Factors associated with patient values among individuals with tuberculosis: a mixed-methods study using a patient- and family-centered care approach

Yosephina Elizabeth Sumartini Gunawan,[1] Servasius To'o Jala Mulu,[1] Leni Landudjama,[1] Melkisedek Landi,[1] Wanto Paju,[1] Heriberth Bara Hunggurami,[1] Geralda Holi Mayela Ludji,[1] Grazhela Tatu Rija,[1] Donny Sulistiono,[2] Israfil Israfil[3]

[1]Health Polytechnic of the Ministry of Health, Kupang; [2]Health Polytechnic of the Ministry of Health, Surabaya; [3]Institute of Technology and Health Bali, Denpasar, Indonesia

Abstract

Tuberculosis (TB) is a major global health problem, especially in rural areas with limited access to healthcare services. Beyond physical symptoms, its impact extends to psychological and social burdens, significantly affecting the patients' quality of life during the lengthy treatment period. This study aimed to analyze the quality of life of TB patients using a Patient- and Family-Centered Care (PFCC) model. A mixed-methods design with an explanatory sequential approach was used. The quantitative phase involved 180 purposively selected patients with TB, with data collected via structured questionnaires and analyzed using Spearman's rho correlation test. The qualitative phase employed a descriptive approach, involving in-depth interviews with 11 patients and thematic analysis. Results showed that PFCC dimensions – respect, partnership, care coordination, communication, and information sharing – were significantly associated with perceived patient value, with respect showing the strongest correlation. Four main qualitative themes were identified: optimism regarding recovery, responses during treatment, provision of information, and family and health worker support. These findings confirm that patient-perceived value is closely tied to PFCC elements. The study suggests that integrating PFCC into TB healthcare programs through supportive strategies, such as care groups and tailored education, can improve adherence, reduce stigma, and enhance treatment outcomes.

Correspondence: Yosephina Elizabeth Sumartini Gunawan, Health Polytechnic of the Ministry of Health, Kupang, Indonesia.
E-mail: bettytjang@gmail.com

Key words: patient- and family-centered care; tuberculosis; patients.

Contributions: YESG, conceptualization, data curation, formal analysis, methodology, validation, visualization, writing – original draft, review & editing; STJM, LL, ML, WP, HBH, GTR, GHML, data curation, formal analysis, methodology, validation, visualization, writing – original draft, review & editing; DS, formal analysis, methodology, validation, visualization, writing – original draft, review & editing; II, writing – original draft, review & editing.

Conflict of interest: the authors declare no actual or potential conflict of interest.

Ethics approval and consent to participate: this research was approved by the Ethics Commission of the Kupang Ministry of Health Polytechnic Institution (no. LB.02.03/1/0072/2023). Written informed consent was obtained from all participants before the study.

Consent for publication: informed consent was obtained for the publication of anonymized patient information.

Availability of data and materials: all data generated or analyzed in this study are included in this published article.

Funding: this research was supported by a research grant from Poltekkes Kemenkes Kupang, Fiscal year 2023-2024 under the Higher Education Basic Research Scheme (No. DP.04.03/F.XXXVII/1072/2024).

Acknowledgments: the authors would like to thank the Director of the Kupang Ministry of Health Polytechnics and the academic community for their support, especially in completing this research.

Received: 19 December 2024.
Accepted: 29 April 2025.
Early view: 28 July 2025.

Healthcare in Low-resource Settings 2025; 12(s2):13505
doi:10.4081/hls.2025.13505

Introduction

Tuberculosis (TB) is a preventable and curable disease that poses a significant threat to global health. Although current TB treatments are effective when properly administered, challenges that impact patient quality of life and treatment adherence persist, primarily due to lengthy therapy.[1] The prolonged nature of TB treatment can have physical and psychological consequences on patients.[2,3] Individuals with TB experience debilitating symptoms that affect their physical and mental well-being, often leading to dietary changes, reduced activity, and difficulties in maintaining treatment adherence.[1,2,4] These issues are compounded by the TB stigma in many communities.[5] These conditions increase the risk of treatment discontinuation and contribute to disease transmission. Furthermore, quality of care correlates strongly with patient adherence and treatment outcomes. High-quality care involves emphasizing patient self-management and empowering individuals to participate in decisions to maintain health.[6,7]

TB remains a highly infectious disease with a significant global burden and is the second leading cause of death from infectious diseases worldwide,[6] particularly affecting low- and middle-income countries.[8-11] Indonesia ranks second globally in TB cases, reflecting its status as one of the countries with the highest TB burdens.[12] Within Indonesia, Sumba Island in East Nusa Tenggara Province exemplifies this challenge. In 2023, Sumba Island accounted for 20.2% of the total 9,535 TB cases in the province, an increase of 53.3% from the previous year. The island comprises

four districts – East Sumba, Central Sumba, West Sumba, and Southwest Sumba – which have experienced rising TB incidence.[13] Research has identified key obstacles to TB control on Sumba Island, including limited access to healthcare, inadequate infrastructure, and social stigma. The high TB prevalence and diagnostic delays are attributed to insufficient laboratory facilities and trained healthcare personnel. However, studies have suggested that community-based treatment approaches and enhanced public awareness through health education can improve early detection and treatment adherence.

Despite concerted efforts by governments to eliminate TB, these initiatives have not significantly reduced its incidence or mortality rates.[14] The rise in multidrug-resistant tuberculosis (MDR-TB) poses a serious threat to global public health by complicating diagnosis, increasing treatment failure, and raising mortality rates.[15-17] Family support behavior significantly influences TB outcomes, as patient and family perceptions of TB severity, treatment benefits, and care ability are linked to treatment adherence.[18,19] Implementing patient- and family-centered approaches at community health centers can enhance family involvement and improve self-care adherence.[20] Enhanced family knowledge about prevention, treatment adherence, and risk of failure positively influences patient motivation and compliance with long-term treatment.[21,22]

Factors that enhance patient care quality, including healthcare resources, family support, patient factors, and environmental influences, have led to the development of the PFCC model.[23-26] PFCC aims to improve care experience and health outcomes.[27] Within the PFCC, care quality serves as a key indicator of success, as assessed by patients based on their perceptions of value and involvement in decision-making.[28] Emotional and social support are essential components of the quality of life of TB patients. Studies show that patients receiving support from social networks and healthcare providers demonstrate improved psychological well-being and better symptom management. A patient-centered approach can help reduce stigma and discrimination faced by TB patients, fostering an inclusive environment. The elements contributing to patients' sense of value include respectful interactions, effective communication, collaborative partnerships, information accessibility, and coordinated care.[29,30] This study aimed to analyze the factors associated with TB patients' perceptions of value using the PFCC approach.

Materials and Methods

Research design

This study employed a mixed-methods design with an explanatory sequential approach to analyze the values of TB patients within the framework of the PFCC model. The quantitative phase utilized a cross-sectional design to identify patterns and associations. In contrast, the qualitative phase adopted a descriptive qualitative approach to explore the experiences of patients and families during TB treatment.

Population, sample, and sampling

The study population comprised TB patients in East Sumba, Central Sumba, and West Sumba Regencies, totaling 721 individuals: East Sumba (339), Central Sumba (129), and West Sumba (253). Given that the population exceeded 100, a sample size of 10-25% was deemed appropriate.[31] Accordingly, 25% of the participants were selected, resulting in 180 participants. Respondents were selected purposively based on study objectives and inclusion criteria. For the qualitative phase, data saturation was reached with 13 TB patients, three family members, one physician, and three TB health personnel. Participants from the quantitative phase were included in the qualitative phase where applicable. The sampling technique for both phases was purposive sampling. Inclusion criteria for the quantitative phase were undergoing TB treatment, aged 15 years or older, and able to communicate effectively. For the qualitative phase, participants needed to be undergoing treatment (for at least one month), able to communicate well, and willing to participate in interviews.

Variables

This study included both independent and dependent variables. The dependent variable was the perception of being *valued* by TB patients. The independent variables consisted of five key components of the PFCC model: respect, communication, partnership, information sharing, and coordination.

Instrument

The structured questionnaire was developed based on the PFCC model and the WHO Quality of Life questionnaire, focusing on assessing the value variable.[32] The instrument contained 20 items across five dimensions: respect (4 items), communication (4 items), partnership (4 items), information sharing (4 items), and coordination (4 items). Items were rated on a 4-point Likert scale: strongly agree (4 points), agree (3 points), disagree (2 points), and strongly disagree (1 point).

The questionnaire underwent validity and reliability testing with 30 respondents outside the main study population. Validity was assessed by comparing each item's r-value against the r-table value of 0.361; all items were valid. Reliability was measured using Cronbach's Alpha, with all dimensions showing acceptable internal consistency: respect (α=0.760), communication (α=0.795), partnership (α=0.921), information sharing (α=0.866), and coordination (α=0.934).

Qualitative data were collected through semi-structured interviews using a guide developed by researchers aligned with study objectives. The guide had three sections: the opening included questions to build rapport and assess participant readiness; the core section contained five open-ended questions exploring perceived value among TB patients; and the closing section involved expressing gratitude and arranging follow-up for transcript approval (member checking).

Data collection

Data collection began with obtaining research permits from East, Central, and West Sumba local governments. These permits were submitted to health offices and centers. The research team consulted TB coordinators at each center for data on registered TB patients as potential respondents. Each patient received a clear explanation of the study's purpose, procedures, benefits, and right to voluntary participation. Patients who agreed signed an informed consent form. Quantitative data collection involved a structured questionnaire, with researchers ensuring complete responses. For the qualitative phase, cooperative patients with relevant health histories were selected for in-depth interviews at participants' homes, mostly traditional raised houses typical of the Sumba community. Each interview lasted about 60 minutes. All interviews were conducted by the principal investigator, an Associate Professor of Nursing with a master's degree, who had no prior relationships with participants. Interviews were audio-recorded with detailed field notes, capturing verbal and non-verbal responses and contex-

tual observations. Triangulation occurred through Focus Group Discussions (FGDs) with TB program coordinators from participating health centers. The team reviewed interview transcripts to ensure consistent interpretation. Transcripts were returned to participants for member checking to ensure recorded data accurately reflected their perspectives.

Data analysis

Quantitative data were analyzed using Spearman's Rho correlation to assess relationships among variables, with significance at 0.05. For qualitative analysis, data were analyzed using thematic analysis based on Colaizzi's method. The process began with reading interview transcripts to gain an understanding of participants' experiences. Significant statements relevant to objectives were identified and coded into meaningful units. These codes were organized into themes and sub-themes through iteration. To enhance credibility, themes were returned to participants for confirmation. The findings were presented through a combination of text, tables, visual representations, and narratives to provide a comprehensive view of the experiences.

Ethical clearance

This research was approved by the Ethics Commission of the Kupang Ministry of Health Polytechnic Institution (ethics number LB.02.03/1/0072/2023).

Results

Characteristics of respondents in quantitative research

Data in Table 1 shows respondents are predominantly male (67%), with ages from productive to elderly, the largest group aged 15-34 (36.1%), and the smallest over 74 (8.3%). Respondent's data based on TB treatment history covers types of TB treatment, duration, and current stage. Most respondents (88.9%) undertook first-time TB treatment, while 11.1% had prior treatment.

Descriptive analysis

The descriptive analysis results are presented as percentages of each research variable, as described in Table 2.

Table 2 shows participants rated the most variables as "adequate", particularly in partnership (63%) and information sharing (58%). The "valued" and "care coordination" variables had higher proportions of "very good" ratings at 43% and 39% respectively. Partnership had the lowest "very good" ratings (26%), while Care coordination showed the highest "inadequate" ratings (12%).

Relationship between each variable

Table 3 presents Spearman correlation test results, indicating that all independent variables have significant relationships with the dependent variable (value). The "respect" variable has the strongest relationship with value, with a correlation of 0.769 ($p<0.01$), followed by partnership (0.477), care coordination (0.424), communication (0.421), and sharing information (0.362).

Table 1. Characteristics and treatment history of respondents with TB (n=180).

Characteristics of respondents	Category	n	%
Gender	Man	121	67
	Female	59	33
Age (years)	15-34	65	36
	35-54	45	25
	55-74	55	31
	>74 15	8	
Treatment history			
Types of TB treatment	First	160	88.9
	Second	20	11.1
Duration of TB treatment	Sixth month	180	100.0
Stage of treatment currently being undergone	Early	57	31.7
	Continued	123	68.3

TB, tuberculosis.

Table 2. Percentage distribution of factors related to TB patient perceived values using the patient- and family-centered care (PFCC) Approach (n=180).

Variable	Very good		Adequate		Inadequate	
	n	%	n	%	n	%
Valued	78	43	90	50	12	7
Respect	62	34	99	55	19	11
Communication	68	38	100	55	12	7
Partnership	46	26	114	63	20	11
Information sharing	59	33	105	58	16	9
Care coordination	70	39	89	49	21	12

These relationships exhibit a positive direction, indicating that increases in the independent variables tend to increase the value of the dependent variable.

Characteristics of participants in qualitative research

Table 4 shows that most participants were male (62%), with ages ranging from 22 to 96. Most participants worked as farmers (69%), while others were housewives, retirees, and traders. Eleven participants were in the latent TB treatment stage, while 2 participants were in the active stage. Three patients' families and three TB program managers at the Health Center were recruited as additional participants in this study to ensure that qualitative data triangulation was conducted correctly and that the information provided by the main participants was reliable and valid.

Categories, themes, and sub-themes

The content analysis of interviews yielded three categories, four themes, and eight sub-themes, detailed in Table 5. The categories are: 1) patient experience during TB treatment with two themes; 2) health education about TB during treatment with one theme; and 3) the key supporter of TB patients.

Category 1: patient experience during TB treatment

Theme 1: optimism about recovery after undergoing a TB treatment program

The first theme consists of two sub-themes: being motivated to follow the treatment program and hoping for recovery. This theme reflects TB patients' belief in undergoing treatment, with participants expressing optimism and hope that the treatment would help them recover from TB, as shown in the following participant's statement:

Table 3. Spearman's rho correlations between PFCC variables related to TB patients' perceived value (n=180).

Variable	Correlations					
	Value	Respect	Communication	Partnership	Information sharing	Care coordination
Value	1.000	0.769**	0.421**	0.477**	0.362**	0.424**
Respect	0.769**	1.000	0.433**	0.568**	0.398**	0.455**
Communication	0.421**	0.433**	1.000	0.614**	0.553**	0.526**
Partnership	0.477**	0.568**	0.614**	1.000	0.708**	0.680**
Information sharing	0.362**	0.398**	0.553**	0.708**	1.000	0.758**
Care coordination	0.424**	0.455**	0.526**	0.680**	0.758**	1.000

**Correlation is significant at the 0.01 level (2-tailed).

Table 4. Demographic and treatment characteristics of participants in the qualitative phase of the study on TB patients' perceived values using the PFCC approach.

Participant's code	Gender	Age (year)	Occupation	TB Treatment Stages
P1	Female	70	Housewife	Latent
P2	Man	22	Farmer	Latent
P3	Man	73	Farmer	Latent
P4	Man	96	Farmer	Active
P5	Female	41	Farmer	Active
P6	Female	57	Farmer	Latent
P7	Man	38	Farmer	Latent
P8	Man	68	Farmer	Latent
P9	Man	51	Farmer	Latent
P10	Man	76	Pensionary	Latent
P11	Female	61	Farmer	Latent
P12	Man	67	Salesman	Latent
P13	Female	50	Housewife	Latent

Table 5. Overview of categories, themes, and sub-themes from the qualitative analysis of TB patient values based on the PFCC approach.

Categories	Themes	Sub-themes
Patient experience during TB treatment	Optimistic about recovery after undergoing a TB treatment program	Motivated to follow the treatment program Hope for recovery
	Responses during the TB treatment program	Physical responses during treatment Psychological responses during treatment
Health education about TB during the treatment program	Providing information related to the TB treatment program	Interaction with health workers Revealing explanations about TB disease and TB treatment programs
The key supporter of TB patients	Family and health worker support	Family support in complying with the TB treatment program Support from health workers in complying with TB treatment programs

"I am happy to take this medication … and I am also optimistic about getting better" (P5)

"I never decided to stop taking my medicine… I want to be healthy and free from this disease" (P7)

Statements from participants illustrate their optimism and confidence in undergoing TB treatment. All participants said they would comply with the treatment program, believing it could improve their health status and help them recover from TB. The patient's family confirmed these statements as follows:

"Sometimes I feel sad seeing my mother always taking medicine, feeling unwell, or complaining of pain. However, I admire her spirit to keep taking it, saying she wants to recover quickly from TB" (T1)

"My grandpa himself knows the schedule to go for a check-up at the health center to get medicine, so He always reminds me to take him to the health center" (T3)

The TB person in charge agreed with the patient and family's statements above and said the following in the focus group discussion:

"All of the patients always feel happy when approaching the end of TB treatment or when they are about to finish treatment" (T4)

"All patients are confident with the treatment they are undergoing because there are changes, so they are diligent in their treatment and medicine intake" (T6)

Theme 2: responses during the TB treatment program

The second theme comprises two sub-themes: physical responses during treatment and psychological responses during treatment. This theme relates to physical reactions such as nausea, loss of appetite, getting tired quickly when walking, and psychological responses such as never feeling bored during treatment, feeling cared for, feeling happy, feeling treated well, feeling comfortable, and trusting family and health workers. The following are statements from several participants that support the theme:

"For the past 3 months, I have been taking medicine; even though it is a lot, I never get bored" (P3)

"I am happy to take this medicine because I feel there is a change; the pain I felt is starting to lessen" (P6)

"Before taking the medication, I got tired more quickly and had shortness of breath, but the complaints that I feel so far during this treatment period are a little less" (P7)

Participants reported their complaints decreased after taking TB medication regularly. Some still noted medication side effects but felt happy due to recovery benefits. These statements align with what their families and the TB person in charge stated below:

"My son told me that her stomach felt unwell every time she took the medication; he felt nauseous and tired quickly... but he still took the medication according to the prescription" (T2)

"The patients said that their weight has increased, their appetite has improved after treatment, and their coughing has also started to decrease. We have also told them that they can contact us at any time if they experience new complaints or if they feel there are other side effects during treatment" (T4-6)

Category 2: health education about TB during the treatment program

Theme 1: providing information related to the TB treatment program

This theme was divided into two sub-themes: Interaction with health workers and revelations about TB disease and treatment programs. The theme explains how health workers deliver information to respondents about TB disease and treatment programs. Respondents' statements that support this theme include:

"The health worker told me that I have an infectious disease… I have to take medication for 6 months to recover" (P2)

"The health center staff always tells me about TB disease, and I do not feel disturbed by it, and they remind me not to forget to take my medicine or not to miss any of the medicine schedules so that the disease does not relapse" (P10)

The interviewed families shared the same story, as they accompanied patients when health workers provided education about TB and their treatment program. It was expressed as follows:

"When the doctor first said that mom had to take this project medicine, the doctor and his staff explained it, but not all at once, maybe so that it would not be easy to forget. The explanation focused on how to take medicine, the schedule, the importance of not forgetting to take it, and the recommendation to immediately report to the Health Center if there were any complaints" (T1)

The TB person in charge confirmed explaining to all TB patients about the required treatment and possible side effects. Based on their experience, patient response to treatment side effects has mostly been nausea. Some interesting statements that support this are:

"Education about TB and its treatment is provided early, starting from the diagnosis. We use booklets, leaflets, and posters prepared at the Health Center, with language adjusted to ensure patients and their families understand" (T4)

"There was one TB extract patient who immediately consulted because his lump had become so big that it looked like it was going to burst after taking medication for two weeks, afraid that the medication was not suitable or that this was the right medication. His complaint had been forwarded and consulted to his doctor, and the doctor responded that those were the symptoms after treatment and to continue the treatment" (T6)

Category 3: the key supporter of TB patients

Theme 1: family and health worker support

The theme includes two sub-themes: the role of the family and the role of health workers. The key aspect is how families support patients in adhering to treatment and the assistance provided by health workers during TB treatment. Both forms of support are vital to the success of TB treatment as they motivate patients to complete the program. All participants stated the same regarding the support from family and health workers:

"During my illness, there has never been any rejection from my family; everyone at home supports me to get better quickly… they always remind me to take my medicine on time… With the support of my family, I can definitely get through this and recover" (P1-13)

"The doctor said I could recover as long as I obeyed the treatment. The nurse also patiently accompanies me when I feel tired or hopeless. The officer did give us their telephone number, so if we need something at any time or if we suddenly have a lamentation, we can call them" (P1-13)

This statement corresponds with the information provided by the patient's family, who expressed their support for the patient in adhering to the TB treatment program. This support encompasses accompanying the patient to medical appointments or medication administration at the health facility, ensuring medication adherence, encouraging the patient to complete the treatment, and providing additional assistance.

"All of us at home always supported them (the patients) in various ways, such as reminding them to take medicine on time, providing nutritious food, and ensuring that check-up schedules at the Health Center are not missed" (T1-3)

"We also always encourage and give confidence that even though this treatment takes a long time, it will bring healing... we also do not forget to pray for God's blessing" (T1-3)

The TB person in charge stated that family support is crucial for the success of TB treatment, particularly in monitoring medication intake. The following is a summary of several statements from TB managers regarding this theme:

"The selection of the patient medication observer (PMO) is not done directly by us but by the patients themselves, who choose, for example, their child, who helps remind them to take their medicine on time. The selected PMO must understand the TB treatment process well and should have a good emotional relationship with the patient" (T4-6)

"There has been no family rejection regarding TB treatment; patient and family response is very good. Patients show high awareness of treatment, supported by promises to take medication. PMOs face no difficulties since medication is taken with family from the start, and family members volunteer to be PMOs. In some cases, two PMOs from one family assist, so if one is absent, another can help, which is permissible" (T4-6)

Discussion

The findings of this study emphasize that the perceived quality of TB care is influenced by multiple factors, particularly the core dimensions of the PFCC approach – respect, partnership, care coordination, communication, and information sharing. In addition to these structural and relational elements, individual factors such as self-motivation, resilience, and life optimism also play a significant role in shaping positive perceptions of care. These combined factors contribute to improved well-being and quality of life, underscoring the need for a holistic, patient-entered approach in TB treatment programs.

The findings reveal that respect is fundamental to interactions between patients and healthcare providers. In this study, respect emerged as the strongest factor influencing TB patients' perceived value of care. When health workers show respect, it fosters patient trust and encourages participation in treatment.[33] Such interactions create an environment where patients feel valued and understood. This favorable climate enhances the care experience. When patients perceive respectful treatment, their satisfaction increases, leading them to value their treatment more – ultimately contributing to improved adherence and outcomes.[34-36] The finding indicates that clear communication enhances patients' understanding of medications and treatment plans while reducing anxiety, particularly through explanations of side effects. Participants felt more at ease after receiving comprehensive information about their therapy. Align with studies showing that effective communication helps patients understand medication instructions and expected reactions, build trust, and plays a vital role in treatment success.[34,37] Good communication reduces patients' emotional distress regarding their health status. By delivering accurate and empathetic information, healthcare providers can reinforce treatment adherence and improve health outcomes.[37,38]

Another essential dimension of the PFCC model is the partnership between patients and healthcare providers. Findings from this study indicate a strong relationship between partnership and patients' perceived value of care. This was reflected in multiple positive statements from participants who felt that health workers involved them in the TB treatment process. Although patients may not be involved in every decision, both they and their families expressed feeling valued and appreciated for their involvement. Additionally, strong partnerships cultivate an environment in which patients feel comfortable expressing concerns and asking questions, enabling healthcare professionals to offer more targeted support. This aligns with studies showing that when patients are actively involved in decisions about their care, they develop a greater sense of ownership and responsibility for their health.[39] This contributes to increased patient satisfaction and reinforces the value they assign to their care experience.[33,36,40]

Information sharing shows a significant positive correlation with perceived value among TB patients within the PFCC approach. When providers effectively communicate TB management information, patients and families are more likely to value the care provided. This supports research showing that accurate information enhances patient understanding, treatment adherence, and reduces stigma – an important factor linked to poor quality of life in TB patients.[41-46] Information sharing through education or media covers treatment plans, side effects, and compliance with evidence-based content.[47,48] Adherence depends on social, economic, health system, therapeutic, lifestyle, and geographic access elements.[49] Addressing these through support from families, providers, and communities is crucial to encouraging treatment and improving the quality of life for TB patients. Care coordination has a significant impact on the patient experience in TB treatment. Effective coordination between healthcare providers can reduce confusion and improve continuity of care. It is essential for TB patients, who require multidisciplinary care for optimal outcomes. Patients receiving coordinated services tend to be more satisfied and believe they receive comprehensive care.[50,51]

The interconnectedness of PFCC variables requires a holistic approach in TB care. Healthcare providers must address key aspects of patient interaction – respect, communication, partnership, information sharing, and care coordination – to enhance treatment value. These elements vary across cultural contexts, making culturally sensitive strategies essential. Cipta *et al.* (2024) emphasized that respect and communication hold different meanings across cultures, requiring adaptation to local norms.[52] Applying PFCC can motivate patients to complete treatment despite side effects or social stigma. Nurses play a vital role in providing safe, supportive care amid challenges. Stigmatization of TB patients demands comprehensive efforts at all levels for treatment success.[2,53,54] Without support, incomplete treatment may cause drug resistance, increased morbidity and mortality, and wasted

resources.[55] Therefore, implementing PFCC is vital to improving treatment adherence and public health outcomes.

Qualitative findings indicate that the first category identified is optimism about recovery after undergoing a TB treatment program. Optimism is a key psychological factor that enhances self-motivation in patients undergoing TB treatment. An optimistic outlook contributes to greater consistency in following treatment, persistence despite discomfort, and reduced risk of drug resistance. Patients with optimism are more enthusiastic and committed, helping them manage challenges such as fatigue, pain, and side effects during the six-month TB treatment regimen. This aligns with previous studies showing that optimism, positive attitudes, social support, and life satisfaction significantly improve adaptation and quality of life.[43,56,57] The second theme within this category concerns the TB treatment program. Patients reported experiencing both physical and psychological responses. Physical symptoms, such as chest discomfort due to pulmonary involvement, can hinder daily functioning and treatment adherence.[58,59] Psychological responses, including anxiety and stress, may lead to emotional changes and social withdrawal.[58] These effects can significantly reduce patients' quality of life. Therefore, continuous support from family, friends, and the surrounding community is essential. Such support helps foster motivation and optimism, enabling patients to navigate challenges and remain committed to completing their treatment.

In the second category, the theme identified is providing information related to the TB treatment program. Findings indicate that health workers are responsible for providing patients and their families with information about pulmonary tuberculosis and its treatment. Accurate, comprehensive, and reliable information plays a crucial role in improving patient understanding, adherence to treatment,[45] and reducing stigmatization associated with TB,[41-43,45] which negatively impacts patients' quality of life.[44,46] This information sharing can be delivered directly or through media,[47,48,60] and covers treatment details, side effect management, and the importance of adherence. Several factors influence adherence, including individual, social, economic, health system, therapeutic, lifestyle, and geographic access elements.[49] Addressing these factors supports positive behavioral change in taking TB medication, which enhances treatment outcomes and quality of life. This can only be achieved through the active cooperation and support of families and health workers directly involved in the TB treatment program.

In the third category, the theme identified is family and health worker support, which plays a vital role in the success of TB treatment. Patients who receive regular supervision and spiritual encouragement from family members, maintain good relationships with healthcare workers, possess TB-related knowledge, and benefit from strong support from policymakers demonstrate higher treatment adherence,[61,62] which contributes to high compliance in treatment.[45,63] In contrast, poor family support can lead to lower adherence levels.[64] Meeting the psychosocial needs of TB patients is also essential in sustaining optimism and motivation throughout treatment.[46] Therefore, optimal family support not only provides practical assistance – such as helping patients adhere to their treatment plan – but also offers emotional encouragement. This emotional support is critical for maintaining patients' spirits and motivation, enabling them to overcome treatment-related challenges and complete the therapy as prescribed. Thus, family and health worker involvement are key factors in improving treatment outcomes. The theme of optimism about recovery after undergoing a TB treatment program is closely linked to other themes in this study. Although responses during the TB treatment program include physical and psychological challenges that may lower optimism, effective coping helps sustain it.

Providing information related to the TB treatment program supports optimism by improving understanding, while family and health worker support enhances motivation through emotional and practical assistance. Together, these themes illustrate how various factors influence optimism. The integration of quantitative and qualitative findings provides valuable insights, underscoring the need for holistic, patient-centered interventions to enhance TB treatment adherence and outcomes.

Conclusions

The perceived value of TB patients undergoing treatment on Sumba Island was rated as adequate. All variables significantly influenced this perception, with respect showing the strongest correlation, followed by partnership, care coordination, communication, and information sharing. These aspects positively affect patients' quality of life during treatment. The qualitative findings supported these results through themes such as optimism about recovery, treatment responses, information provision, and support from family and health workers. These findings highlight the importance of using the PFCC approach. The implication is the need for value-based strategies, including TB care groups and targeted educational media, to improve treatment outcomes and adherence.

References

1. Ory MG, Ahn S, Jr SDT, Smith ML. Chronic disease self-management education: program success and future directions. Geriatr Model Care 2024.
2. Dilas D, Flores R, Morales-García WC, et al. Social support, quality of care, and patient adherence to tuberculosis treatment in Peru: the mediating role of nurse health education. Patient Prefer Adherence 2023;17:175–86.
3. Widyastuti M, Hastuti P, Kirana SAC, Farendita NH. The correlation of spiritual status and anxiety level in patients with pulmonary tuberculosis. J Ners 2020;15:67–71.
4. Indarto T, Sukartini T, Makhfudli M. Factors contributing to TB at primary health center in Sidoarjo-Indonesia. J Ners 2020;15:433–5.
5. Gunawan YES, Njurumana CA, Njakatara UN, et al. Cultural factors and family behavior in preventing the transmission of TB in The Nusa Tenggara Region, Indonesia. Int J Health Sci 2022;6:709–23.
6. Zainaro MA, Gunawan A. Kualitas pelayanan kesehatan rawat jalan dengan tingkat kepatuhan minum obat penderita tuberkulosis paru. Holistik J Kesehat 2020;13:381–8.
7. Zagdyn ZM, Kobesov NV, Rusakova LI, et al. Global tuberculosis burden in Russia and the world as a public health problem (historical and analytical review). Tuberc Lung Dis 2023;101:78–88.
8. Tegegn BA, Hailu BZ, Tsegaye BD, et al. Quality of care delivered to tuberculosis patients among public hospitals in central northeast Ethiopia. Ethiop J Health Sci 2020;30:671–80.
9. Yayasan KNCV Indonesia. Laporan Kasus Tuberkulosis (TBC) Global dan Indonesia 2022. Yayasan KNCV Indones 2022;1–8.

10. Dinanti FP, Erawati T, Hariyadi DM. Development of inhaled tuberculosis microparticle using polysaccharide polymers containing rifamycin groups: in-vitro and in-vivo study. Int J Drug Deliv Technol 2024;14:1116–23.
11. Juliasih NN, Koendhori EB, Semita IN. Prevention of tuberculosis transmission through mycobacterium tuberculosis detection in the air. Kesmas J Kesehat Masy Nas 2024;19:32–7.
12. World Health Organization. Global TB Report 2023. January. Geneva: 2023.
13. BPS. Sumba Timur Dalam Angka 2023. BPS Kabupaten Sumba Timur. 2023, p.10–288.
14. Chakaya J, Khan M, Ntoumi F, et al. Global tuberculosis report 2020 – reflections on the global TB burden, treatment and prevention efforts. Int J Infect Dis 2021;113:S7–12.
15. World Health Organization. Global Tuberculosis Report 2022. Vol. 13, Nucl. Phys. Geneva: 2022, p. 52.
16. Kusmiati T, Agustiyanto C, Rampengan VR. The sustainability approach to treatment of DR-tB patients through community social organization (aisyiyah). J Pure Appl Microbiol 2020;14:2477–81.
17. Surya Suameitria Dewi DN, Made Mertaniasih N, Soedarsono. Severity of TB classified by modified bandim tb scoring associates with the specific sequence of esxA genes in MDR-TB patients. African J Infect Dis 2020;14:8–15.
18. Wulandari R, Kusumawati A, Prabamurti PN. Dukungan Sosial Keluarga pada Pasien TB MDR di Kota Semarang. Media Kesehat Masy Indones 2021;20:41–9.
19. Ulfa M, Purnomo W, Indawati R. Factors that affect on the event of lung TB in Jati Kudus health center. Indian J Forensic Med Toxicol 2021;15:1254–9.
20. Ariani NP, Nuraeni A. Family and client approches to improve family support and tuberculosis client complience in self care. Enferm Clín 2018;29:462–7.
21. Donsu JDT, Harmilah, Ratnawati A, Adriani RB, Agussalim. Tuberculosis prevention development family model based in Indonesia. J Drug Alcohol Res 2021;10:1–5.
22. Sukartini T, Widianingrum TR, Yasmara D. The relationship of knowledge and motivation with anti tuberculosis drugs compliance in tuberculosis patients. Syst Rev Pharm 2020;11:603–6.
23. Deek H, Hamilton S, Brown N, et al. Family-centred approaches to healthcare interventions in chronic diseases in adults: A quantitative systematic review. J Adv Nurs 2016;72:968–79.
24. Grey M, Knafl K, McCorkle R. A framework for the study of self- and family management of chronic conditions. Nurs Outlook 2006;54:278–86.
25. Rachmawati DS, Priyantini D, Aini Q. Family factors and their relation to the treatment adherence of pulmonary TB patients in Surabaya. J Ners 2020;15:45–9.
26. Nabila N. Factors influencing patients with tuberculosis' compliance with using anti-tuberculosis medications (OAT) (TBC): literature review. Media Publ Promosi Kesehat Indones 2023;6:1478–84.
27. Hamilton Family Health Team. What is patient and family-centred care? 2022;1–2.
28. Rose L, Istanboulian L, Allum L, et al. Patient and family centered actionable processes of care and performance measures for persistent and chronic critical illness: a systematic review. Crit Care Explor 2019;1:E0005.
29. Aggarwal AN. Quality of life with tuberculosis. J Clin Tuberc Other Mycobact Dis 2019;17:100121.
30. Juliasih NN, Mertaniasih NM, Hadi C, et al. Factors affecting tuberculosis patients' quality of life in Surabaya, Indonesia. J Multidiscip Healthc 2020;13:1475–80.
31. Polit DF, Beck CT. Nursing research: Generating and assessing evidence for nursing practice. 12th ed. In Philadelphia: Wolters Kluwer; 2024.
32. World Health Organization. The World Health Organization Quality of Life (WHOQOL)-BREF. Geneva: 2004. p. 1–6.
33. Beach MC, Inui T, Frankel R, et al. Relationship-centered care: A constructive reframing. J Gen Intern Med 2006;21.
34. Beach MC, Sugarman J, Johnson RL, et al. Do patients treated with dignity report higher satisfaction, adherence, and receipt of preventive care? Ann Fam Med 2005;3:331–8.
35. Elander J, Beach MC, Haywood C. Respect, trust, and the management of sickle cell disease pain in hospital: Comparative analysis of concern-raising behaviors, preliminary model, and agenda for international collaborative research to inform practice. Ethn Heal 2011;16:405–21.
36. Saha S, Arbelaez JJ, Cooper LA. Patient-physician relationships and racial disparities in the quality of health care. Am J Public Health 2003;93:1713–9.
37. Sharkiya SH. Quality communication can improve patient-centred health outcomes among older patients: a rapid review. BMC Health Serv Res 2023;23:1–14.
38. Kwame A, Petrucka PM. A literature-based study of patient-centered care and communication in nurse-patient interactions: Barriers, facilitators, and the way forward. BMC Nursi 2021;20:1–10.
39. Karazivan P, Dumez V, Flora L, et al. The patient-as-partner approach in health care: A conceptual framework for a necessary transition. Acad Med 2015;90:437–41.
40. Pomey MP, Hihat H, Khalifa M, et al. Patient partnership in quality improvement of healthcare services: Patients' inputs and challenges faced. Patient Exp J 2015;2:29–42.
41. Marahatta SB, Yadav RK, Giri D, et al. Barriers in the access, diagnosis and treatment completion for tuberculosis patients in central and western Nepal: A qualitative study among patients , community members and health care workers. PLoS One 2020;1–18.
42. Chen X, Du L, Wu R, et al. Tuberculosis-related stigma and its determinants in Dalian, Northeast China: a cross-sectional study 2021;21:6.
43. Datiko DG, Jerene D, Suarez P. Stigma matters in ending tuberculosis: Nationwide survey of stigma in Ethiopia. BMC Public Health 2020;20:190.
44. Demirchyan A, Petrosyan V. Internalized social stigma and its determinants among drug-sensitive tuberculosis patients in Armenia. Eur J Public Health 2023;33:ckad160.558.
45. Chen X, Du L, Wu R, et al. The effects of family, society and national policy support on treatment adherence among newly diagnosed tuberculosis patients: a cross-sectional study. BMC Infect Dis 2020;20:623.
46. Sofiana L, Adi MS, Martini M, et al. Quality of life in tuberculosis patients in Yogyakarta. J Heal Educ 2023;8:9–18.
47. Feroz A, Jabeen R, Saleem S. Using mobile phones to improve community health workers performance in low-and-middle-income countries. BMC Public Health 2020;20:49.
48. Pradipta IS. Interventions to improve medication adherence in tuberculosis patients: a systematic review of randomized controlled studies. NPJ Prim Care Respir Med 2020;30:21.
49. Nezenega ZS, Perimal-lewis L, Maeder AJ. Factors influencing patient adherence to tuberculosis treatment in Ethiopia: a literature review. Int J Environ Res Public Health 2020;17:5626.

50. Simpson K, Nham W, Thariath J, et al. How health systems facilitate patient-centered care and care coordination: a case series analysis to identify best practices. BMC Health Serv Res 2022;22:1–17.
51. Möckli N, Simon M, Denhaerynck K, et al. Care coordination in homecare and its relationship with quality of care: A national multicenter cross-sectional study. Int J Nurs Stud 2023;145:104544.
52. Cipta DA, Andoko D, Theja A, et al. Culturally sensitive patient-centered healthcare: a focus on health behavior modification in low and middle-income nations—insights from Indonesia. Front Med 2024;11:1–7.
53. Probandari A, Sanjoto H, Mahanani MR, et al. Being safe, feeling safe, and stigmatizing attitude among primary health care staff in providing multidrug-resistant tuberculosis care in Bantul District, Yogyakarta Province, Indonesia. Hum Resour Health 2019;17:16.
54. Pradipta IS, Idrus LR, Probandari A, et al. Barriers and strategies to successful tuberculosis treatment in a high-burden tuberculosis setting : a qualitative study from the patient's perspective. BMC Public Health 2021;21:1–12.
55. Ruan Y, Li L, Xu L, et al. Practical experiences of delivering multidrug-resistant tuberculosis comprehensive supportive care services in China. China CDC Wkly 2021;3:566–8.
56. Ciria-Suarez L, Calderon C, Montes AF, et al. Optimism and social support as contributing factors to spirituality in Cancer patients. Support Care Cancer 2021;29:3367–73.
57. Sany SBT, Aman N, Jangi F, et al. Quality of life and life satisfaction among university students: Exploring, subjective norms, general health, optimism, and attitude as potential mediators. J Am Coll Heal 2023;71:1045–52.
58. Meghji J, Gregorius S, Madan J, et al. The long term effect of pulmonary tuberculosis on income and employment in a low income , urban setting. BMJ J Thorax 2021;387–95.
59. Rahajeng B, Shafira N, Utami P. Effects of anti tuberculosis side effect on the quality of life of tuberculosis patients in RSKP Respira Yogyakarta at the period of January-June 2019. In: Universitas Muhammadiyah Yogyakarta, editor. Proceedings of the 4th International Conference on Sustainable Innovation 2020–Health Science and Nursing (ICoSIHSN 2020). Yogyakarta: Atlantis Press; 2021, p. 321–6.
60. Pradipta ivan surya. Mengapa kegagalan pengobatan tuberkulosis banyak terjadi di Indonesia. Conversat 2021.
61. Chan M. Global report on diabetes. Geneva: World Health Organization; 2014. p. 58.
62. World Health Organization. United Republic of Tanzania – TB Community Network: a platform for a stronger community response to tuberculosis: case study. Geneva: World Health Organization; 2020.
63. Lisum K, Waluyo A, Nursasi AY. Treatment adherence among tuberculosis patients: a concept analysis. Open Access Maced J Med Sci 2021;9:20–8.
64. Sanjaya M, Mara DS. The role of the family in supporting the cure process of pulmonary TB Patients at the Pamatang Raya Health Center, Simalungun District. Medalion Med Res Nurs Heal Midwife Particip J 2016;106–10.