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NURSING CARE ANALYSIS OF *PURSED LIPS BREATHING* AND SEMI-*FOWLER* FOR PULMONARY TUBERCULOSIS FAMILIES IN RAGUNAN

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ABSTRACT

Pulmonary tuberculosis was an infectious disease caused by Mycobacterium tuberculosis which infected the lung organs. Appropriate actions performed by nurses included pursed lips breathing therapy and the semi-Fowler position to optimize tidal volume and help facilitate the airway to the lungs. This case study aimed to increase the ability to analyze nursing care through pursed lips breathing interventions and the semi-Fowler position in families with pulmonary tuberculosis using a descriptive method on two families for three consecutive days with a duration of two minutes. Data collection used assessment sheets and a pulse oximeter. There was an increase in oxygen saturation levels from in Mr. SpO_2 = 90% ke SpO_2 = 95% M's family and from SpO_2 = 91% ke SpO_2 = 97% in Mr. T's family after the therapy was provided. Pursed lips breathing therapy and the semi-Fowler position proved effective for increasing oxygen saturation levels in pulmonary tuberculosis patients and the quality of independent family health. Nurses were able to conduct home visits directly and periodically to ensure the progress of the activities.

Keywords: Pulmonary Tuberculosis, Pursed Lips Breathing, Semi-Fowler.

1. INTRODUCTION

Tuberculosis (TBC) is an infectious disease caused by the bacterium *Mycobacterium tuberculosis* which primarily attacks the lungs although it can also affect other organs such as the brain, spine, and kidneys (Setyaningrum & Silvitasari, 2023). *Mycobacterium tuberculosis* is transmitted between individuals via airborne droplets from the sputum of pulmonary tuberculosis patients with Basil Tahan Asam (BTA) positive status during activities such as speaking, sneezing, or coughing which can release up to 3.000 bacteria (Syamsuddin et al., 2023). Indonesia ranked second globally in tuberculosis incidence in 2022 with an increase in cases from 824.000 in 2021 to 1.060.000 in 2022 and a mortality rate reaching 134.000 deaths (World Health Organization, 2023). The province of DKI Jakarta is among the five provinces with the highest number of tuberculosis cases in Indonesia (Aisyah et al., 2024). The prevalence of tuberculosis cases in DKI Jakarta reached 26,854 cases and the South Jakarta region contributed a significantly high number of pulmonary tuberculosis cases totaling 4.812 cases (Dinas Komunikasi, Informatika dan Statistik DKI Jakarta, 2022).

The high prevalence of tuberculosis necessitates appropriate management through the early detection of signs and symptoms. The primary clinical symptoms in pulmonary tuberculosis patients include a cough lasting two weeks or longer, productive cough with sputum, potential hemoptysis, dyspnea, weight loss, chills, fever, and nocturnal diaphoresis without physical activity for more than one month (Pingkan, 2022). The productive cough symptoms that expel secretions in pulmonary tuberculosis patients are caused by the presence of *Mycobacterium tuberculosis* which induces secretion accumulation and results in ineffective airway clearance leading to a decrease in oxygen saturation (Pangestu & Susanti, 2024). Appropriate management is required to address the symptoms presented in pulmonary tuberculosis patients. This includes nursing interventions comprising pharmacological therapies such as oxygen administration and Anti-Tuberculosis Drugs including rifampicin, isoniazid, pyrazinamide, streptomycin, and ethambutol according to the prescribed dosage and treatment category as well as non-pharmacological therapies (Rifani & Perangin-angin, 2024). One of the non-pharmacological therapies that can be implemented is *pursed lips breathing* and the adjustment of the semi-*Fowler*'s position (Wigiyanti & Faradisi, 2023).

Pursed lips breathing is a specialized breathing exercise technique designed to significantly improve pulmonary ventilation and prevent alveolar collapse while simultaneously increasing positive expiratory pressure, prolonging the expiration phase, and effectively optimizing tidal volume as well as decreasing residual volume (Pakaya & Kaharu, 2023). Meanwhile, the semi-Fowler's position is a position with a 45-degree inclination that utilizes gravity to lower the diaphragm thereby increasing chest expansion and lung ventilation which helps open atelectasis areas, facilitates secretion clearance, enhances oxygenation, and reduces dyspnea (Setyaningrum & Silvitasari, 2023). The collaboration of *pursed lips breathing* and the semi-*Fowler*'s position is capable of improving ventilation and airflow to the lungs so that blood oxygenation and oxygen saturation increase (Silvia et al., 2024).

2. PROBLEM STATEMENT AND RESEARCH QUESTIONS

The Province of DKI Jakarta currently stands as one of the five provinces with the highest documented prevalence of pulmonary tuberculosis cases in Indonesia, according to the official report from the DKI Jakarta Department of Communication, Informatics, and Statistics (2021), the prevalence of pulmonary tuberculosis in DKI Jakarta reached a total of 26.854 cases, with the South Jakarta administrative region contributing a significantly high volume of 4.812 pulmonary tuberculosis cases, one of the primary clinical manifestations of pulmonary tuberculosis is characterized by a productive or bloody cough persisting for ≥2 weeks caused by the presence of Mycobacterium tuberculosis bacteria which poses a substantial risk for transmission via airborne droplets, this infectious process can subsequently result in a pathological accumulation of respiratory secretions, thereby leading to ineffective airway clearance which ultimately triggers a physiological decline in oxygen saturation levels.

Based on those statements the problem formulation to be addressed is how to analyze nursing care through *pursed lips breathing* interventions and

the semi-*Fowler*'s position in the families of Mr. M and Mr. T with pulmonary tuberculosis in Ragunan village. This data collection was conducted in the RW 03 area of Ragunan village, Pasar Minggu, South Jakarta, DKI Jakarta.

3. LITERATURE REVIEW

Tuberculosis (TBC) is a major global health problem caused by the aerobic bacterium *Mycobacterium tuberculosis* which is transmitted through the air via droplets when an infected individual coughs or sneezes (Pangestu & Susanti, 2024). The *Mycobacterium tuberculosis* bacteria trigger an immune response that forms granulomas to limit the infection and can spread to other organs however it frequently occurs in the lungs and poses a risk of becoming an active infection if not appropriately managed (Flynn & Chan, 2022). Active infection causing dominant clinical indications in pulmonary tuberculosis patients include a persistent cough for two weeks or more and a productive cough which is sometimes mixed with blood and dyspnea as well as weight loss additionally patients frequently experience fever and diaphoresis at night without physical activity for at least one month (Pingkan, 2022). The productive cough has the potential to release approximately 3.000 droplets of secretion into the air (Syamsuddin et al., 2023).

The *Mycobacterium tuberculosis* infection triggers secretion accumulation within the respiratory tract which leads to ineffective airway clearance and a decrease in oxygen saturation levels (Rifani & Perangin-angin, 2024). Comprehensive clinical management is required to reduce these symptoms. Nursing interventions to optimize lung expansion and function include both pharmacological and non-pharmacological approaches. Pharmacological methods involve the administration of Anti-Tuberculosis Drugs such as rifampicin, isoniazid, pyrazinamide, streptomycin, and ethambutol which are combined based on the appropriate dosage and treatment classification (Rokiban & Maykasari, 2024). Meanwhile, the selected non-pharmacological techniques that can be implemented are *pursed lips breathing* and the adjustment of the semi-*Fowler*'s sleeping position (Wigiyanti & Faradisi, 2023).

Pursed lips breathing therapy and the semi-*Fowler*'s position are breathing techniques performed simply and independently to increase oxygen saturation levels (Silvia et al., 2024). *Pursed lips breathing* which is also known as a deep breathing relaxation technique is a respiratory procedure involving inhaling air through the nose and exhaling slowly through *pursed lips breathing* to optimize lung ventilation and ensure the openness of the airways (Wigiyanti & Faradisi, 2023). *Pursed lips breathing* is a non-invasive ventilation technique specifically designed to facilitate the expulsion of trapped air from the lungs through controlled expiration with pursed lips, effectively increasing oxygen saturation, alleviating the sensation of shortness of breath (dyspnea), and significantly reducing the overall physiological workload of the respiratory system (Srimulyati et al., 2024). The semi-*Fowler*'s position is a semi-sitting position with a 45-degree inclination that utilizes the force of gravity to pull the diaphragm downward to maximize chest expansion and lung ventilation thereby opening atelectasis areas while facilitating secretion clearance through the airways

and increasing oxygen levels to alleviate dyspnea caused by reduced abdominal pressure on the diaphragm (Setyaningrum & Silvitasari, 2023).

The administration of intervention in the form of *pursed lips breathing* therapy combined with semi-*Fowler* positioning is applied based on specific clinical considerations, including indications of mucus accumulation or secretion buildup in the respiratory tract with mild to moderate severity, and this procedure is also intended for patients experiencing mild to moderate manifestations of shortness of breath, decreased oxygen saturation conditions (mild hypoxemia), as well as a background or history of chronic pulmonary disease accompanying the patient's condition (Suryana et al., 2025).

Pursed lips breathing therapy and the semi-*Fowler*'s position can be performed for a duration of approximately 2 minutes for 3 consecutive days where the patient's oxygen saturation levels are measured before and after the therapy is administered (Silvia et al., 2024). The strategic combination of the semi-*Fowler*'s position with the *pursed lips breathing* technique is capable of maximizing gas exchange and smoothing the flow of oxygen to the lungs which results in an increased volume of oxygen inhaled by the patient, as the oxygen levels in the body increase, the amount of oxygen bound by red blood cells and hemoglobin also increases, thereby directly promoting a significant rise in oxygen saturation levels (Setyaningrum & Silvitasari, 2023).

While this therapy offers various benefits, there are several contraindications that must be strictly monitored before the procedure is performed, including severe mucus or sputum accumulation that may obstruct the airway, as well as acute respiratory failure requiring emergency intervention, and furthermore, this therapy is not recommended for patients experiencing chest pain, cardiovascular instability, or those with a history of injury or trauma to the face, mouth, and spinal structures that could exacerbate the patient's condition if the intervention is administered (Pakaya & Kaharu, 2023).

Pursed lips breathing therapy and the semi-*Fowler* position can be implemented as non-pharmacological nursing interventions or simple care for family members of pulmonary TBC patients especially in the Ragunan sub district area to increase oxygen saturation levels and are expected to enhance the level of family independence so as to provide better family health quality. The implementation of this non-pharmacological therapy employed a descriptive method aimed at describing, illustrating, or capturing phenomena, situations, or subject characteristics systematically, factually, and accurately without providing special treatment or seeking cause-and-effect relationships (Akmal & Mulianto, 2023). The stages of nursing care analysis through *pursed lips breathing* therapy and the semi-*Fowler* position are as follows:

a. Preparation Stage
    1) Coordination of the preliminary study with community institutions in the Ragunan area.
    2) Establishing a relationship of mutual trust with residents by holding an opening event and participating in the Integrated Development Post or Posbindu for the elderly.
    3) Screening for health problems and family disease cases.

b. Implementation Stage
   1) Assessment: identifying family data, family development stages and history, environmental data, family structure, family functions, as well as family stress and coping adaptation.
   2) Nursing diagnosis: a clinical judgment regarding the responses of individuals, families, or communities to life processes, whether actual or potential.
   3) Intervention: designing a nursing care plan to prevent or address pulmonary tuberculosis health problems based on the established diagnoses.
   4) Implementation: the realization of the nursing care plan formulated based on the established nursing diagnoses, specifically *pursed lips breathing* therapy and the semi-*Fowler* position.
   5) Nursing evaluation: a systematic stage to assess the effectiveness of the implemented interventions and provide a follow-up care plan according to the achieved results.

Through *pursed lips breathing* therapy and semi-*Fowler* position, it is expected that families of pulmonary tuberculosis patients will be able to perform simple care independently and participate in conducting promotive and preventive efforts so that family health increases. The main target of this therapy is families with pulmonary tuberculosis patients around RW 03 of the Ragunan sub district.

4. METHODS

a. The method utilized in this case study is the descriptive method which aims to describe the characteristics of social phenomena systematically factually and specifically within community life.
b. The sample used consists of two families to be provided with nursing care in the form of *pursed lips breathing* and the semi-*Fowler*'s position for three consecutive days with a duration of two minutes. Data collection was performed using assessment forms and a pulse oximeter.
c. The implementation of *pursed lips breathing* therapy and the semi-*Fowler*'s position is conducted for patients with indications of mild to moderate dyspnea the presence of secretion accumulation a mild decrease in oxygen saturation and a history of chronic obstructive pulmonary disease. Contraindications for this therapy include acute respiratory failure decreased consciousness excessive pain and the presence of injuries that prevent the therapy from being performed.
d. The movements in *pursed lips breathing* therapy and the semi-*Fowler*'s position can be carried out according to the patient's ability and the steps for *pursed lips breathing* and the semi-*Fowler*'s position are as follows:
   1) Inquire about the medical history complaints and the condition of the patient before the therapy is administered.
   2) Measure oxygen saturation levels using a pulse oximeter before the therapy begins.
   3) Arrange the patient into the semi-*Fowler*'s position by placing the body at a 45-degree inclination.
   4) Instruct the patient to take a deep breath then exhale slowly through lips shaped like the letter O.

5) Teach the patient to control the exhalation phase so it lasts longer than the inhalation phase.
6) Inhale deeply through the nose for 4 seconds until the chest and abdomen feel lifted while keeping the mouth closed during inspiration and holding the breath for 2 seconds.
7) Exhale through pursed and slightly parted lips while contracting the abdominal muscles for 4 seconds.
8) Perform the inspiration and expiration cycles for 5 to 8 repetitions.
9) Measure oxygen saturation levels using a pulse oximeter after the therapy is completed.

5. RESULTS AND DISCUSSION

a. Result

The intervention results were conducted across two managed families regarding the oxygen saturation levels of family members suffering from pulmonary tuberculosis from September 04 to September 19 2025, involving a total of five visits consisting of two sessions to establish rapport and perform initial patient assessments, as well as three subsequent visits to implement the *pursed lips breathing* therapy and semi-*fowler* positioning intervention.

The assessment results of Mr. M's family revealed that Mrs. E the wife of Mr. M, was diagnosed with pulmonary tuberculosis based on positive Rifampicin-sensitive (Rifsen) TCM results, Mrs. E reported complaints of frequent productive cough and occasional hemoptysis, Mrs. E further stated that she has experienced persistent shortness of breath from before her diagnosis until the present time, Mr. M's family expressed a lack of understanding regarding pulmonary tuberculosis and referred to the illness simply as lung breathlessness, the family also mentioned a habit of self-medicating with over-the-counter drugs regardless of the ailment and admitted to rarely engaging in physical exercise, Mrs. E's vital signs were recorded as blood pressure: 123/81 mmHg, SpO_2: 90%, heart rate: 65 bpm, respiratory rate: 31 breaths/minute, and temperature: 36.5°C, additionally, Mrs. E exhibits impaired hearing and blurred vision, upon auscultation, rhonchi (+) was detected alongside tachypnea, Mrs. E weighs 37 kg with a height of 155 cm, resulting in a Body Mass Index (BMI) of 15.4 which is categorized as underweight, furthermore, the lighting in Mr. M's house is inadequate as sunlight does not sufficiently enter the home and the windows remain permanently closed.

The assessment results for the second family, the family of Mr. T revealed that Mrs. T, the wife of Mr. T was diagnosed with pulmonary tuberculosis based on positive Rifampicin-sensitive (Rifsen) TCM results, Mrs. T reported frequent coughing, which is sometimes productive and at other times dry, while also noting persistent mild shortness of breath and a decrease in appetite, Mr. T's family admitted that their knowledge regarding pulmonary tuberculosis remains insufficient, Mrs. T expressed ongoing anxiety about taking Obat Anti Tuberkulosis (OAT) continuously because she still places her trust in herbal remedies and prayer water, furthermore, the family does not wear masks when outside the home due to a lack of motivation, Mrs. T stated that she has forgotten to take her medication on several occasions, while the family members claimed they

have attempted to remind her, they acknowledged that these reminders are sometimes neglected due to their busy daily schedules, Mrs. T's vital signs were recorded as blood pressure: 133/81 mmHg, SpO_2: 91%, heart rate: 77 bpm, respiratory rate: 16 breaths/minute, and temperature: 36.5°C, Mrs. T was observed coughing occasionally, additionally, sunlight penetration into the home is inadequate and the ventilation remains permanently closed, upon auscultation, rhonchi (+) breath sounds were detected, Mrs. T weighs 40 kg with a height of 155 cm, resulting in a Body Mass Index (BMI) of 16.6, which is categorized as underweight.

Based on these findings the intervention performed was *pursed lips breathing* therapy and the semi-*Fowler*'s position for three consecutive days which resulted in an increase in oxygen saturation levels in both families of pulmonary tuberculosis patients starting from the third visit or the first day of therapy until the fifth visit or the third day of therapy with an increase of 6% from SpO_2 = 90% to SpO_2 = 95% in the family of Mr. M and an increase of 5% from SpO_2 = 91% to SpO_2 = 97% in the family of Mr. T.

Tabel 1. Pre intervention and Post intervention Oxygen Saturation Results.

	The family of Mr. M			The family of Mr. T		
Visit	**Pre**	**Post**	**Result**	**Pre**	**Post**	**Result**
3	SpO_2 = 90%	SpO_2 = 92%	(+) 2%	SpO_2 = 91%	SpO_2 = 93%	(+) 2%
4	SpO_2 = 91%	SpO_2 = 93%	(+) 2%	SpO_2 = 95%	SpO_2 = 97%	(+) 2%
5	SpO_2 = 93%	SpO_2 = 95%	(+) 2%	SpO_2 = 96%	SpO_2 = 97%	(+) 1%
Total	Saturation results		(+) 6%	Saturation results		(+) 5%

Furthermore, based on a comprehensive synthesis of the data analysis and clinical assessments conducted within the families of Mr. M and Mr. T both of whom are managing pulmonary tuberculosis between September 04 and September 19 2025, the primary nursing diagnosis established for Mr. M's family is ineffective health maintenance, justified by the presence of specific major and minor objective signs and symptoms, meanwhile, the diagnosis for Mr. T's family is identified as ineffective family health management, supported by a combination of subjective and objective major and minor clinical indicators in strict accordance with the Indonesian Nursing Diagnosis Standards (Tim Pokja SDKI DPP PPNI, 2017).

Figure 1. Posbindu for the Elderly to Establish a Therapeutic Relationship

Figure 2. Intervention for the Family of Mr. M

Figure 3. Intervention for the Family of Mr. T

b. Discussion

Based on the primary nursing problems identified in both families, specifically ineffective health maintenance and ineffective family health management, there is a similarity in data analysis indicating that both families experience a knowledge deficit, such as not being aware of the signs and symptoms of pulmonary tuberculosis, furthermore, both families have not been able to reduce emerging risk factors, evidenced by persistent complaints of a productive cough and shortness of breath, nor have they been able to perform environmental modifications, such as

ensuring adequate lighting and proper indoor air ventilation, although both families are already capable of utilizing healthcare facilities by attending follow-up appointments and obtaining Obat Anti Tuberkulosis (OAT) at the nearest community health center.

Additionally, differences in the data analysis were identified, which led to the distinct primary nursing diagnoses for the families of Mr. M and Mr. T, as Mr. M's family demonstrated the ability to care for a family member with pulmonary tuberculosis and ensured that the Obat Anti Tuberkulosis (OAT) were taken routinely and on time, whereas Mr. T's family was not yet capable of providing such care because the family expressed a reluctance to use masks and Mrs. T, as the tuberculosis patient, several times forgot to take the OAT medication regularly, resulting in a clear distinction in the ability versus inability to care for family members with health disorders that ultimately caused the two families to have different primary nursing diagnoses.

Consequently, the case study results demonstrated significant changes in each family following the interventions, as both Mr. M's and Mr. T's families were able to understand tuberculosis issues with Mr. M's family successfully implementing pulmonary tuberculosis prevention measures while Mr. T's family remained unable to do so, and although Mr. M's family was capable of performing promotive efforts whereas Mr. T's family was not, both families ultimately succeeded in utilizing healthcare facilities, while both families were also provided with a primary intervention of simple home care through *pursed lips breathing* therapy and semi-*Fowler* positioning.

The administration of *pursed lips breathing* therapy and semi-*Fowler* positioning resulted in an increase in oxygen saturation levels starting from the third to the fifth visit, showing a 6% improvement from SPO_2 = 90% to SPO_2 = 95% in Mr. M's family and a 5% increase from SPO_2 = 91% to SPO_2 = 97% in Mr. T's family, although a discrepancy in the rate of oxygen saturation increase was observed, where Mr. M's family achieved better overall progress compared to Mr. T's family due to the fact that Mrs. E the family member suffering from pulmonary tuberculosis routinely attended check-ups adhered to Obat Anti Tuberkulosis (OAT) medication and received strong family support, whereas in Mr. T's family, the patient Mrs. T occasionally forgot to take her OAT medication and lacked sufficient family support for tuberculosis recovery, yet despite these differences, both families demonstrated the ability to perform and independently model the simple care techniques taught by the nurse in accordance with the recommendations.

Therefore, in accordance with the family nursing care plan guidelines established by the Indonesian Nursing Intervention Standards (Tim Pokja SIKI DPP PPNI, 2018) as well as the five family nursing tasks which include, firstly, enhancing the ability to recognize health issues by providing education on the tuberculosis disease process, secondly, encouraging family decision making through appropriate decision making support interventions, thirdly, improving the capacity to care for family members through the primary interventions of *pursed lips breathing* therapy and semi-*Fowler* positioning, fourthly, engaging the family in environmental modification through the promotion of health seeking behavior and finally supporting the family in planning consistent follow

up care to utilize healthcare facilities where by these case study results and guidelines yielded the primary interventions administered to both families.

The primary intervention provided to the families of Mr. M and Mr. T is a non-pharmacological therapy consisting of *pursed lips breathing* and semi-*Fowler* positioning, this therapy is conducted as a rehabilitative and preventive effort. This combined technique functions to optimize ventilation and clear the airway to facilitate the entry of oxygen because an increase in the volume of inspired oxygen can enhance oxygen binding to hemoglobin, thus effectively increasing the oxygen saturation of pulmonary tuberculosis patients (Silvia et al., 2024). The implementation of non-pharmacological therapy has been identified as having significant effectiveness as a rehabilitative, promotive, and preventive instrument within the framework of tuberculosis management, this approach not only plays a crucial role in reducing various clinical manifestations or symptoms experienced by the patient, but also serves as a strategic strategy to minimize the risk of drug resistance due to non-compliance or other physiological factors during the healing period (Meliasari, 2021).

Furthermore, the importance of implementing a comprehensive management approach is highly emphasized to ensure the achievement of a total cure for Tuberculosis (TBC) patients, this urgency aligns with data from the WHO 2021 Global Tuberculosis Report which indicates that the cure rate can reach 85% if patients undergo routine treatment over a six-month period and this success is also heavily dependent on the provision of adequate supportive care to minimize clinical manifestations resulting from the infection, such as symptoms of chronic cough and shortness of breath (dyspnea) that frequently interfere with the patient's quality of life (Subiakto et al., 2023).

The integration of *pursed lips breathing* techniques and semi-*Fowler* positioning has been clinically proven effective in optimizing lung ventilation and reducing complaints of shortness of breath (dyspnea) in tuberculosis patients, the significance of this effectiveness is reinforced by Wilcoxon test results with a p-value < 0.05 showing a tangible impact on reducing the degree of breathlessness across patient groups categorized as having severe shortness of breath (19 respondents) and mild shortness of breath (33 respondents) through these respiratory function improvements, patients are able to increase their tolerance for physical activity without experiencing excessive fatigue (Marchiana & Silaen, 2023).

In addition to conventional medical factors, there are other fundamental elements that play a crucial role in supporting treatment success and the recovery process of pulmonary tuberculosis patients because the achievement of comprehensive optimal treatment outcomes is highly dependent on four pillars of approach, namely the establishment of personal rapport with the patient, the influence of strong moral authority, the availability of adequate emotional support, and the aspect of trust built between the patient and their supportive environment (Sary et al., 2024). These aspects indicate that low family support for pulmonary tuberculosis patients is often caused by indifferent attitudes and the busyness of daily routines, as well as the tendency of families to spend less time, provide less motivation, or fail to facilitate necessary

requirements, which results in the patient not receiving sufficient encouragement to fight and treat their illness (Aruan & Zega, 2021).

The success of pulmonary tuberculosis treatment was found to have no significant correlation with family support, as evidenced by a p-value = 0.550 and an insignificant OR, this condition indicates that the primary determinant factor in recovery does not originate from external support, but rather from the patient's intellectual capacity or independent knowledge because good knowledge is capable of constructing a positive perception within the patient, which ultimately becomes the main driver in maintaining disciplined adherence to Obat Anti Tuberkulosis (OAT) consumption (Qamariya et al., 2025).

The researcher assumes that the combination of *pursed lips breathing* therapy and the semi-*Fowler* position is an effective non-pharmacological intervention to reduce shortness of breath due to secret accumulation and increase oxygen saturation in pulmonary TBC patients while the differences in family support results between the two families after this intervention were caused not only by family support but also by many other triggering factors such as a lack of self-awareness regarding the suffered illness and existing cultural beliefs that are still practiced.

6. CONCLUSION

a. Family nursing care for pulmonary tuberculosis was provided to both families with pulmonary tuberculosis patients exhibiting symptoms of productive cough and shortness of breath for more than two weeks.
b. The nursing problem that emerged in Mr. M's family is ineffective health maintenance and for Mr. T's family it is in effective family health management, however, there are similarities and differences in the data analysis of the two families that result in different primary diagnoses for the families of pulmonary tuberculosis patients.
c. Nursing interventions with non-pharmacological management or simple care provided to both families involved the administration of *pursed lips breathing* therapy and the semi-*Fowler*'s position. *Pursed lips breathing* therapy and the semi-*Fowler*'s position are proven effective in increasing oxygen saturation levels in pulmonary tuberculosis patients and improving family health quality independently.
d. The nursing evaluation provided shows that both families are effectively able to perform and demonstrate the simple care techniques taught by the nurse independently according to the established recommendations, while simultaneously demonstrating a comprehensive understanding of the specific implementation steps required to maintain patient health at home.
e. Nurses can conduct periodic home visits to monitor and ensure the consistent progress of therapeutic activities within the families of pulmonary tuberculosis patients, while simultaneously evaluating the family's adherence to the established care plan and providing necessary clinical reinforcement to optimize recovery outcomes.
f. Future research should employ an experimental design with a larger sample size and a control group to further validate the clinical effectiveness of these interventions.

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