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Enhancing self-care adherence in tuberculosis patients through family support: a systematic review

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ABSTRACT

Tuberculosis (TB) is a persistent and widespread chronic disease, posing a significant global health challenge and ranking as a leading cause of mortality worldwide. Indonesia, in particular, bears the fourth-highest TB burden globally, especially within the South-East Asia (SEA) region. Alarmingly, TB incidence rates increased by 13% from 2020 to 2021. This research utilized a systematic review methodology, sourcing data from four reputable English databases: PubMed, Google Scholar, OpenAlex, and Dimensions. Both quantitative and qualitative studies published in the last five years (2019-2023) were included. A comprehensive search strategy across the specified databases yielded a total of 1,201 articles. These articles underwent meticulous screening, resulting in six articles being deemed relevant for inclusion in the review. The inclusion criteria focused on studies examining the association between family support and self-care adherence among TB patients. The systematic review identified and analyzed these six pertinent articles, highlighting the pivotal role of family support in influencing TB patients' adherence to self-care during treatment. Enhanced family support was found to correlate positively with improved adherence levels among TB sufferers. In summary, this literature review underscores the critical importance of family support in enhancing self-care adherence for individuals undergoing tuberculosis treatment. The positive correlation between robust family support and improved adherence levels emphasizes the influential role of the family unit in the overall well-being and treatment outcomes of TB patients.

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1. INTRODUCTION

Tuberculosis (TB) is a lung disease and a leading cause of death worldwide, particularly among children. Mycobacterium tuberculosis, the bacteria that causes tuberculosis, spreads through airborne particles when an infected person coughs or sneezes. Although TB primarily affects the lungs, it can also impact other organs. People infected with TB have a 5%-10% chance of developing the disease. The risk is significantly higher for individuals with weakened immunity systems, such as those with human immunodeficiency virus (HIV), malnutrition, diabetes, or those who use tobacco. TB remains one of the top ten causes of death globally [1].

A significant portion of the global population has been infected with TB, resulting in many deaths [2]. Approximately 90% of those infected each year are men, while many instances also affect women. TB continues to be the most common cause of death from a communicable disease when compared to coronavirus (COVID-19). The incidence of tuberculosis has noticeably increased since 2015 [3]. The spread of tuberculosis has become a significant global health issue. The World Health Organization (WHO) projects that 9.9 million people worldwide will get mycobacterium tuberculosis in 2022 [4]. Information was gathered from 202 nations and territories, covering over 99% of the global populace and cases of tuberculosis.

The Southeast Asia (SEA) region accounts for 26% of the world's population and bears a TB incidence burden of 4.3%. An estimated 1.3 million persons in the area lost their lives to tuberculosis in 2020, and 4.3 million people were expected to have contracted the disease [5]. In the Southeast Asian region, Indonesia has the fourth-highest TB burden in the world. In Indonesia, the number of cases of tuberculosis rose from 351,936 in 2020 to 397,377 in 2021. TB remains one of the leading causes of death from infectious diseases [6].

Patient non-compliance with medication regimens is a significant factor contributing to the high incidence of TB [7]. The government prioritizes the recovery of TB patients, as irregular treatment allows TB bacteria to multiply and develop resistance to anti-tuberculosis drugs, necessitating intensive treatment for the first two months [8]. Furthermore, relapse rates for post-TB patients range from 5 to 10% [9]. Thus, substantial efforts are needed to enhance TB patients' access to diagnosis and treatment and reduce patient misreporting [4]. It is crucial for TB sufferers to complete their therapy programs to ensure successful recovery [10].

The ability of a patient to maintain wellness, fend off illness, and channel positive emotions into action is known as TB self-care. For individuals with tuberculosis, self-care is taking their medicine as prescribed, controlling their emotions, and performing their social and domestic duties. Achieving full recovery and a satisfactory outcome for pulmonary tuberculosis treatment, which usually takes six to nine months, depends on patients and their families adhering to self-care guidelines during the course of treatment [11]. A vital component of tuberculosis self-care is following the recommended medication schedule [12].

Patients with chronic illnesses like tuberculosis (TB) feel more confident when their families and themselves are empowered to take care of themselves [13]. Studies show that client self-care initiatives can increase educational objectives and the capacity for efficient self-care [14]. Research from other studies shows that knowledge has a big impact on self-care. Furthermore, enhancing the ability of TB patients to take care of themselves requires a strong focus on family empowerment. The patient's family is their primary support system and plays a critical role in promoting the patient's self-care practices [15]. As a social unit, the family significantly influences health status through their attitudes, actions, and acceptance of ill family members [16]–[18].

Family support is essential in helping patients overcome challenges, boosting self-confidence, and motivation in dealing with the disease [19]. Families can consistently remind patients to take medication regularly and actively care for them [20]. This support involves providing patients with accurate information about their disease and treatment, thereby reducing the risk of TB transmission and increasing cure rates [21]. Family and community psychosocial support are also vital components of strategies to support government efforts in eradicating TB [22]. Successful treatment and cure of TB require not only patient compliance but also support from families and health workers [23]. This study focuses on how family support can increase self-care adherence among TB patients [24]–[27]. The literature on this topic is limited, as most studies focus on other diseases such as diabetes mellitus, hypertension, and heart disease [28]–[30]. It is crucial to disseminate the results of this study to guide future research.

TB remains a persistent and widespread chronic disease, posing a significant global health challenge and ranking as a leading cause of mortality worldwide. Indonesia, in particular, bears a high TB burden, with incidence rates increasing by 13% from 2020 to 2021. Despite ongoing efforts to control TB, patient non-compliance with self-care practices, including adherence to medication, remains a critical issue, complicating treatment outcomes and contributing to the spread of the disease. There is a need to understand the factors that influence self-care adherence among TB patients to develop effective interventions [12].

This paper provides a systematic review of the correlation between family support and self-care adherence among TB patients, utilizing data from four reputable English databases: PubMed, Google Scholar, OpenAlex, and dimensions. By analyzing six relevant studies published in the last five years (2019-2023), the review highlights the pivotal role of family support in enhancing TB patients' adherence to self-care during treatment. The findings underscore the critical importance of robust family support in improving adherence levels, thereby emphasizing the influential role of the family unit in the overall well-being and treatment outcomes of TB patients. This review contributes valuable insights for health policymakers and practitioners aiming to enhance TB treatment strategies through family-centered approaches.

2. METHOD

2.1. Literature search strategies and databases

The preferred reporting items for systematic reviews and meta-analyses (PRISMA) standards were followed in the conduct of this systematic review. Four English-language databases PubMed, Google Scholar, OpenAlex, and dimensions were searched. A critical appraisal of the included studies was performed using the Joanna Briggs Institute (JBI) critical appraisal checklist. The articles included in the review were published within the last five years (2019-2023), as of October 25, 2023. The concept map of self-care generated using VOSviewer can be seen in Figure 1.

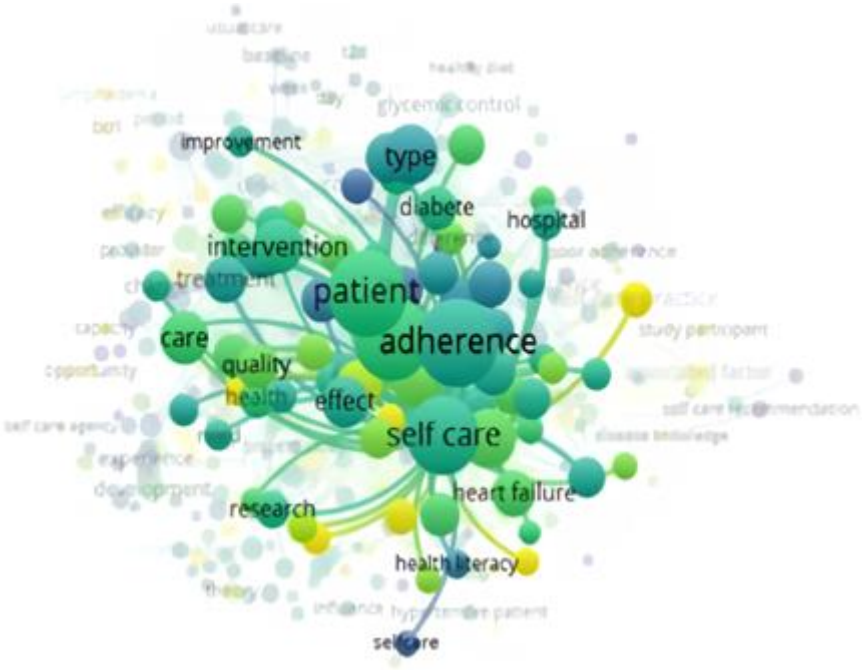

Figure 1. Concept map of self care (VOSviewer)

The keyword and inclusion criteria used in this study for searching in each database are shown in Table 1. Searching terms applied to search article were based on MESH terms: “Self-Care” or “Self-Care Adherence” and “Family Support” And (tuberculosis or TB Or TBC). The reference lists of the included studies were checked in accordance with the inclusion criteria in addition to the database search. When needed, we adjusted the electronic bibliography database search method for every database website. For instance, by changing the text word search for MeSH (Medical subject headings) in abstracts and titles [tw] and getting rid of wildcards [*].

Table 1. Keywords and inclusion criteria used for searching in each database

Database	Main search	Limit	Search found (N)	Meet criteria (N)	Reasons for Exclusion
PubMed	“Self care” or “Self care adherence” and “Family support” and (tuberculosis or Tb or Tbc).	English Year 2019-2023	109	7	The outcome is not matched
Google Scholar	“Self care” or “Self care adherence” and “Family support” and (tuberculosis orTb or Tbc).	English Year 2019-2023	517	15	The outcome is not matched
OpenAlex	“Self care” or “Self care adherence” and “Family support” and (tuberculosis or Tb or Tbc).	English Year 2019-2023	117	5	The outcome is not matched
Dimensions	“Self Care” and “Family support” and “Tuberculosis”	English Year 2019-2023 Article	458	6	The outcome is not matched

2.2. Eligibility criteria

Studies that focused on self-care adherence on TB patients were considered. The inclusion criteria were: i) type of respondents: TB patient with age more than 17 years old; ii) types of outcome measures: self-care; ii) language and date of publication: publication in English between January 2019 to October 2023, to be present with the latest literature; iv) study design: cross-sectional study, intervention. Meanwhile, exclusion criteria were studies that i) literature review articles, ii) written in a language other than English, and iii) focus on self-management.

2.3. Study selection

In the first step, we searched the article by software Harzing's Publish or Perish (window GUI edition) for PubMed, Google Scholar, and OpenAlex. But for dimension, we search manually on the database. After all the results of databases collected, the researcher put into Mendeley and removed all duplicate articles. After that, two examiners looked over the abstracts and titles to decide which research should be included in our evaluation. Meta-analyses and review papers were eliminated. Furthermore, the analysis excluded any research that did not address self-care and family support. The full texts of the remaining papers were acquired by the examiners, who then verified their validity. The remaining papers were saved for the literature review, which was the following stage.

2.4. Quality appraisal of the studies

The quality of the selected papers was assessed critically using the cross-sectional, quasi-experimental, and experimental study checklists. There are three types of study design in the papers, for example, four papers with cross-sectional, one paper with quasi-experimental, and one paper with experimental study.

2.5. Data extraction

The six papers' data were extracted using PRISMA guidelines [31]–[33]. Including the study design, study environment, sample size, population, intervention, measures, finances, authors, year of publication, and nation. Every item was incorporated into the data extraction process as shown in Table 2 (see in Appendix).

2.6. Theoretical framework

Our paper's framework can be outlined as follows. Integration of family support programs into TB treatment protocols: develop and implement structured programs that actively involve family members in supporting TB patients throughout their treatment journey. This could include educational sessions, counseling, and practical assistance to help families understand the importance of adherence to treatment and provide the necessary support to patients. Community-based support networks: establish community-based support networks that connect TB patients with peers who have successfully completed treatment, as well as with trained volunteers or health workers who can provide ongoing guidance and encouragement. These networks can serve as a source of emotional support and practical assistance for TB patients and their families. Use of Technology: explore the use of technology, such as mobile health applications or telemedicine platforms, to facilitate communication between TB patients, their families, and healthcare providers. This can help ensure timely access to information, support, and monitoring of treatment adherence, particularly in remote or underserved areas. Strengthening health education initiatives: implement targeted health education initiatives aimed at raising awareness about TB within communities, with a particular emphasis on the role of family support in improving treatment outcomes. Provide families with information about TB transmission, treatment regimens, and the importance of adherence to medication. Addressing socioeconomic barriers: recognize and address socioeconomic factors that may hinder TB patients' ability to adhere to treatment, such as poverty, stigma, and limited access to healthcare services. Provide support services, such as financial assistance, transportation vouchers, and social support programs, to help mitigate these barriers and enable patients to focus on their treatment. Collaborative care approach: promote a collaborative care approach that involves multidisciplinary healthcare teams working together to address the holistic needs of TB patients and their families. This may include involving social workers, psychologists, and community health workers in addition to medical professionals to provide comprehensive support and care.

3. RESULTS

The Study found 1,201 articles using the search techniques. Total of 664 pieces were chosen after 537 duplicate articles were eliminated. We selected 51 papers for complete reading after reading the titles and abstracts. Out of those publications, 45 were discarded, and 6 research met the requirements for inclusion in the analysis as shown in Figure 2. Table 2 (see in appendix) shows our categories for each study's study synthesis description article on self-care in TB patients. Using the JBI critical appraisal tools for each approach, examine the assessment outcomes for the systematic review as shown in Tables 3 to 5.

All the six reviewed studies were conducted in Public Health Center area, Indonesia. The total number of participants in this study was 342 respondents. Type of studies was 5 (article 1, 2, 3, 4, 6) quantitative and 1 (article 5) qualitative. In quantitative study there were 2 designs (cross-sectional (article 1, 2, 4, 6) and quasi-experimental (article 3). Thirteen was the lowest and 123 was the greatest number of participants in a single study. six studies explore family support self-care knowledge, social support, and self-efficacy [32]–[38].

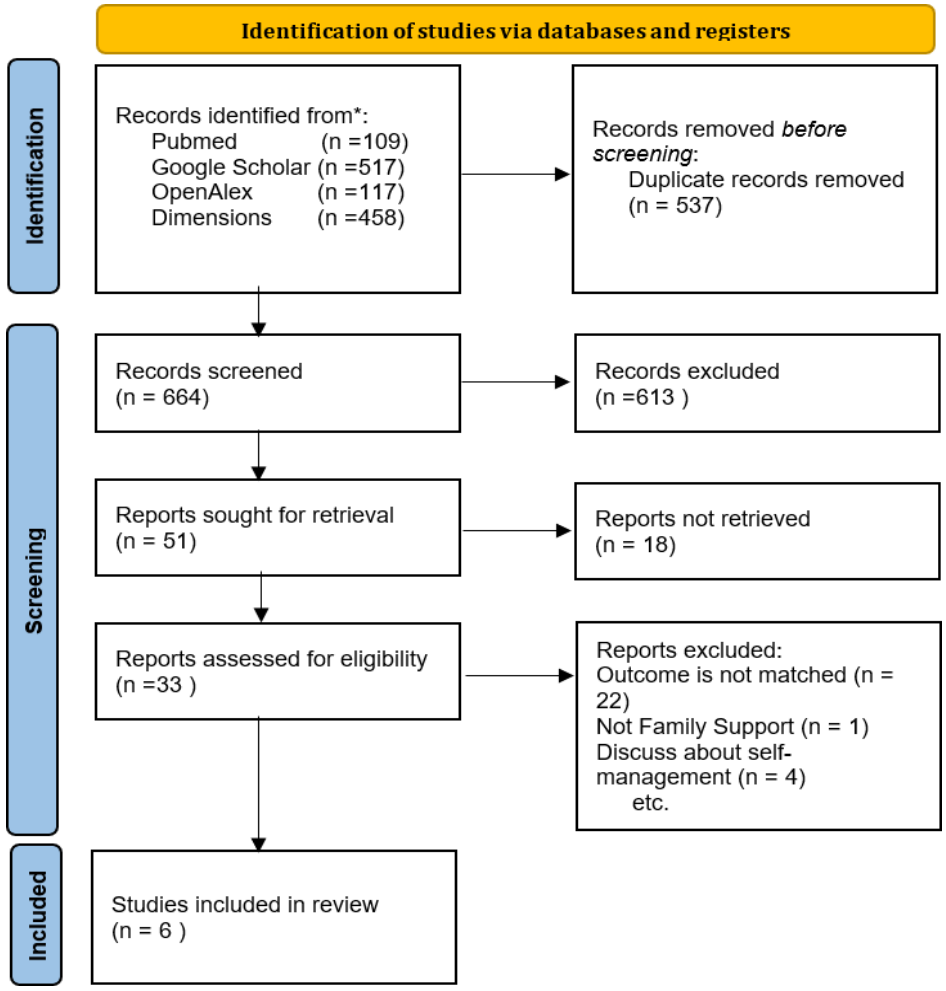

Figure 2. PRISMA flow diagram

Table 3. Study assessment results for systematic review using the JBI critical appraisal tools cross-sectional

Author	Assessment criteria								Result
	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	
[34]	√	√	√	√			√	√	6/8 (75%)
[21]	√	√	√	√	√		√	√	7/8 (87.5%)
[14]	√	√	√	√	√		√	√	7/8 (87.5%)
[38]	√	√	√	√			√	√	6/8 (75%)

Table 4. Study assessment results for systematic review using The JBI critical appraisal tools quasi-experimental

Author	Assessment Criteria									Result
	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	
[37]	√	√	√	√	√	√	√	√	√	9/9 (100%)

Table 5. Study assessment results for systematic review using The JBI critical appraisal tools experimental

Author	Assessment criteria										Result
	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	
[36]	√	√	√	√	√	√	√	√	√	√	9/10 (90%)

4. DISCUSSION

Self-care treatment is the most promising and exciting new method to enhancing health and wellbeing, both from the standpoint of health systems and the people who use them. The WHO defines self-care as an individual's, family's, and community's capacity to maintain health, prevent disease, overcome illness and disability, and do so with or without the help of medical professionals [39]. Self-care is influenced by a number of things, such as family support. Similar to what the review found, family support has been linked to self-care [21], [34], [37]. In order to facilitate the effective treatment of pulmonary tuberculosis, the family offers both medical and psychological support [35], [36]. Additionally, it can serve as primary data for creating programs for TB patients' self-care.

This study is the first systematic review of family support to increase self-care adherence among TB patients while other studies focus on other diseases. Barriers to self-care in TB patients are also noted. According to Cho and Kwon [30], this is consistent with the findings of [40], who explain that TB patients have challenges in self-care due to a lack of knowledge. Other factors may also serve as obstacles, especially when patients experience stigma, psychological and physical distress, hardship, and job loss [41], [42]. Patients with type 2 diabetes mellitus and tuberculosis may encounter obstacles to self-care relating to interactions and services, making self-care even more difficult [43]. Research has demonstrated that educational interventions grounded in the Health Belief Model are efficacious in fostering self-care habits among tuberculosis patients [44]. Coping mechanisms, self-care management procedures, and family well-being all have an impact on TB patients' physical self-care [45].

These results demonstrated that the cross-sectional research design was often utilized to examine the association between factors and self-care (4 publications). In a cross-sectional study, researchers assess both outcome and exposure in study participants. Typically, this may be accomplished swiftly and cheaply. It may be utilized for monitoring and planning public health. In general, cross-sectional research designs have the advantage of estimating the prevalence of the desired outcome because samples are taken from the entire population. They are also beneficial for public health planning, disease etiology, and hypothesis generation due to the large number of outcomes and risk factors that can be assessed [46]. Other studies used quasi-experimental and experimental study.

The most common of respondent characteristics seen in papers is TB patients of productive age with a positive TB diagnosis and getting care in health services. TB age is becoming more visible in the elderly, peaking among individuals over the age of 65 [17]. Age is a significant factor in the susceptibility, presentation, and outcomes of tuberculosis. Elderly individuals are more susceptible to M. tuberculosis infection due to age-related changes in immune function [47]. Elderly individuals are at a higher risk of developing tuberculosis and experiencing adverse reactions to antituberculous drugs, leading to a higher mortality rate [48]–[50]. This vulnerability is attributed to factors such as decreased lung function, immuno-senescence, inflammaging, and age-associated comorbidities [48]. The risk of hepatotoxicity from antituberculous therapy is also higher in the elderly [50]. The prognosis for elderly people with pulmonary tuberculosis is frequently poor; negative outcomes are associated with reduced body weight, comorbid medical conditions, and severe radiographic illness [51]. The elderly also have higher rates of recently transmitted and reactivated tuberculosis, and are at a higher risk of treatment failure and death due to the disease [52]. Inflammation in the lung is a key factor in the susceptibility of the elderly to tuberculosis [53].

Poverty and aging are significant contributors to the increase in tuberculosis, with the disease being closely linked to poverty [54]–[56]. The association between tuberculosis and poverty is mediated by factors such as low body mass index and indoor air pollution [56]. Aging, particularly in the context of the elderly, is also a key factor in the resurgence of tuberculosis [57]. The impact of HIV infection, which is often associated with poverty, further exacerbates the tuberculosis burden [58]. The co-infection of tuberculosis and HIV presents a significant burden, particularly in resource-limited countries [59]. The diagnosis and treatment of HIV-associated tuberculosis present unique challenges, including the need for rapid and accurate diagnostic tools and effective management strategies [60]. Risk factors for tuberculosis death also include socioeconomic characteristics like unemployment, education, history of homelessness, drug and alcohol misuse, and nationality [61].

The sample according to the findings of the literature research, the highest number of samples utilized in papers is 123 participants. The optimum sample size is an important aspect of every investigation. Since these six articles included in inclusion criteria from the same country which is Indonesia, the researcher cannot find differences of the result from other countries. Hope for the further study can conduct similar topic in difference countries. This research employed a systematic review methodology to investigate the association between family support and self-care adherence among TB patients, with a focus on the context of Indonesia, which bears a significant TB burden within the South-East Asia (SEA) region. By sourcing data from four reputable English databases-PubMed, Google Scholar, OpenAlex, and dimensions a comprehensive search strategy was implemented, resulting in the identification of 1,201 articles published within the last five years (2019-2023).

Meticulous screening of these articles led to the inclusion of six relevant studies that met the predefined criteria, which centered on examining the impact of family support on TB patients' adherence to self-care during treatment. The systematic review revealed a dearth of comprehensive studies specifically exploring this relationship within the Indonesian context. However, existing literature globally indicated a positive correlation between enhanced family support and improved adherence levels among TB sufferers.

The findings of this review underscored the critical importance of family support in enhancing self-care adherence among TB patients, emphasizing the influential role of the family unit in promoting positive treatment outcomes. This aligns with previous research highlighting the crucial impact of social support networks on health behaviors and outcomes. However, the novelty of this study lies in its specific focus on the Indonesian context, shedding light on the unique challenges and opportunities for improving TB management within this high-burden setting. Overall, this research contributes valuable insights into the pivotal role of family support in TB treatment adherence, highlighting the need for tailored interventions that harness the supportive resources within familial and community networks to optimize treatment outcomes and mitigate the global burden of TB.

5. CONCLUSION

This systematic review highlights the critical significance of family support in enhancing the self-care adherence of individuals undergoing tuberculosis treatment. With tuberculosis representing a significant global health challenge, particularly in Indonesia, where it stands as the fourth-highest burden globally, addressing adherence to treatment is crucial. The alarming increase in TB incidence rates further emphasizes the urgency of effective interventions. Through meticulous analysis of pertinent studies, this review elucidates the positive correlation between robust family support and improved adherence levels among TB patients. The findings underscore the influential role of the family unit in the overall well-being and treatment outcomes of individuals grappling with tuberculosis. Moving forward, interventions aimed at bolstering family support mechanisms could play a pivotal role in mitigating the impact of TB and improving treatment adherence, thus contributing to better health outcomes and reducing mortality rates associated with this persistent and widespread chronic disease.

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APPENDIX

Table 2. Study synthesis description article self care in TB patient

No	Author	Setting	Research design	Purpose	Sample size	Intervention	Type of aspects measured and Instruments	Finding
1	[34]	Polonia Health Center Medan	A cross-sectional study design	The study's goal was to investigate the factors that influence lung TB patients' families' willingness to take anti-tuberculosis medication at the Polonia Health Center in Medan.	48 Respondents	No	Questionnaire	The Polonia Health Center Medan findings in 2019 indicate that the patient's family support and medicine intake have an impact on the effectiveness of anti-tuberculosis treatments.
2	[21]	Public Health Centre	A cross-sectional design.	To Determine Knowledge, Social and Family Support, Self-Efficacy, and Self-Care Practices Among Patients with Pulmonary Tuberculosis	65 respondents	No	Instruments used for knowledge, family support, social support, self-efficacy, and self-care behavior questionnaires. The data analysis method used was the Spearman rho test with a significance value of $\alpha \leq 0.05$	Significant associations were found between self-efficacy, family support ($p=0.000$), and knowledge ($p=0.003$). Self-efficacy and social support did not correlate ($p=0.106$). Knowledge ($p=0.048$), family support ($p=0.036$), social support ($p=0.022$), and self-care behavior were correlated. Self-efficacy and family support were correlated with knowledge, whereas self-efficacy and social support were uncorrelated. There was a connection between self-care practices and knowledge, as well as family and social support.

Table 2. Study synthesis description article self care in TB patient (c*ontinued*)

No	Author	Setting	Research design	Purpose	Sample size	Intervention	Type of aspects measured and Instruments	Finding
3	[37]	Public Health Center	A quasi-experimental design with control group.	To recognize an educational and supportive intervention for patients with tuberculosis: Self-care integration and family-centered nursing	48 answerers. The respondents were split into two groups: the treatment group (n=24) received standard PHC intervention along with the supportive educational system, while the control group (n=24) received standard PHC intervention alone.	Supportive educative	The treatment group was given the supportive educative system, which consists of teaching, guidance, and support related to the nutrition of TB, besides the initial intervention, while the control group was not given any additional intervention. The supportive educative system consists of 3 sessions and divided into 3 meetings for 2-3 weeks and lasted for 45-60 minutes in every meeting	The support from family members differed significantly between the treatment and control groups. The findings showed that family support is greatly increased (p=0.003) by a supportive educational system. It's interesting to see that family support improved with PHC standard intervention (68.46±73.58) compared to supportive educational systems (74.29±75.83). The effectiveness of regular PHC interventions was higher than that of supportive educational system interventions. It might be affected by the study's duration, the sample's characteristics, variable control, and other elements.
4	[14]	Public Health Center	Cross sectional study	To examine the factors influencing the physical self-care of TB patients	45 TB patients	No	Physical self-care questionnaire developed by Ummah 2017, coping strategy questionnaire, (SCMP-G) and Family well-being assessment tool.	There was a significant association between the self-care management process, family well-being, and physical self-care
5	[36]	Public Health Center	A qualitative study with a phenomenological approach	To explore The Role of Family as A Caregiver in Caring for Family Members that are Suffering from Pulmonary Tuberculosis	13 Respondents	No	A questionnaire containing demographic data and followed by in depth interviews.	The family's experience preventing disease transmission while caring for family members with tuberculosis is one of five themes that illustrate the role of the family as caregiver in providing care for family members. This theme is addressed by the theme of efforts made by families to prevent disease, 2) The issue of nonpharmacological therapy provided by families to control symptomatic pulmonary tuberculosis accommodates the role of the family in treating tuberculosis patients. 3) The theme "Nutrition support provided by families treating patients" takes into account the role that families play in meeting the nutritional needs of family members who are ill with TB. 4) The social support given while caring for family members who are ill with tuberculosis is accommodated by the themes of informational aid provided to families in caring for tuberculosis patients and emotional support delivered by the family in caring for tuberculosis patients. 5) The family supports the patient's effective pulmonary tuberculosis therapy by offering both medical and psychological assistance.
6	[38]	Public Health Center	Cross-sectional design	The study found a relationship between patient behavior and family support in the adherence of patients to tuberculosis treatment.	123 respondents	No	Using sociodemographic questionnaires, family support, behavior, TB treatment adherence and MMAS-8.	There was a correlation between patient behavior and family support (p=0.025) and between family support and TB treatment compliance (p=0.042).

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