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Exploring family perceptions and roles in pulmonary tuberculosis care: A phenomenological study in East Kolaka Regency

Eksplorasi persepsi dan peran keluarga dalam perawatan tuberkulosis paru: Studi fenomenologis di Kabupaten Kolaka Timur

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Abstract

Several studies conducted on tuberculosis (TB) management have largely focused on patient-centered interventions, with limited qualitative exploration of family perceptions and caregiving roles, particularly in rural Indonesian contexts. This study addresses that gap by examining how families perceive and engage in the care of pulmonary TB patients in the service area of UPTD Puskesmas Mowewe, East Kolaka Regency, in 2024. Employing a qualitative descriptive design with a phenomenological approach, data were collected through in-depth interviews, observations, and document reviews involving six informants, including family members of TB patients. The study reveals a spectrum of family perceptions, from comprehensive understanding to persistent stigma and misconceptions about TB transmission and treatment. These perceptions significantly influence caregiving behaviors, with some families offering strong emotional and logistical support, while others demonstrate limited involvement due to lack of knowledge and access to health information. Findings highlight that the family's role is central in supporting treatment adherence, facilitating access to healthcare, and promoting healthy practices within the household. The study underscores the need for structured education and empowerment programs tailored to families, especially in rural settings. These efforts are critical for enhancing family participation in TB care and achieving better public health outcomes. Recommendations include integrating family-based strategies into TB control programs and strengthening collaboration between healthcare providers and families.

Abstrak

Beberapa studi melakukan pengelolaan tuberkulosis (TB) umumnya berfokus pada intervensi yang berpusat pada pasien, sementara eksplorasi kualitatif mengenai persepsi dan peran keluarga masih terbatas, terutama di konteks pedesaan Indonesia. Studi ini mengisi kesenjangan tersebut dengan menelaah bagaimana keluarga memaknai dan menjalankan perawatan terhadap anggota keluarga penderita TB paru di wilayah kerja UPTD Puskesmas Mowewe, Kabupaten Kolaka Timur, tahun 2024. Penelitian ini menggunakan desain deskriptif kualitatif dengan pendekatan fenomenologis, dengan pengumpulan data melalui wawancara mendalam, observasi, dan telaah dokumen terhadap enam informan dari keluarga pasien TB paru. Hasil penelitian menunjukkan adanya variasi persepsi keluarga, mulai dari pemahaman yang baik hingga stigma dan miskonsepsi yang masih kuat terkait penularan dan pengobatan TB. Persepsi ini sangat mempengaruhi perilaku pengasuhan, di mana sebagian keluarga memberikan dukungan emosional dan logistik secara aktif, sementara yang lain menunjukkan keterlibatan terbatas karena kurangnya pengetahuan dan akses informasi kesehatan. Temuan ini menegaskan bahwa peran keluarga sangat penting dalam mendukung kepatuhan pengobatan, memfasilitasi akses layanan kesehatan, dan mendorong praktik hidup sehat di lingkungan rumah. Studi ini menekankan pentingnya program pendidikan dan pemberdayaan keluarga secara terstruktur, khususnya di wilayah pedesaan. Upaya ini krusial untuk meningkatkan partisipasi keluarga dalam perawatan TB dan mencapai hasil kesehatan masyarakat yang lebih baik. Rekomendasi meliputi integrasi strategi berbasis keluarga dalam program pengendalian TB serta penguatan kolaborasi antara tenaga kesehatan dan keluarga.

Keywords :

delivery of health care; family perception; patient; pulmonary; tuberculosis

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INTRODUCTION

A Tuberculosis (TB) remains a major public health issue globally, especially in Indonesia, one of the countries with the highest TB burden (Ritonga et al., 2023; Walt & Keddy, 2021). According to the World Health Organization, around 10 million TB cases and 1.45 million deaths occurred worldwide in 2018, with Southeast Asia among the highest in incidence (Walt & Keddy, 2021). Despite various control strategies, Indonesia still faces a high TB burden, highlighting the need for improved healthcare access and effectiveness (Saputro et al., 2024).

Current interventions include expanding rapid molecular testing for multidrug-resistant TB and addressing key determinants like undernutrition and public health education (Leung et al., 2020). These efforts are crucial, as social determinants often hinder TB control (Chen et al., 2022). Raising public awareness is also seen as essential to improving policies and resource allocation (Leung et al., 2020). Indonesia's commitment to the End TB Strategy reflects its goal to reduce TB incidence and mortality by 2030, though ongoing challenges must be resolved (Ritonga et al., 2023; Olaleye et al., 2023).

Family-centered TB care plays a vital role in supporting treatment adherence and improving outcomes, especially in community and home settings. Research shows that family involvement enhances case notification and treatment success. For example, care provided by community health workers in patients' homes improves access and strengthens registration and notification systems (Chávez-Rimache et al., 2023). Families also help create supportive environments for recovery. Clean and hygienic households are critical, as poor conditions can worsen health (Suprajitno et al., 2022; Brillianti & Hendrati, 2022). Moreover, family engagement reduces stigma and fosters emotional well-being during extended treatment (Phalasarn et al., 2021). Their involvement not only supports medication adherence but also strengthens TB knowledge and prevention at the community level (Yuen et al., 2022). Incorporating family roles into TB care is thus essential, particularly in high-burden areas like Indonesia (Marlianasyam et al., 2024).

Stigma and misconceptions remain significant barriers to TB care. Stigma includes social rejection and self-stigmatization, discouraging treatment-seeking and adherence. A study in Ethiopia found internalized stigma made patients fear negative community reactions, limiting healthcare engagement (Datiko et al., 2020; Kebede et al., 2022). Men especially feared disclosure due to shame, further complicating treatment (Medina-Marino et al., 2022).Misconceptions also worsen outcomes. Many people misunderstand how TB spreads or the nature of the disease. A study in Vanuatu revealed that many patients didn't know TB is airborne, leading to delayed care (Onyango et al., 2020). Patients often misinterpret medication side effects or the importance of completing treatment (Mathur, 2022). Tackling these misconceptions and reducing stigma are crucial for improving TB outcomes (Foster et al., 2022; Foster et al., 2024).

Family members are vital treatment supporters in the Directly Observed Treatment Short-course (DOTS) strategy. Their involvement provides emotional, informational, and practical support critical during long-term therapy (Shalahuddin et al., 2024; Mariani et al., 2022). Mariani et al. emphasized that trained family members help monitor compliance effectively, showing that training empowers families in TB care. A supportive home environment also encourages adherence. Suarnianti et al. (2023) noted that reminders and motivation from family improve compliance, while Belarminus et al. (2023) showed that family support enhances recovery and health outcomes. This underscores the need to embed family roles in TB strategies, especially within the DOTS model. Exploring family perspectives and barriers qualitatively is crucial. Families influence treatment adherence and outcomes (Abayneh et al., 2020; Chen et al., 2021). Misunderstandings about TB can hinder detection and engagement in care. Gaining qualitative insights helps tailor interventions that address knowledge gaps and emotional needs. Stigma from within families may also deter patients from seeking help. Internalized stigma makes some fear rejection, reducing engagement (Datiko et al., 2020). Qualitative studies help uncover such dynamics, guiding family education to create supportive environments. They also reveal social and psychological barriers affecting patients' quality of life (Lutfian et al., 2024). Thus, qualitative approaches can guide family-centered care strategies to improve TB management in communities (Belarminus et al., 2023; Alinaitwe et al., 2025).

However, despite growing interest in family roles in TB care, most prior studies have predominantly focused on patients' perspectives or the effectiveness of DOTS-based support (Bedingfield et al., 2021; Bedingfield et al., 2022; Pradipta et al., 2021), with limited qualitative insight into family perceptions and caregiving challenges, particularly in rural Indonesian settings. Previous reviews rarely address how family misconceptions, stigma, and

household dynamics concurrently shape caregiving behaviors. Moreover, localized socio-cultural factors in regions like East Kolaka remain underexplored. This study addresses that gap by analyzing the perceptions and roles of families in caring for members with pulmonary TB in the service area of UPTD Puskesmas Mowewe, East Kolaka Regency, in 2024. By capturing family narratives, the study contributes valuable contextual evidence to support the development of family-based TB care strategies tailored to specific regional needs.

METHODS

This study employed a qualitative research design with a phenomenological approach to explore the lived experiences, perceptions, and roles of families in caring for pulmonary tuberculosis patients. The study was conducted in the working area of UPTD Puskesmas Mowewe, East Kolaka Regency, Southeast Sulawesi. The selection of this location was based on its relatively high number of pulmonary TB cases compared to other sub-districts, its rural health service characteristics, and the unique sociocultural factors that may influence family caregiving practices. This setting also offered strategic access to informants directly involved in TB care, such as patients, families, and health workers.

The study population consisted of all families of pulmonary TB patients and relevant health workers in the Mowewe Health Center service area. The sampling technique applied was purposive sampling, selecting participants who were deemed capable of providing in-depth and credible information. Key informants were chosen based on their direct involvement in patient care and knowledge of TB management, including TB program managers and immediate family members of TB patients. Inclusion criteria included individuals over 18 years old, directly involved in caregiving activities, and willing to participate voluntarily. Ordinary informants, or TB patients themselves, were included to provide contextual insights on the effectiveness and perceptions of family support. Informed consent was obtained from all participants after a clear explanation of the research objectives, confidentiality assurances, and their right to withdraw at any time.

Data collection was conducted through semi-structured in-depth interviews, allowing for flexibility in exploring participant perspectives. The interview guide contained core questions such as: "What do you know about TB and its transmission?", "What is your role in caring for a family member with TB?", and "What challenges have you faced in caregiving?" Interviews were audio-recorded with participant permission, transcribed verbatim, and then translated into English for analysis. Data were organized thematically, using coding techniques to identify recurring themes and patterns related to perceptions, roles, barriers, and support systems in TB care. Thematic analysis was used to interpret the findings, allowing researchers to draw connections between participant experiences

RESULTS

The informants in this study consisted of key informants and regular informants. Key informants included three individuals: two family members of pulmonary TB patients and one health worker. Regular informants comprised two pulmonary TB patients. The selection of informants was carried out using the snowball sampling method, in which participants were recruited based on referrals from previously interviewed individuals. The process began with selecting the first participant, who then recommended other individuals relevant to the study. Data collection was conducted through in-depth interviews using interview guides and voice recorders.

The key informants in this study were C, a 30-year-old female TB program officer at Mowewe Health Center; DW, a 27-year-old male self-employed family member of a TB patient; AH, a 36-year-old female self-employed family member of a TB patient; and AS, a 43-year-old male farmer and family member of a TB patient. The regular informants were MG, a 48-year-old male laborer with TB, and JA, a 39-year-old female housewife with TB.

Perception of Vulnerability

Perception of vulnerability refers to the extent to which families perceive the risk of contracting pulmonary TB. Most informants believed that pulmonary TB is contagious and poses a risk to other family members. Four informants showed awareness that TB is a serious and transmissible disease, while one informant exhibited limited understanding due to lower educational attainment and a lack of curiosity about the disease. This informant associated TB symptoms with chronic cough, coughing up blood, and a thin appearance. Only two informants had comprehensive knowledge of TB symptoms and its transmission. The informant's statement is as follows:

> *"Of course, our family knows that Pulmonary Tuberculosis is an infectious disease caused by bacteria. It can affect the lungs and cause symptoms such as chronic cough, fever, weight*

loss, and fatigue". (Key Informant DW, male, 27 years old)

"Pulmonary tuberculosis is an infectious disease caused by bacteria" (Key Informant AH, male, 36 years old)

".....they say TB is a contagious disease but I don't really know about it either...." (Key Informant AS, male, 43 years old)

In line with what was expressed by an ordinary informant who is a pulmonary TB sufferer, the following is an excerpt from the interview results:

"According to my understanding, pulmonary tuberculosis is an infectious disease caused by bacteria that attack the lungs." (Regular informant, MG, male, 48 years old)

Similar things were also conveyed by several informants regarding other symptoms in children suffering from pulmonary TB, namely fever, weight loss, decreased appetite and sweating, as quoted from the following interview:

"...initially, she had a continuous cough, was underweight every time she was weighed at the integrated health post, her appetite decreased, she sweated excessively, miss." (Key Informant AH, female, 36 years old)

"..... she used to have a good body but now she is thin, has a fever, coughs and flu too". (Key Informant AS, female, 43 years old)

In line with what was conveyed by ordinary informants regarding the symptoms and signs of Pulmonary TB, where the respondent interview excerpt is as follows:

"The symptoms I felt included a cough that did not go away for several weeks or months." (Regular informant, MG, male, 48 years old)

"...sometimes with bloody sputum, fever, excessive night sweats, loss of appetite, and unintended weight loss". (Regular informant JA, female, 39 years old)

These results show that while some informants are well-informed about TB, others remain unaware of its infectious nature and symptoms. Pulmonary TB is caused by Mycobacterium tuberculosis and typically presents as chronic cough, fever, night sweats, loss of appetite, and weight loss.

Perception of Seriousness

Perception of seriousness refers to the belief that TB can lead to severe health consequences, including complications, serious symptoms, and social and economic impacts. Informants considered TB to be a dangerous illness requiring prompt treatment. Based on the study, it is known that families feel that Pulmonary TB disease is a serious disease and must be treated immediately, as seen in the following informant interview excerpt:

"As far as I know, the complications are like lung damage and kidney damage." (Key Informant DW, male, 43 years old)

"...it seems like I could get asthma, like having difficulty breathing if I don't get treatment." (Key Informant AS, male, 43 years old)

Similar things were conveyed by TB sufferers that complications caused by TB start from lung damage, kidney damage and difficulty breathing. This can be very disruptive to a person's health and quality of life. The following is an excerpt from an in-depth interview with a TB sufferer:

"The complications that I feel from this disease are lung damage, normal weight loss, my sugar also increases with my blood pressure". (Regular informant MG , male, 48 years old)

"I usually feel like my blood pressure is rising, I like getting headaches, and my blood sugar also usually rises." (Ordinary informant, JA, female, 39 years old)

Based on the interview results above, it shows that some complications caused by pulmonary TB start from lung damage, weight loss, increased blood sugar levels and blood pressure also increases. This can be very disruptive to health and quality of life. Then the severity of symptoms of pulmonary TB, as seen in the following key informant interview excerpt:

"…the severity of symptoms of Pulmonary TB such as continuous coughing, difficulty sleeping and complaining of headaches". (Key Informant DW, male, 43 years old)

"The symptoms are severe and can interfere and reduce the quality of life of sufferers, such as coughing up blood." (Key Informant AS, male, 43 years old)

In line with the statement of the key informant, the Mowewe Health Center officer, who said that:

"...yes that's right, from the results of our diagnosis so far on pulmonary TB patients, it was found that the patient had hypertension and diabetes." (Key Informant C, female, 30 years old).

Based on the results of interviews with the informants above, it is known that families and health workers feel serious about handling complications felt by patients due to Pulmonary TB can cause various serious complications for patients. Complications felt by patients due to Pulmonary TB are that Pulmonary TB can cause various serious complications for patients. These include complications such as lung damage, hypertension and diabetes.

Perception of Benefits

Perception of benefits refers to the perceived positive outcomes of TB treatment. Informants noted health improvements among TB patients after receiving regular treatment. As seen in the following key informant interview excerpt:

> *"... thank God, compared to the beginning, now I'm healthier, I see ." (Key Informant DW, male, 43 years old)*
>
> *"... because he routinely takes medicine, thank God he has never coughed up blood, he is healthy." (Key Informant AH, female, 36 years old)*
>
> *"...yeah, it's still normal for him to cough but it's not as bad as before he took the medicine."* (Key Informant AS, male, 43 years old)

In line with the statement of ordinary informants who stated that health improvement after treatment by carrying out intensive and consistent care, significant health improvement. The symptoms of pulmonary TB experienced began to decrease gradually, coughing gradually recovered, fever began to subside, and more energy, This recovery gives hope and motivates to continue treatment with discipline . The following is an excerpt from an interview with an ordinary informant :

> *"After undergoing intensive and consistent treatment, I feel that my health condition has started to improve. At first, I coughed so often that I had trouble sleeping at night. Thank God, now I rarely cough. I am not too weak and I rarely have a fever."* (Regular informant MG, male, 48 years old)
>
> *"Thank God, my noodles are feeling better, not like before."* (Regular informant, JA, female, 39 years old)

In line with the statement of health workers regarding improving the health conditions of pulmonary TB patients, as seen in the following interview excerpt:

> *"Thank God, Mr. MG and Mrs. JA's condition is getting better. They rarely come to the health center for check-ups, only when their medicine runs out"* (Key Informant C, female, 30 years old).

Based on the results of interviews with informants that the skills in caring for family members suffering from Pulmonary TB are by monitoring health conditions and administering drugs. Then improving health after treatment by carrying out intensive and consistent care, significant health improvements.

Perception of Barriers

Perception of barriers refers to obstacles experienced during TB treatment. These include financial constraints, lack of transportation, community stigma, and limited information. As seen in the following informant interview excerpt:

> "*We realize that Pulmonary TB can cause significant economic problems for families."* (Key Informant DW, male, 43 years old)
>
> *"...including medical expenses, loss of income due to absence from work".* (Key Informant AH, female, 36 years old)
>
> *"...and additional costs for other necessary health care".* (Key Informant AS, male, 43 years old)

Based on the results of interviews with the informants above, it shows that economic problems due to Pulmonary TB can cause significant economic problems for families including medical costs, loss of income due to absence from work and additional costs for other health care. Then in dealing with Pulmonary TB sufferers, families experience obstacles in accessing health services, as seen in the following in-depth interview excerpts with informants:

> *"Yes, we experience some obstacles in accessing health services for Pulmonary TB, for example there is no vehicle to the health center".* (Key Informant DW, male, 43 years old)
>
> *"...including long distances to health facilities, high treatment costs".* (Key Informant AH, female, 36 years old)
>
> *"....we have difficulties due to the lack of information or education about this disease".* (Key Informant AS, male, 43 years old)

Barriers to accessing health services include long distances to health facilities, high treatment costs and lack of information or education about the disease.

Perception of Self-Confidence

Perception of self-confidence refers to the family's belief in their ability to care for TB patients. Informants expressed a strong desire to support recovery, acquire caregiving skills, and seek guidance from health professionals. Excerpts from interviews with informants as follows:

> *"...follow the nurse's instructions well and remember them".* (Key Informant AH, female, 36 years old)

> *"...learn from experience how to take care of sick people and advice from doctors at the health center".* (Key Informant AS, male, 43 years old)

In line with the statement of the key informant, the Mowewe Health Center officer, who said that:

> *"So far, the skills of families of TB patients in caring for TB patients are still based on the experience of caring for sick people. As a health worker, I only provide counseling on how to care for TB patients so that patients can gradually recover and families can also avoid the risk of TB transmission. Families also actively ask me about what taboos should be avoided by TB patients".* (Key Informant C, female, 30 years old).

Based on the results of the interview above, it was revealed that efforts to obtain skills in caring for family members suffering from pulmonary TB to obtain the skills needed to care for family members suffering from pulmonary TB are still based on experience in caring for sick people, and following instructions from health workers carefully . Family efforts to obtain skills in caring for pulmonary TB patients with very important and attentive steps.

Perception of the urge to act

Perception of the urge to act includes external motivators that drive families to continue TB treatment. These include family support, information-seeking behavior, and involvement in treatment schedules. As quoted from the interview with the following informant:

> *"We only get information about TB from health workers..."* (Key Informant DW, male, 43 years old)

> *"...from the same doctor, if we usually go to the hospital or health center, the doctor will explain about TB disease."* (Key Informant AH, female, 36 years old)

Based on the results of the interview with the informant above, it was obtained that the search for information about Pulmonary TB and its treatment was obtained from health workers at the Health Center and at the Hospital. Then the involvement in arranging the treatment schedule, as seen in the following key informant interview excerpt:

> "*I am the one involved in arranging the treatment schedule for family members who suffer from Pulmonary TB because I am the one who writes down the schedule for taking the medicine."* (Key Informant DW, male, 43 years old)

> *"....we are the ones who always remind him every hour to take his medicine."* (Key Informant AH, female, 36 years old)

> *"...we usually ask him if he has taken his medicine because he often forgets."* (Key Informant AS, male, 43 years old)

Involvement in setting up a treatment schedule involves coordinating with the doctor to create a schedule that suits the family's needs, ensuring that treatment is given regularly.

The role of family care

The role of family care for Pulmonary TB is the behavior of the family in providing care to family members suffering from Pulmonary TB, such as the duties and responsibilities of family members, obstacles in caring for family members suffering from Pulmonary TB. As seen in the following interview excerpt:

> *"Our job is to monitor patients whether they have taken their medication, write down their medication schedule , monitor their health condition."* (Key Informant DW, male, 43 years old)

> *"....preparing food, taking care of patients, and reminding them to take their medication."* (Key Informant AH, female, 36 years old)

> *"...we monitor whether he has taken the medicine."* (Key Informant AS, male, 43 years old)

The duties and responsibilities of family members, for example, monitor patients to take medication and monitor their health conditions. Then the obstacles in caring for family members who suffer from Pulmonary TB. As seen in the following informant interview excerpt:

> *"Well, the biggest obstacle is economic."* (Key Informant DW, male, 43 years old)

> *"...my obstacles are like financial difficulties for medical expenses and stress."* (Key Informant AH, female, 36 years old)

> *"...apart from the economy, patients also often forget to take their medication."* (Key Informant AS, male, 43 years old)

In line with the statement of a regular informant regarding obstacles in carrying out care, who said that:

> *"I feel sorry for the treatment, I am enthusiastic about getting treatment, but I feel sorry for the economic problems*." (Ordinary informant MG, male, 48 years old)

> *"...the obstacle is in the economy, even though it is also a pity that we want to get treatment if we don't have money, it is also difficult and access to the health center is also quite far."* (Regular informant JA, female, 39 years old)

Overall, the findings indicate that while families are committed to supporting TB treatment, they face substantial barriers, particularly financial and informational, which impact their caregiving effectiveness and patient adherence.

DISCUSSION

This study found that family members of pulmonary tuberculosis patients generally recognize the disease's seriousness and its potential complications, yet face various challenges in providing effective care. These challenges range from limited knowledge and education to financial constraints and inadequate access to health information. Informants expressed both positive and negative perceptions of TB, which significantly influenced their caregiving behaviors. Some family members showed high levels of motivation and emotional investment in patient recovery, while others struggled due to misconceptions, stigma, and insufficient support. Informants also reported practical contributions to patient care, such as managing medication schedules and offering emotional support, despite facing economic and logistical burdens.

Perception significantly shapes caregiving behavior, influencing how caregivers respond to the needs and challenges of those they care for. Positive illness perception among caregivers fosters proactive help-seeking behaviors, as indicated by a study where a significant proportion of caregivers held a positive view of the illness, which correlated with high levels of engagement in seeking help (Faradila & Coralia, 2023). This suggests that caregivers who perceive the illness more positively are likely to be more supportive and active in facilitating care. Conversely, negative perceptions, including stigma and emotional responses related to caregiving, can lead to heightened burdens on caregivers and affect their well-being. Radu et al. (2022) found that emotional representations of illness correlated with increased caregiver burden and reduced well-being. This relationship underscores how caregivers' perceptions of the illness can directly impact their emotional health and subsequently influence their caregiving attitudes and behaviors.

Additionally, caregivers' perceptions of stigma related to their care recipient's condition—such as mental health issues or substance use disorders—can lead to feelings of shame and isolation, further diminishing their effectiveness (Bhowmick, 2025). They may engage in maladaptive coping strategies or become less involved in care as a defense against the stigma they face. Thus, understanding family perspectives and perceptions is crucial in developing supportive interventions that empower caregivers and enhance primary caregiving behaviors (Peng et al., 2024).

Barriers to effective family involvement in tuberculosis (TB) care can be categorized into socioeconomic, educational, and informational obstacles, all of which impede the optimal engagement of families in treatment processes. Socioeconomic challenges often create significant hurdles for families. Economic constraints, such as loss of income due to illness or costs associated with accessing treatment, can negatively impact the ability of family members to support TB patients effectively (Baloyi & Manyisa, 2022). When families face financial stress, they may prioritize day-to-day survival over health-related activities, thereby reducing their involvement in patient care.

Educational barriers also play a critical role. Families with lower levels of education may struggle to comprehend medical information and adhere to treatment regimens (Sari & Nirmalasari, 2020). A lack of awareness regarding TB, its transmission, and treatment can lead to misconceptions that hinder effective caregiving. Higher educational attainment among family members is often correlated with better preparedness and the ability to communicate effectively with healthcare providers, facilitating a supportive environment for patients. Informational obstacles further exacerbate the challenge of family involvement. Many families report inadequate information regarding TB, the treatment process, and available support services (Sholichah & Kushartati, 2023).

Without proper guidance and resources, family caregivers may feel ill-equipped to provide the necessary support to TB patients, leading to negative outcomes in treatment adherence and overall care quality. By addressing these barriers, healthcare systems can promote more effective family involvement, enhancing TB care and ensuring better health outcomes for patients (Grigoryan et al., 2022).

Family roles and dynamics in providing emotional, logistical, and health-promoting support vary significantly based on multiple factors, including the condition being managed, individual family member characteristics, and the broader socio-cultural context. Emotional support is critical in care dynamics, as family members often serve as primary sources of psychological and emotional reinforcement. Research indicates that family caregivers are typically the most consistent providers of emotional support, significantly impacting the emotional well-being of patients (Bouchard et al., 2023). For instance, caregivers of children with emotional and behavioral disorders often report a high need for emotional support due to their increased stress and isolation, highlighting the vital role families play in buffering against the psychosocial challenges associated with caregiving (Graaf et al., 2023).

Logistical support, which includes assistance with daily activities and coordination of care, is also paramount. Family members frequently take on responsibilities for managing appointments, medications, and transportation, effectively acting as coordinators of care. Graaf et al. (2023) noted that families who share caregiving responsibilities can significantly alleviate the burden on individual caregivers, thus enhancing the support provided. Additionally, practical support, like help with household tasks, has been shown to reduce caregiver stress levels, demonstrating the importance of family dynamics in caregiving roles (Taufik et al., 2023).

Health-promoting behaviors are reinforced through family involvement, influencing not only adherence to treatment but also lifestyle choices that affect overall health. For instance, the presence of supportive family members can enhance self-care behaviors among patients with chronic illnesses, leading to improved health outcomes (Ulfah et al., 2022). Conversely, when families are not adequately involved or when their support is lacking, it may lead to poorer adherence and health management (Basnyat & Chang, 2021). Understanding the variation in family roles and dynamics is crucial to optimize caregiving strategies, ensuring they align with the emotional and practical needs of both caregivers and patients (Finn et al., 2022).

Empowering families through education is crucial for enhancing their involvement in caregiving, particularly in managing health conditions like tuberculosis (TB) or mental health disorders. Education serves as a foundational element that equips families with the necessary knowledge, skills, and confidence to provide effective care. One key recommendation is to offer targeted educational programs for family members that enhance their awareness of health issues and caregiving responsibilities. For instance, Santosa et al. (2021) argue that proper education and information dissemination about mental illness can alleviate families' perceived burdens and stigmatizing experiences, thereby facilitating empowerment and better caregiving outcomes. Educational initiatives can focus on knowledge about disease management, medication adherence, and recognizing signs that require medical intervention, which ultimately leads to improved patient care.

Furthermore, specific training for caregivers can enhance their health literacy and self-efficacy. Rodrigues et al. (2025) emphasize that interventions built on a family-centered empowerment model can improve caregivers' understanding of their roles and available resources, resulting in higher-quality care delivery. Such educational efforts should also include practical components, such as instructional videos, to help families learn caregiving techniques and medical procedures easily. Emerging literature suggests the development of educational materials, including videos, specifically supports families in caregiver roles by facilitating learning through accessible formats (Page et al., 2022). Moreover, it is essential to prepare healthcare providers with education programs that enhance their competencies in supporting family caregivers, as noted by Parmar et al. (2021; 2022). Ensuring that healthcare professionals are trained to engage respectfully and effectively with families can promote a collaborative care environment, which is vital for holistic patient support.

Integrating family support more systematically into health policy and programs entails several key implications that enhance collective health outcomes. One of the primary recommendations is to incorporate family engagement frameworks in the development and implementation of health promotion programs. As demonstrated by Novilla et al. (2020), involving families in the planning phases, alongside using the Public Health Family Impact Checklist, can help guide programs to better engage families and tailor initiatives to meet their specific needs. This approach not only improves family involvement but also aligns health interventions with family dynamics and challenges.

Furthermore, fostering intersectoral collaboration is crucial. Viklund et al. (2023) argue that multi-professional collaboration through methods like social prescribing can enhance support for families, ensuring timely and personalized assistance. Policymakers should promote partnerships across various sectors—health, education, and social services—to create a holistic support network for families, thereby addressing diverse needs.

Operationalizing logistical support within programs also deserves emphasis. Research by Piper et al. (2024) indicates that logistical barriers significantly hinder family participation in care, suggesting that programs should implement flexible scheduling, transportation, and childcare solutions to enhance accessibility. This practical support is vital for encouraging family involvement, especially in communities facing socioeconomic challenges. Additionally, embedding educational components into support programs can substantially improve family capacities. Rao et al. (2021) highlight that caregiver support groups aimed at addressing emotional and logistical concerns can lead to better caregiving outcomes. Therefore, equipping family members with the knowledge and tools to manage health conditions effectively fosters a more robust support system. To empower families systematically, policies must emphasize multifaceted family engagement, partnerships across different sectors, logistical support mechanisms, and educational initiatives. This comprehensive approach will enhance family involvement in health care and improve health outcomes across communities.

This study has several strengths. It provides an in-depth qualitative understanding of how family members perceive and manage pulmonary TB in a rural Indonesian context, offering rich narratives that reflect real-life experiences. The use of a phenomenological approach enabled researchers to capture nuanced emotional, logistical, and practical caregiving aspects. Additionally, by incorporating both family members and TB patients as informants, this study ensures a well-rounded perspective on family involvement and caregiving challenges.

However, this study is not without limitations. The findings are limited to one health center in East Kolaka Regency and may not represent broader patterns in other geographic or cultural settings. The reliance on self-reported data may also introduce recall bias or social desirability bias. Moreover, while the study highlights barriers and strengths in family caregiving, it does not measure clinical outcomes of patients, which could provide further insight into the effectiveness of family involvement. Future research should explore similar dynamics in diverse regions and consider integrating quantitative methods to validate and extend these findings.

CONCLUSION

This study concludes that the perceptions held by families—such as perceived vulnerability, seriousness, benefits, barriers, self-confidence, and motivational cues—along with their caregiving roles, significantly influence the management and outcomes of pulmonary tuberculosis treatment. The findings underscore the central role families play not only in ensuring medication adherence and facilitating healthcare access, but also in providing emotional and logistical support that helps patients endure the lengthy and demanding treatment process. Family support becomes an essential component in improving the quality of care and fostering positive treatment outcomes. These results contribute to public health by emphasizing the importance of incorporating family perspectives into tuberculosis care strategies, especially in rural and high-burden areas. For families and TB patients, structured education and ongoing support are crucial in reducing stigma and enhancing knowledge and caregiving practices. Healthcare professionals are encouraged to actively engage families in care planning and provide targeted counseling and empowerment interventions. Policymakers and stakeholders should integrate family-centered care models into TB programs to optimize treatment success and patient well-being. Future researchers are advised to expand this study's scope to include quantitative validation and examine diverse geographical contexts, enabling broader generalizations. Further investigations may also explore the direct relationship between family involvement and clinical outcomes to strengthen evidence-based policy and practice.

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Yayudia Setriawati M. Arwan designed the study, formulated the concept, wrote the manuscript, ollected data, and analyzed the

data. Achmad R. Muttaqien Al-Maidin designed the study, revised the manuscript, and performed the field work, Andi Alim and Asnidar analyzed the data, revised the manuscript, and performed the field work. All Authors read and approved the final.

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COMPETING INTERESTS

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