integral part of Tuberculosis control.

Based on the results of the Multivariate Analysis of Variance (MANOVA) test shown in Table 3, it is known that the Self-Care Practice-based Supportive Educative System intervention did not have a significant effect on increasing knowledge ($p = 1.000$). However, the intervention had a very significant effect on the self-efficacy variable ($p =$

0.000) and medication adherence ($p = 0.000$). The highest F value was found for self-efficacy ($F = 41.798$), followed by adherence ($F = 34.546$). This value indicates that self-efficacy is the variable most dominantly influenced by the intervention. With an R^2 value of 0.349 for self-efficacy, the intervention was able to explain approximately 34.9% of the variation in changes in patient self-confidence behavior in managing treatment. Meanwhile, the effect on adherence was 30.7% ($R^2 = 0.307$) indicating a close relationship between increased self-efficacy and patient adherence in undergoing drug therapy.

These findings confirm that increased self-efficacy plays a key role in encouraging patients to be more compliant with pulmonary Tuberculosis treatment. Research by Rahmawati and Lestari (2024) at Dr. Moewardi Regional General Hospital in Surakarta found that self-efficacy significantly influenced medication adherence in pulmonary Tuberculosis patients. Patients with high self-efficacy were twice as likely to complete treatment compared to those with low self-efficacy. This study confirms that self-confidence in facing therapy challenges is an important psychological factor underlying long-term adherence (Rahmawati & Lestari, 2024). Another study by Handayani (2023) in Gresik Regency showed that increasing self-efficacy through structured educational interventions can improve patients' ability to perform self-care, including diligently taking anti-tuberculosis medication. Through educational sessions and supportive counseling, patients gained not only knowledge but also confidence in coping with the side effects and duration of Tuberculosis treatment. This suggests that educational approaches that strengthen self-efficacy are more effective than simply providing information (Handayani, 2023).

Under similar conditions, research by Fauziah (2022) in Makassar City revealed that psychological factors, particularly self-efficacy, had the strongest relationship to medication adherence compared to socioeconomic factors and knowledge. In her study, patients with high levels of self-efficacy showed more stable adherence patterns over 6 months of therapy compared to other groups. This research supports the finding that self-efficacy is the dominant variable influencing adherence to pulmonary Tuberculosis treatment (Fauziah, 2022). Based on research findings and supporting theory, self-efficacy is the psychological variable that most determines the success of pulmonary Tuberculosis treatment.

Patients with high self-efficacy tend to have stronger confidence in their ability to adhere to long and challenging treatment regimens. Self-Care Practice-based Supportive Educative System interventions are effective because they not only provide education but also build confidence and the ability to overcome barriers to therapy, such as drug side effects or boredom. When patients have high self-efficacy, they are able to take an active role in self-care, which directly improves adherence. Therefore, interventions that focus on strengthening self-efficacy should be a top priority for Tuberculosis control in primary healthcare facilities, as they have a comprehensive impact on patient treatment behavior.

CONCLUSION

The results showed that before the intervention, both the control and intervention groups had relatively low levels of knowledge, self-efficacy, and medication adherence. Most respondents did not fully understand the importance of adherence to pulmonary Tuberculosis treatment and still exhibited inconsistent medication use. This suggests that before the intervention, pulmonary Tuberculosis patients require strengthening both knowledge and self-confidence to support optimal medication adherence. After the intervention, there was an increase in the average scores for all three variables, particularly in the intervention group. The most prominent improvement was seen in self-efficacy and adherence, indicating that the Self-Care Practice-based Supportive Educative System intervention successfully built patient confidence and increased adherence to treatment. Meanwhile, the increase in knowledge was not statistically significant, indicating that behavioral reinforcement and motivation played a greater role than cognitive aspects alone in changing adherence behavior.

Based on the results of the Paired Sample t-test, it was found that there was a significant difference in influence between the control group and the intervention group after being given the Self-Care Practice-based Supportive Educative System intervention. The intervention group showed a higher average increase in knowledge (0.75), self-efficacy (1.025), and medication adherence (0.825) compared to the control group. These results prove that the intervention provided not only improves patient understanding of treatment, but also strengthens self-confidence (self-efficacy) and adherence behavior in carrying out therapy. Thus, the

Self-Care Practice-based Supportive Educative System intervention is proven to be more effective than conventional treatment in increasing the success of treatment for pulmonary tuberculosis patients in Blitar Regency. The analysis results show that self-efficacy is the dominant variable that has the most influence on improving medication adherence. The highest F value ($F = 41.798$) and the coefficient of determination ($R^2 = 0.349$) indicate that self-efficacy explains 34.9% of the variation in changes in adherence behavior. This means that the higher the patient's confidence in their ability to manage their treatment, the greater their likelihood of remaining adherent and completing therapy. Therefore, increasing self-efficacy is the primary focus in implementing Supportive Educative System-based interventions to support sustainable treatment success.

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