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Supportive-educative nursing on knowledge, self-efficacy and medication compliance in pulmonary TB patients

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ABSTRACT

Tuberculosis (TB) cases are very developed in Indonesia and are ranked second largest in the world with 8.5% of global cases. We aim to analyze the effect of supportive-educational nursing interventions on self-efficacy, medication adherence, and knowledge of TB patients. The research design used is a quasi-experimental with a control group design. The treatment group was given supportive educational nursing using pocketbooks and teaching aids, while the control group was given education by health workers using leaflets. This research was conducted in the Bima city area by randomly selecting pulmonary TB sufferers in seven community health centers. The sample size is calculated use the Slovin formula and get the sample size was 64 people. Wilcoxon sign rank test and Mann-Whitney were used in this research. The findings show that there were differences in knowledge, self-efficacy, and treatment adherence in the intervention group regarding pulmonary TB with p-values=0.000, 0.000, 0.001 respectively. Findings show that in the control and treatment post-test groups, there were differences in the variables of self-efficacy, treatment compliance, and knowledge with p-values=0.001, 0.000, and 0.000, respectively. The conclusion was the intervention given to the treatment group had an impact on increasing self-efficacy, pathophysiology, and knowledge compared to the control group in TB patients.

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1. INTRODUCTION

Tuberculosis (TB) is an infectious disease that is the leading cause of death in the world and is a common disease that is 1 of the 10 leading causes of death in the world [1], [2]. India is the largest contributor of TB cases in the world and is followed by Indonesia which is the second largest contributor in the world with a figure of 8.5% of cases globally. The case detection rate shows that in 2019 the TB figure reached 64.5%. while in the city of West Nusa Tenggara Province, the case detection rate reached 41% in the same year [3]. Despite progress in CDRs, challenges remain in achieving universal access to TB care and treatment in Indonesia. Efforts to improve TB prevention, diagnosis, and treatment services are crucial to further reduce the TB burden in the country [4].

The decline in TB control efforts was experienced especially during the COVID-19 pandemic. This was due to the diversion of resources and loss of focus on the ongoing TB control process which was no longer a priority at that time. TB case tracking also experienced obstacles due to mobility restrictions during the pandemic [5]. The decline in the quality of TB care has also decreased due to the COVID-19 pandemic.

TB patients who generally have comorbidities and lung damage make them very susceptible to the COVID-19 virus. Symptoms of the disease in TB patients are generally similar to the symptoms of COVID-19. Some symptoms that are generally the same between COVID-19 and TB are fever and cough, this can cause confusion in the diagnosis of this disease [6].

The main obstacle in TB treatment is lack of adherence in taking medication [7], Therefore, effective strategies are needed to improve medication adherence [8]. In changing the behavior of TB patients and their families, nurses have an important role by increasing independence in taking medication [9]. Supportive-educative nursing methods consist of three techniques: the provision of support, guidance, and teaching will significantly enhance self-care agency, knowledge, and self-efficacy in performing independent care [10]. Nurses can empower patients by providing them with the necessary tools and knowledge to manage their condition effectively. By incorporating supportive-educative nursing methods, nurses can help patients develop the skills and confidence needed to adhere to their treatment plan and ultimately improve outcomes.

To improve self-care in TB patients, educational interventions are needed by nurses and families. interventions have a significant effect on knowledge and attitudes in TB patients [11]. Health education is very necessary to improve self-efficacy towards medication adherence in TB patients. Other interventions in the form of multicomponent interventions based on the Health Action Process Approach (HAPA) can generally improve self-management skills in patients with TB [12].

We aim to analyze the effect of supportive-educational nursing interventions on self-efficacy, medication adherence, and knowledge of TB patients In Bima City, NTB. The novelty is that it uses a holistic approach by involving the patient's family in the treatment process. Thus, it is hoped that it can increase the effectiveness of pulmonary TB treatment. It is hoped that the results will support the creation of more efficient nursing interventions to improve public health, especially in the treatment of pulmonary TB patient.

2. METHOD

2.1. Design

The research design used is a quasi-experimental with control group design. The treatment group received supportive educational nursing using pocket books and teaching aids, whereas the control group received education from health workers using leaflets. For both groups, a pre-test was performed, and the intervention was continued in the treatment group. After the intervention was completed, a post-test was conducted on both groups four weeks later. This research was conducted in the Bima city area by randomly selecting pulmonary TB sufferers from seven existing health centers, namely Paruga, Mpunda, Penana'e, East Rasana'e, Kumbe, Kolo, and Jatibaru.

2.2. Population and sample

The population was all TB sufferers who were registered and receiving therapy in the Bima City Health Service in 2023. From June to September 2023, all pulmonary TB patients undergoing treatment met the inclusion and exclusion criteria. Those who met the inclusion criteria were as all TB patients undergoing tuberculosis treatment in the Bima City Health Service area, sufferers could communicate well, and the patient was accompanied by family members during the treatment**,** Willing to be a respondent and be involved in treatment that lasts for 3-4 weeks. The exclusion criteria were as follows: i) respondents who were unable to continue their research activities because of critical conditions, ii) were unable to communicate, and iii). had no family members to accompany them, and iv) withdrew as the research respondents.

In carrying out research (providing treatment), sufferers and family members who have met the criteria are involved, however, the center of analysis (source of information) in each data collection is TB sufferers and family members who are influential, based on family structure. The study divided the sample into two groups, the treatment and control, and calculated the sample size using the Slovin formula for two paired groups [13], and a the sample size of 64 TB Patients was obtained.

2.3. Data collection procedures

The researchers divided the respondents into two groups: the treatment group and the control group. Researchers visited respondents at their homes, gave informed consent to the respondents, and submitted an application form to become respondents. TB sufferers who agree to become respondents sign a consent form to become respondents. We conducted a pretest on the control and treatment groups at the initial meeting. Data collection was carried out by researchers by giving questionnaires directly to respondents, waiting for them, and taking them back after they had finished answering.

Providing the treatment group with supportive educational nursing care entails making four home visits over the course of four to five weeks, or as agreed upon with the respondent, to educate them about pulmonary tuberculosis, its symptoms and transmission, how to prevent a recurrence, how to take medication, how to cough effectively, and how to prepare a place to dispose of phlegm. When seeking care at the health centre or during home visits, the control group will receive health education as is customarily given by medical professionals. A week following the last phase of therapy, the treatment and control groups took a post-test administered by the researcher. The gathered information was examined. Figure 1 provides a thorough explanation of the research flow.

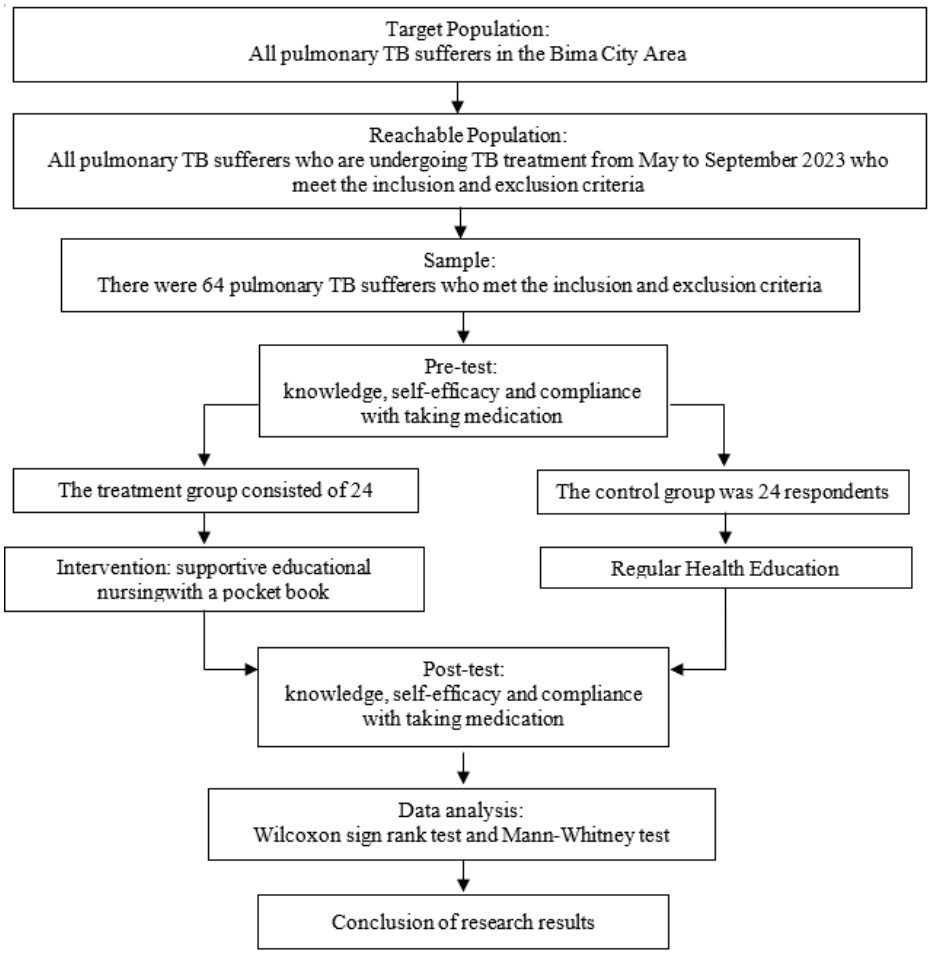

Figure 1. Research flow

2.4. Data processing and analysis

Activities in data processing include checking, coding, cleaning, tabulating, and entering data. The editing activity checks the data collected from the questionnaire, which was done by checking the number of sheets and the contents of the questionnaire, as well as making corrections to the completeness of filling out the questionnaire. If there were unclear answers or questions that were not filled in, respondents were asked to complete them. Coding facilitates code to make data processing. Data entry involves moving or entering data into a computer for analysis using software.

Univariate analysis descriptively analyzes the existing variables by calculating the frequency distribution and proportions. Univariate analysis was performed for each research variable. This analysis was used to provide a description of the respondent characteristic data and research variables, which are presented in tabular form. Multivariate analysis was performed to examine the relationship between the independent and dependent variables. Multivariate analysis uses non-parametric statistics to test the significance of research variables using a computer program. The study employed the Wilcoxon signed-rank test to investigate variations in medication compliance, self-efficacy, and knowledge between the treatment and control groups based on pre- and post-test results. If the p-value was less than 0.05, a different hypothesis was accepted. Following the intervention, the treatment and control groups were compared on knowledge,

self-efficacy, and adherence to swallowing medication. The Mann-Whitney test was employed to assess these differences. If the p-value was less than 0.05, a different hypothesis was accepted.

2.5. Ethical clearance

The ethical review board of Poltekkes Kemenkes Mataram has approved this study with number: LB.01.03/6/310/2023 The study will strictly adhere to the guidelines set forth by the Ministry of Health to ensure the protection and well-being of all participants involved. Any potential risks or ethical concerns will be promptly addressed and reported in accordance with the approved protocol.

3. RESULTS AND DISCUSSION

The research results consist of data on respondent characteristics and data from the measurement results of the research variables. Data on respondent characteristics included age, sex, occupation, religion, education, and length of time in the treatment program. Data from measuring research variables included knowledge, self-efficacy, and compliance with swallowing medication before and after treatment in both groups, as well as analysis of the influence of supportive educational nursing on knowledge, self-efficacy, and treatment compliance in patients with TB.

Table 1 indicates that the majority of patients with pulmonary tuberculosis (TB) are between the ages of 36 and 55. Of these patients, 56.25% were in the treatment group and 59.38% were in the control group. Male respondents made up the majority (56.26% in the control group and 59.38% in the treatment group). Both groups' responders were mostly recent high school graduates. The majority of participants in the treatment and control groups were employed as farmers or fishermen. Married respondents made up the majority of both the treatment and control groups. For the two groups, the therapy regimen lasted between two and four months.

According to Table 2, the majority of pulmonary tuberculosis patients' knowledge from the post-test results fell into the good category (53.13%) in the treatment group, while the majority fell into the sufficient category (40.63%) in the control group. When the treatment group's pre- and post-test results were compared, the Wilcoxon Signed Rank Test revealed a difference in knowledge about pulmonary tuberculosis (TB) with a value of $p=0.000$ ($p<0.05$), while the control group showed no difference at all with a value of $p=0.194$ ($p>0.05$). The Mann-Whitney Test, which was used to see if the post-test findings in the treatment and control groups differed from each other, yielded a value of $p=0.000$ ($p<0.05$), indicating a significant difference between the post-test results in the treatment and control groups.

According to Table 3, the majority of pulmonary tuberculosis patients' self-efficacy in the treatment group fell into the good category (59.38%), whereas the majority of patients in the control group fell into the sufficient category (71.88%). The self-efficacy of patients with pulmonary tuberculosis differed in the treatment group according to the results of the Wilcoxon Signed Rank Test, with a value of $p=0.000$ ($p<0.05$), while there was no significant difference ($p = 0.527$) ($p>0.05$) in the control group. A significant difference was found between the post-test results in the treatment group and the control group, as indicated by the Mann-Whitney Test results, which were used to see if there were any differences in the post-test results between the groups. The value of $p=0.001$ ($p<0.05$) was obtained.

Treatment compliance for patients with pulmonary tuberculosis was primarily in the compliant category (96.88%) in the treatment group and 71.88% in the control group, according to Table 4's post-test data. The Wilcoxon Signed Rank Test results for the treatment group revealed a difference in pulmonary tuberculosis patients' compliance with treatment, with a value of $p=0.001$ ($p<0.05$), compared to the control group, which showed no difference, with a value of $p=0.437$ ($p>0.05$). A statistically significant difference was observed between the post-test results of the treatment group and the control group ($p=0.000$, $p<0.05$), according to the results of the Mann-Whitney Test used to compare the post-test results between the two groups.

The study's findings demonstrated that, among pulmonary tuberculosis patients, the majority of post-test results in the treatment group fell into the good category, while the majority in the control group fell into the sufficient category. Patients and their families now know more about pulmonary tuberculosis (TB), including what causes it, how it spreads, how to stop it from spreading, and self-care actions that relatives can take on behalf of their loved one. Families of TB patients in research areas typically assist with tasks like setting up a location for patients to dispose of their phlegm, drying mattresses, pillows, and blankets in the sun, cooking wholesome meals for patients, and giving direct care to patients, like applying warm compresses when they are feverish. The family's participation in the patient's care, such as reminding the patient to consistently swallow medication, is another change that the patient has demonstrated. Aside from the teaching provided by officers, patients' own treatment experiences are undoubtedly a valuable source of information regarding tuberculosis [7], [14]–[17].

Table 1. Frequency distribution of characteristics of pulmonary TB patients

Variable	Treatment		Control		Total	
	f	%	f	%	Σ	%
Age group						
18-25 years	4	12.50	1	3.13	5	7.81
26-35 years	6	18.75	8	25.00	14	21.88
36-55 years	18	56.25	19	59.38	37	57.81
56-65 years	4	12.50	4	12.50	8	12.50
Amount	32	100	32	100	64	100
Gender						
Man	19	59.38	18	56.25	37	57.81
Woman	13	40.63	14	43.75	27	42.19
Total	32	100	32	100	64	100
Level of education						
Elementary school	12	37.50	11	34.38	23	35.94
Junior high school	6	18.75	5	15.63	11	17,19
Senior high school	13	40.63	12	37.50	25	39.06
Bachelor	1	3.13	4	12.50	5	7.81
Total	32	100	32	100	64	100
Type of work						
Civil servants/TNI/Polri/Retired	2	6.25	6	18.75	8	12.50
Self-employed	6	18.75	2	6.25	10	15.63
Private Employee	6	18.75	4	12.50	10	15.63
Farmers/Fishermen	8	25.00	10	31.25	16	25.00
Housewife/Not working	7	21.88	4	12.50	11	17,19
Student	3	9.38	6	18.75	9	14.06
Total	32	100	32	100	64	100
Marital status						
Single	3	9.38	6	18.75	9	14.06
Marry	27	84.38	22	68.75	49	76.56
Widow/widower	2	6.25	4	12.50	6	9.38
Total	32	100	32	100	64	100
Length of time undergoing treatment program						
0-2 months (Intensive)	0	0.00	0	0.00	0.00	0.00
>2-4 months (Continued)	18	56.25	20	62.50	62.50	59.38
>4-6 months (Continued)	14	43.75	12	37.50	37.50	40.63
Age group						
18-25 years	4	12.50	1	3.13	5	7.81
26-35 years	6	18.75	8	25.00	14	21.88
36-55 years	18	56.25	19	59.38	37	57.81
56-65 years	4	12.50	4	12.50	8	12.50
Amount	32	100	32	100	64	100
Gender						
Man	19	59.38	18	56.25	37	57.81
Woman	13	40.63	14	43.75	27	42.19
Total	32	100	32	100	64	100

Table 2. Effect analysis supportive nursing education to increase patients' understanding of TB

Knowledge	Treatment				Control			
	Pre-test		Post-test		Pre-test		Post-test	
	f	%	f	%	f	%	f	%
Good	6	18.75	17	53.13	3	9.38	7	21.88
Moderate	9	28.13	14	43.75	13	40.63	13	40.63
Poor	17	53.13	1	3.13	16	50.00	12	37.50
Total	32	100.0	32	100.0	32	100.0	32	100.0
Pre-post in groups, Wilcoxon signed-rank test		p=0.000				p=0.194		
Test Mann-Whitney (post only within groups)				p=0.000				

Table 3. Analysis influences supportive educational nursing on self-efficacy in pulmonary TB sufferers

Self-efficacy	Treatment				Control			
	Pre-test		Post-test		Pre-test		Post-test	
	f	%	f	%	f	%	f	%
Good	4	12.50	19	59.38	6	18.75	6	18.75
Moderate	17	53.13	11	34.38	17	53.13	23	71.88
Poor	11	34.38	2	6.25	9	28.13	3	9.38
Total	32	100.0	32	100.0	32	100.0	32	100.0
Pre-post in groups, Wilcoxon signed rank test		p=0.000				p=0.527		
Test Mann-Whitney (post only within groups)				p=0.000				

Table 4. Analysis influences supportive educational nursing on treatment compliance in pulmonary TB sufferers

Medication adherence	Treatment				Control			
	Pre-test		Post-test		Pre-test		Post-test	
	f	%	f	%	f	%	f	%
Obey	28	87.50	31	96.88	19	59.38	23	71.88
Not obey	4	12.50	1	3.13	13	40.63	9	28.13
Total	32	100.0	32	100.0	32	100.0	32	100.0
Pre-post in groups, Wilcoxon signed rank test		p=0.001				p=0.437		
Test Mann-Whitney (post only within groups)				p=0.000				

Raising the level of understanding among patients and their families regarding the care of pulmonary tuberculosis patients in the treatment group is inextricably linked to educating them about the disease's concept, its treatment, pulmonary tuberculosis patient self-care activities, and how to take care of oneself at home. Knowledge transformation is essentially a learning process, and learning will be more successful if the stimulus is tailored to each learner's needs and is given frequently, intensely, or continually [18]. Home visits to the treatment were used in this study to empower families and pulmonary tuberculosis patients.

The goal of treating a family with the supportive educational nursing approach is to raise their level of knowledge, comprehension, and awareness of their health. The first step towards empowering oneself to maintain and improve one's health is gaining knowledge and awareness [19], [20]. This is a skill that is acquired via education. Transferring knowledge from learning sources to learning subjects is the first step in the process of learning itself [21], [22]. Health professionals teach families how to preserve and enhance the health of their members by giving them health-related knowledge. The family's existing knowledge about the symptoms, causes, treatment options, prevention, and complications of tuberculosis in the lungs would increase their self-efficacy, or willingness to take action towards their health by adopting good lifestyle habits (self-care activity).

In the end, clients will be willing, based on awareness and full understanding, because of supportive educational nursing activities that include guidance, teaching, and support. Contact between clients with chronic illnesses and staff is more intense, and every issue that clients face can be corrected and helped to resolve. alters his actions. Furthermore, the application of nursing, as per the family-centered nursing theory, aims to address health issues within the family and is focused on five family health tasks. These tasks are intended to encourage the family to become aware of and accept their health issues, choose the best course of care, empower the family to take care of ill family members and assist families in making their home healthy [23].

Age, education level, and type of work are examples of predisposing factors that can influence family knowledge and actions when caring for pulmonary tuberculosis patients. In this study, these factors were controlled from the beginning, and the treatment group and control group had comparable levels of each. This means that the factor most likely to cause an increase in knowledge of pulmonary tuberculosis patients in the treatment group is the family's knowledge and attitude towards health, which changed as a result of the treatment (family empowerment). The residence of the respondent, which is not too far from the community health center (the furthest distance between the treatment group's residence and the community health center is +2 km), the existence of other health facilities like pustu and private doctor's practices that are dispersed across almost all sub-districts in the Paruga health center area really support the formation of knowledge of pulmonary TB sufferers are enabling factors for the formation of knowledge of pulmonary TB sufferers in this study. The presence of health cadres dispersed throughout all current sub-districts is another significant feature that increases the formation of knowledge regarding pulmonary tuberculosis disease among patients [24]–[26].

Study findings indicated that after treatment, the self-efficacy of pulmonary tuberculosis patients in the treatment group had increased. This suggests that supportive educational nursing may have had an impact on the self-efficacy of pulmonary tuberculosis patients in Bima City, West Nusa Tenggara. The self-efficacy possessed by pulmonary TB sufferers before treatment includes, among others, there are still sufferers who believe that the disease is hereditary and cannot be cured, there are also sufferers who believe that TB disease was contracted as a result of witchcraft. Most patients with TB feel embarrassed and afraid of being ostracized by society because they suffer from pulmonary TB. After being given family empowerment, the self-efficacy of TB sufferers experienced changes, including the sufferer's confidence in curing their disease, changes in beliefs about the causes and methods of transmission of pulmonary TB, and the sufferer's enthusiasm to undergo treatment to completion. Other changes in sufferers' self-efficacy include that sufferers no longer feel embarrassed about their illness, and there are even some who wish to become health cadres to promote TB after recovering from their illness.

Researchers have not found other research results that are directly related to the same intervention as this study, but several interventions that, in principle, can increase knowledge, attitudes, and skills, such as peer group support interventions and discharge planning for inpatients, can increase self-efficacy. Peer support interventions and telephone peers can reduce depression and improve psychosocial aspects, including quality of life and self-efficacy [27]. Patient empowerment interventions through discharge planning result in a significant increase in self-efficacy, ability to manage stress, provision of support, and ability to make appropriate decisions in disease management [28], [29].

The formation of high self-efficacy in the treatment group could not be separated from the empowerment provided. The use of guidance and counseling methods during the provision of supportive educational nursing plays an important role in increasing the self-efficacy of patients with pulmonary TB. During counseling activities, it allows sufferers to express feelings related to their disease, the successes they have achieved, and the obstacles they have experienced while undergoing the TB treatment program are all revealed during counseling activities. Providing counseling can improve individual integrity through efforts to gain recognition, honor, dignity, self-esteem, reputation, trust, and emotional stability in carrying out actions taught in accordance with norms and ethics.

Another factor that influenced the increase in self-efficacy in this study was the involvement of health cadres recruited by community health center officials from several TB patients who had successfully recovered. These cadres told in simple language how they experienced being TB sufferers, carrying out TB treatment regularly until the end of the treatment period, and how bitter it was to suffer from TB disease. The researchers deliberately involved cadres who had previously suffered from TB at the 4th and 5th meetings during supportive educational nursing activities (home visits). A person's self-efficacy is influenced by several factors, one of which is vicarious experience, namely that a person can learn from other people's experiences and imitate their behavior to get what other people get [30]. Self-efficacy will increase if one observes the successes achieved by others, whereas it will decrease if the individual observes someone who has the same abilities as themselves experiencing failure [31]. This factor on self-efficacy is based on the similarity of the person being observed to the observer himself. The more the person being observed is similar to himself/herself, the greater the potential for self-efficacy that will be contributed by this factor. The verbal persuasion given during empowerment activities also increases the self-efficacy of sufferers. The various directions given are followed by sufferers and their families. The amount of influence that can be exerted by the person giving the persuasion is influenced by the feeling of trust in the person giving the persuasion as well as the realistic criteria regarding what is being persuaded.

Based on researchers' observations, one of the factors that influences the self-efficacy of pulmonary TB sufferers is the individual's perception of the disease and the level of severity experienced. There is a positive relationship between perception and patient self-efficacy, namely if perception is good, self-efficacy increases [32]. One way to create a good perception is through health education, because health education will give sufferers the correct knowledge of their disease so that it will provide the correct perception regarding the possible level of difficulty in managing the disease (magnitude) and the extent of the problems faced (generality), and provide sufferers to understand the strengths they have to face problems in managing their disease, which will ultimately build the sufferers' self-efficacy [33], [34]. Providing family empowerment through health education methods, guidance, and counseling, as well as demonstrations of ways to care for pulmonary TB patients, will facilitate these four factors. The family empowerment process is carried out by providing sufferers with information support to make the right decisions in their own care, fostering cooperation or collaboration between sufferers and health workers, and helping sufferers solve the problems they face.

The supportive educational nursing process through guidance and counseling methods will invite sufferers to share experiences related to their disease and provide appropriate information and steps that sufferers should take to treat and prevent transmission of pulmonary TB. In addition, during the empowerment process, sufferers are given the opportunity to gain experience from other people, in this case, health cadres who are former TB sufferers, as well as exchange experiences with health workers, such as nurses (Pulmonary TB *Puskesmas* officers) and researchers. The opportunity to express feelings and share experiences will foster self-confidence in sufferers (self-efficacy) in that they are able to take the necessary actions to manage their illness.

The results of the study showed that treatment compliance for pulmonary TB sufferers in the treatment group after treatment had increased, which means that supportive educational nursing had an influence on treatment compliance for pulmonary TB sufferers in Bima City, West Nusa Tenggara. Before empowerment was carried out, researchers found that treatment compliance and self-care behavior for TB sufferers were still lacking, including the patient's habit of spitting carelessly, such as in the yard or in the gutter, and the absence of special phlegm storage containers that could kill germs (some sufferers collected phlegm in used cans). After empowerment, there were changes in patient compliance and treatment activities, including patients expelling phlegm in special pots containing antibacterial fluid.

The findings of this study indicate that pulmonary tuberculosis patients can become more self-reliant when they receive supportive educational nursing through health education, guidance, and counseling in addition to self-care demonstrations. The application of the information–motivation-behavioral skills model in diabetes sufferers can improve effective communication between staff and patients, increase social support, and increase self-efficacy and skills in carrying out self-care for diabetes sufferers, which are directly related to lipid control. Increasing access to treatment facilities, patient education, family involvement in care, and strengthening family and community involvement in TB control have a positive impact on treatment delays and healthcare-seeking behavior of patients with TB [35].

The aim of supportive educational nursing is to ensure the independence of the family and sufferers in meeting their self-care needs, including physical, psychological, social, and spiritual self-care. This independence can be achieved if sufferers have the ability to care for themselves (self-care agencies). Empowering families with pulmonary TB sufferers as shown in the research results in the treatment group has had a huge impact on increasing sufferers' knowledge about the concept of pulmonary TB disease, treatment of pulmonary TB disease, and self-care for pulmonary TB sufferers.

The increase in aspects of compliance and self-care activities in the treatment group cannot be separated from the learning process of sufferers and their families during the provision of supportive educational nursing. The combination of implementation methods between health education, guidance, counseling, and demonstrations plays an important role in increasing the compliance and self-care abilities of patients with pulmonary TB. During the provision of supportive educational nursing, respondents always played an active role, especially when demonstrations were carried out, with great enthusiasm the sufferers and their families always paid attention to every action demonstrated. To act in self-care, you need skills, belief in your own success (self-efficacy), enthusiasm, and a high motivation to always try to achieve your desired goals. Therefore, the role of nurses is to provide skills to pulmonary TB sufferers, and strengthen psychological factors by increasing cognitive abilities both by generating patient motivation and stimulating sufferers' self-efficacy that they have the abilities and resources, because self-care is a behavior that can be learned, and every individual has the potential to learn and develop. Pulmonary TB disease is a stressor for individuals, so individuals who were previously normal or healthy are disturbed by the disease they suffer from, so the individual will be motivated to restore balance to normal conditions through self-care and regular efforts while undergoing a pulmonary TB treatment program [36].

4. CONCLUSION

In comparison to the control group, the study's findings indicate that the treatment group's intervention significantly increased the knowledge, self-efficacy, and treatment compliance of patients with pulmonary tuberculosis. This shows that the intervention approach can be an effective strategy for increasing patient understanding and involvement in pulmonary TB patient treatment. Thus, it is important to continue developing and implementing similar interventions to improve the overall treatment outcomes of patients with pulmonary TB. The results of this study provide a strong basis for recommending the same intervention approach to other health institutions. Recommendations for future research include expanding the scope of this intervention to various other types of infectious diseases, as well as involving more patients in the studies conducted. In this way, it is hoped that it will make a wider contribution to efforts to improve the quality of life and recovery of patients with infectious diseases, such as pulmonary TB.

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