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Original Research

ASSERTIVE COMMUNICATION AND STRESS LEVEL AMONG FAMILIES LIVING WITH PULMONARY TUBERCULOSIS PATIENTS

Eko Mulyadi , Moh. Arroyhan, Abd Wahid

Faculty of Health Sciences, Universitas Wiraraja, Sumenep, East Java Province, Indonesia

*E-mail: eko.mulyadi@wiraraja.ac.id

Abstract

Background

Families play a pivotal role in supporting the recovery of patients with pulmonary tuberculosis (TB); however, this role is frequently accompanied by high psychological stress. This study aimed to examine the relationship between assertive communication and stress levels among families caring for pulmonary TB patients.

Methods

This analytical observational study employed a cross-sectional design. A total of 71 family members of TB patients were selected using a simple random sampling technique. Data were analyzed using the Spearman Rank correlation test with a significance level of $\alpha = 0.01$.

Results

Findings indicated that 50.8% of participants demonstrated moderate assertive communication, while 42.6% experienced mild stress levels. Statistical analysis revealed a significant correlation between assertive communication and stress levels ($p = 0.005$), indicating that higher assertive communication skills are associated with lower stress levels.

Conclusion

Assertive communication plays a vital role in mitigating stress among families of TB patients. Strengthening family assertiveness through psychoeducation and counseling interventions could enhance coping abilities and improve overall family well-being.

emergencies.

Keywords: Assertiveness; Psychological Stress; Family Relations; Pulmonary Tuberculosis; Caregivers.

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INTRODUCTION

Family support represents a critical component in the care and recovery of tuberculosis (TB) patients, particularly those with pulmonary TB, which remains one of the leading causes of mortality worldwide (WHO, 2023). Families serve as primary caregivers who ensure adherence to lengthy treatment regimens, provide emotional reassurance, and help mitigate the psychosocial burden associated with TB (Hassani et al., 2024). Despite these contributions, caregiving responsibilities often expose families to sustained psychological stress, stemming from fear of infection, uncertainty about the patient's prognosis, and the social stigma surrounding TB (Cuong Pham et al., 2021).

Globally, TB continues to be a major public health issue. According to the WHO Global TB Report (2023), there were an estimated 10.6 million new TB cases and 1.3 million TB-related deaths in 2022, marking an alarming resurgence after the COVID-19 pandemic. Indonesia ranks second worldwide in TB incidence, recording approximately 969,000 cases in 2022, highlighting the urgent need for effective psychosocial and behavioral interventions in TB management (Ministry of Health of Indonesia, 2024).

Families of TB patients often experience multiple stressors, including financial strain, disrupted family dynamics, limited access to health information, and prolonged caregiving periods (Amoah et al., 2017). High stress levels within families may compromise caregiving effectiveness, adherence to treatment, and the emotional stability of both patients and caregivers (Lohrasbi et al., 2023). Moreover, the absence of effective communication patterns within families exacerbates tension and impairs problem-solving capacity, leading to emotional exhaustion (Parfanovych et al., 2022).

Assertive communication—defined as the ability to express thoughts, emotions, and needs honestly and respectfully—serves as an essential coping mechanism in stressful caregiving contexts (Noh & Kim, 2021). Assertive family members are more likely to seek support, establish clear caregiving boundaries, and reduce interpersonal conflict, all of which contribute to lower perceived stress and enhanced mental well-being (Alberti, 2017). Conversely, non-assertive behaviors, such as passive or aggressive communication, may lead to frustration, miscommunication, and heightened emotional distress (Jandhyala & Kumar, 2024).

Therefore, exploring the relationship between assertive communication and stress levels among families of pulmonary TB patients is critical for developing targeted interventions that strengthen caregiver resilience and promote psychological adaptation. Such understanding

not only contributes to behavioral science literature but also supports the development of integrated TB care models that consider both medical and psychosocial dimensions of family health.

RESEARCH METHODS

Research Design

This study employed an analytical observational design using a cross-sectional approach to examine the relationship between assertive communication and stress levels among families living with pulmonary tuberculosis (TB) patients. The cross-sectional design was chosen because it enables the simultaneous measurement of both independent and dependent variables within a defined population, allowing the assessment of associations without temporal manipulation (Setia, 2016 ;Siedlecki, 2020) This design was particularly suitable for identifying psychosocial patterns related to caregiving among families of TB patients.

Setting and Samples

This study was conducted between March and July 2024 in the working area of the Gapura Community Health Center, located in Sumenep Regency, East Java Province, Indonesia. The region represents a semi-rural area with a relatively high prevalence of pulmonary tuberculosis (TB), making it an appropriate setting for investigating psychosocial aspects among families involved in TB patient care. The local TB control program has been operating under Indonesia's National Tuberculosis Program, which actively monitors patients through community-based health workers (Kementerian Kesehatan RI, 2023).

The study population comprised all families registered in the TB control program who had at least one household member diagnosed with pulmonary TB, totaling 71 families. From this population, a final sample of 61 respondents was selected using a simple random sampling technique to minimize selection bias and ensure representativeness of the population. This sampling approach aligns with recommendations for observational studies seeking to assess correlational relationships between psychosocial and behavioral variables (Polit, 2021)

To maintain methodological rigor, inclusion and exclusion criteria were clearly defined. The inclusion criteria were: (1) family members aged 18 years or older, (2) individuals who were actively involved in daily care or supervision of TB patients, (3) those able to communicate effectively in the Indonesian language, and (4) individuals willing to provide written informed consent prior to participation. Exclusion criteria included: (1) family members diagnosed with psychiatric disorders or cognitive impairments that might interfere with questionnaire completion, and (2) families whose TB patients passed away during the data collection period.

These criteria ensured that participants were capable of accurately reporting their experiences and maintaining emotional stability throughout the research process.

The sample size was determined using the Slovin formula, which is appropriate when population characteristics are known and the desired precision level is predefined. With a total population of 71 families and a 5% margin of error, the minimum required sample size was calculated as 61 participants. This sample size was considered sufficient to achieve adequate statistical power for non-parametric correlation analysis (Spearman's rank test), based on Cohen (2013) recommendations for effect size determination in behavioral research. Furthermore, the sample size aligns with the standards for community-based correlational studies, where a minimum of 50 participants is generally acceptable for achieving meaningful inferential outcomes.

Measurement and Data Collection

Data collection in this study employed two standardized and psychometrically validated instruments designed to measure assertive communication skills and perceived stress among family caregivers of pulmonary tuberculosis (TB) patients. The instruments were selected based on their established validity, reliability, and relevance to behavioral and psychosocial research in caregiving contexts.

Assertive communication was conceptualized as the family's ability to express feelings, needs, and opinions in an honest, clear, and respectful manner without violating the rights of others. Measurement of this construct utilized a 14-item Assertive Communication Skills Questionnaire, rated on a 4-point Likert scale ranging from 1 ("never") to 4 ("always"), with higher scores indicating stronger assertive communication abilities. The instrument was adapted from the Assertiveness Scale developed by Alberti (2017), which has been widely applied in interpersonal communication and behavioral research.

To ensure cultural appropriateness and linguistic accuracy, the instrument underwent a systematic adaptation process. Initially, three bilingual nursing and psychology experts reviewed the items for semantic and conceptual equivalence. Subsequently, a pilot test involving 20 caregivers of TB patients from a nearby community was conducted to assess clarity, cultural relevance, and item comprehension. Results from the pilot testing indicated satisfactory psychometric properties, with a content validity coefficient exceeding $r > 0.444$, confirming item relevance and representativeness. Internal consistency reliability, measured by Cronbach's alpha, yielded a coefficient of 0.81, indicating high reliability consistent with

previous studies that reported similar psychometric robustness in assertiveness assessments (Kerr et al., 2020).

Stress levels experienced by family caregivers were measured using the Perceived Stress Scale for Caregivers (PSS-C), which evaluates psychological strain and emotional burden associated with caregiving responsibilities. The instrument consisted of 14 items rated on a 4-point Likert scale (1 = “never” to 4 = “very often”), with higher total scores reflecting greater perceived stress. The PSS-C is derived from the original Perceived Stress Scale developed by Cohen et al. and has been adapted for use in caregiver populations, demonstrating robust construct validity and internal reliability across diverse cultural contexts (Lee, 2012 ; Lohrasbi et al., 2023)

Prior to implementation, the PSS-C was translated into Indonesian and subsequently back-translated into English following the World Health Organization’s (2020) forward–backward translation protocol to maintain linguistic and conceptual equivalence. A panel of bilingual health professionals and psychometric experts reviewed the translation to ensure semantic consistency and cultural sensitivity. The translated instrument demonstrated a Cronbach’s alpha of 0.84 in the present study, confirming strong internal reliability and consistency with prior research (Lohrasbi et al., 2023)

Data Collection Procedures

Data were collected through structured face-to-face interviews conducted by trained research assistants under the direct supervision of the principal investigator. Each research assistant received intensive training on data collection protocols, ethical considerations, and non-biased interviewing techniques to ensure standardization and minimize interviewer bias. Interviews were carried out during home visits, allowing for a comfortable and familiar environment that encouraged open communication and accurate self-reporting by participants.

The research team ensured confidentiality by assigning anonymous identification codes to all participants and securely storing completed questionnaires in locked files accessible only to the research team. All participants provided written informed consent prior to participation, following a comprehensive explanation of the study’s objectives, procedures, and voluntary participation rights.

Data Analysis

Data analysis was performed using SPSS (IBM Corp., Armonk, NY, USA). Descriptive statistics (mean, standard deviation, and percentage) were calculated to summarize participants’ characteristics. The Spearman Rank correlation test was applied to determine the

relationship between assertive communication skills and stress levels, as both variables were ordinal and did not meet normality assumptions. The significance level was set at $\alpha = 0.01$. The strength of correlations was interpreted based on the classification proposed by Schober et al. (2018).

Ethical Considerations

This study received ethical approval from the Health Research Ethics Committee, Faculty of Health Sciences, Universitas Wiraraja. All participants were provided with clear information regarding the study's objectives, procedures, confidentiality, and voluntary participation. Written informed consent was obtained prior to data collection. Participants were assured of their right to withdraw at any time without any adverse consequences. Data confidentiality was maintained throughout the study by using anonymized codes and secure data storage.

RESULT

Descriptive analyses were first conducted to illustrate respondents' demographic characteristics, including age, gender, education, and occupation. Subsequently, the levels of assertive communication and stress were assessed to provide an overview of the psychosocial conditions experienced by families of TB patients. Finally, inferential analysis using Spearman's rank correlation was performed to examine the relationship between assertive communication and stress levels.

Table 1. Respondent Characteristics Based on Age, Gender, Education, and Occupation

Characteristics	Category	Frequency (n)	Percentage (%)
Age (years)	19–30	16	26.2
	31–40	12	19.7
	41–50	11	18.0
	51–60	13	21.3
	>61	9	14.8
Gender	Female	34	55.7
	Male	27	44.3
Education	No formal education	23	37.7
	Elementary/Islamic Elementary School	28	45.9
	Junior High School	3	4.9
	Senior High School	4	6.6
	College/University	3	4.9
Occupation	Housewife/Unemployed	39	63.9
	Self-employed	12	19.7
	Fisherman/Farmer	10	16.4

The data in Table 1 indicate that the largest proportion of respondents were aged 19–30 years (26.2%), and the majority were women (55.7%). Regarding educational background, most respondents had completed only elementary-level education (45.9%), while a smaller proportion had attended higher education (4.9%). The dominant occupational group consisted of housewives or unemployed individuals (63.9%), followed by self-employed persons (19.7%) and fishermen or farmers (16.4%). This demographic profile suggests that the majority of respondents came from low educational and socioeconomic backgrounds, which may influence both communication behavior and stress-coping capacities.

Table 2. Assertive Communication in Families Living with Pulmonary Tuberculosis Patients

Category	Frequency (n)	Percentage (%)
Low	13	21.3
Moderate	31	50.8
High	17	27.9
Total	61	100.0

As shown in Table 2, half of the respondents (50.8%) demonstrated a moderate level of assertive communication, while 27.9% were categorized as high and 21.3% as low. These findings indicate that most families possess a fair degree of assertiveness in expressing feelings, needs, and concerns, though opportunities remain for improvement in assertive interaction within the family context of TB care.

Table 3. Stress Levels in Families Living with Pulmonary Tuberculosis Patients

Category	Frequency (n)	Percentage (%)
Severe	22	36.1
Moderate	26	42.6
Mild	13	21.3
Total	61	100.0

Table 3 shows that nearly half of the families (42.6%) experienced **moderate stress levels**, followed by severe (36.1%) and mild (21.3%) stress. The high proportion of families experiencing moderate to severe stress highlights the psychological burden associated with caregiving responsibilities for tuberculosis patients.

Table 4. Cross-tabulation of Assertive Skills with Stress Levels in Families of Pulmonary Tuberculosis Patients

Assertive Skills	Stress Level						Total	
	Severe		moderate		mild			
	N	%	N	%	N	%	N	%
Low	10	76.9	2	15.4	1	7.7	13	100.0
Moderate	6	19.4	21	67.7	4	12.9	31	100.0
high	6	35.3	3	17.6	8	47.1	17	100.0
Spearman's Rank Test p value = 0.005 < ($\alpha = 0.01$), Spearman's Correlation Coefficient r = 0.353								

As presented in Table 4, families with low assertive communication skills predominantly exhibited severe stress levels (76.9%), while those with moderate assertiveness mostly experienced moderate stress (67.7%). In contrast, families with high assertiveness were more likely to report mild stress (47.1%). The Spearman's Rank test revealed a significant positive correlation ($r = 0.353$, $p = 0.005$) between assertive communication and stress levels. This finding suggests that families who demonstrate greater assertiveness tend to experience lower stress when caring for members with pulmonary tuberculosis, emphasizing the importance of communication skills as a psychosocial protective factor.

Discussion

The results of this study revealed that families caring for pulmonary tuberculosis (TB) patients in the Gapura Community Health Center predominantly came from low socioeconomic and educational backgrounds. This demographic pattern has critical implications for health communication and stress management. Previous studies have consistently shown that lower educational attainment and economic constraints can hinder the development of adaptive coping mechanisms and assertive communication skills, limiting families' ability to express needs and negotiate support effectively (Cejalvo et al., 2021). In the context of TB care, families from lower socioeconomic strata often experience greater psychological strain due to limited access to health resources, stigma, and caregiving fatigue (Rajeswari et al., 2022). Such contextual disadvantages may exacerbate stress and reduce the family's capacity to engage in assertive interactions with healthcare providers or community members.

The moderate level of assertive communication found among participants suggests that while many families are capable of expressing their emotions and opinions, these abilities remain suboptimal when faced with the psychosocial pressures of chronic illness management. Assertiveness is an essential interpersonal skill that enables individuals to convey their thoughts and feelings clearly and respectfully without violating others' rights (Al-hawaiti et

al., 2025) Within families of TB patients, assertive communication facilitates open dialogue, shared decision-making, and collaborative problem-solving—all of which are critical to effective caregiving. Previous studies have demonstrated that assertiveness training can enhance caregivers' emotional regulation, improve patient–family relationships, and reduce burnout among those caring for chronically ill patients (Noh & Kim, 2021). Moreover, assertive communication promotes psychological resilience, empowering families to seek help and advocate for appropriate health services, thereby reducing the likelihood of distress and emotional exhaustion (Hassani et al., 2024)

Stress among family caregivers of TB patients remains a major public health concern. Chronic exposure to caregiving responsibilities, coupled with disease-related stigma and fear of infection, often leads to psychological distress, anxiety, and social isolation (Hammouda et al., 2025) The finding that a considerable proportion of families experienced moderate to severe stress underscores the heavy psychosocial burden associated with TB caregiving. Similar patterns have been reported in studies across various chronic conditions, where the caregiving role often triggers emotional overload and deteriorating mental well-being (Tesfaye & Demelash, 2025) Importantly, the significant correlation found between assertive communication and stress levels in this study reinforces the notion that interpersonal competence serves as a protective psychosocial factor. Assertive family members are more likely to engage in proactive coping strategies, communicate openly about caregiving challenges, and access social support, thereby mitigating stress responses (Di Corrado et al., 2023)

The association between assertiveness and stress can also be understood through the lens of social cognitive theory, which posits that self-efficacy—the belief in one's ability to perform a task successfully—plays a pivotal role in regulating emotional and behavioral outcomes (Bandura, 2012). Assertive behavior, as an expression of self-efficacy, allows caregivers to maintain control over their interactions and health-related decisions, reducing feelings of helplessness and anxiety (Alberti, 2017). Families who communicate assertively are better equipped to manage conflicts, establish supportive networks, and negotiate caregiving responsibilities, all of which contribute to lower perceived stress (Mehralian et al., 2023). In line with the Health Belief Model, families who perceive clear benefits from assertive communication are more likely to adopt it as a coping mechanism, leading to improved emotional well-being and adherence to treatment routines (Hassani et al., 2024)

Nevertheless, it is noteworthy that assertiveness alone does not fully explain variations in stress levels among families. The persistence of moderate to high stress, even among individuals with moderate assertive skills, suggests that external stressors—such as poverty, limited healthcare access, and social discrimination—may moderate this relationship (Cuong Pham et al., 2021). In particular, the stigma surrounding TB continues to impose psychosocial barriers, discouraging families from seeking support or disclosing their situation (Polat et al., 2024). Social isolation and fear of judgment may suppress assertive expression and exacerbate emotional distress. Therefore, interventions aimed at strengthening assertive communication should be complemented by community-based stigma reduction programs, mental health counseling, and economic empowerment initiatives.

The practical implications of these findings are significant for nursing and public health practice. Healthcare providers should integrate assertiveness training and communication skill development into family education programs for TB management. Structured workshops and counseling sessions can enhance caregivers' ability to express concerns, request assistance, and manage emotional strain effectively. Additionally, community nurses should play a proactive role in facilitating psychosocial support groups that promote assertive communication, empathy, and peer encouragement among TB-affected families. Strengthening these interpersonal competencies can not only reduce caregiver stress but also foster patient adherence, accelerate recovery, and ultimately improve TB control outcomes.

From a research perspective, this study contributes to the growing body of evidence linking interpersonal communication to mental health outcomes in chronic disease contexts. Its strength lies in the integration of psychosocial theory with empirical findings, highlighting assertiveness as both a behavioral and emotional resource in caregiving. However, the study's cross-sectional design limits causal inference, and the relatively small sample size may restrict generalizability. Future studies should employ longitudinal or intervention-based designs to explore causal mechanisms and evaluate the effectiveness of assertiveness-enhancement programs in diverse cultural settings. Furthermore, integrating qualitative approaches could provide deeper insights into how families perceive and enact assertiveness within the sociocultural context of TB care.

In conclusion, the present study underscores the critical role of assertive communication as a protective factor against stress among families of pulmonary TB patients. Enhancing assertive behavior through targeted educational and psychosocial interventions may strengthen

caregiver resilience, improve communication with healthcare professionals, and contribute to better overall TB management outcomes.

Implications

The study offers several practical implications. Health professionals, particularly community nurses and TB program managers, should incorporate assertiveness and communication-skills training into caregiver education modules. Such programs can strengthen families' ability to negotiate care responsibilities, advocate for patient needs, and reduce stress-related maladaptive responses. In addition, integrating psychosocial support services—such as family counseling, peer discussion forums, and stress management workshops—into TB care delivery could enhance caregiver resilience and improve patient treatment outcomes. Policymakers should also recognize caregiver well-being as an essential dimension of comprehensive TB control strategies.

Strengths and Limitations

A key strength of this study lies in its exploration of psychosocial and communicative variables within the family caregiving context for TB, an area that remains underexplored in low-resource settings. The use of validated instruments and inferential analysis strengthens the reliability of the findings. However, several limitations should be acknowledged. The cross-sectional design precludes causal inference, and the relatively small, geographically confined sample limits generalizability. Self-reported measures may also introduce social desirability bias, particularly in reporting communication behaviors. Future research should employ longitudinal or mixed-method designs to examine causal pathways, explore gendered dynamics of assertive communication, and assess the effectiveness of structured communication interventions in reducing caregiver stress.

Conclusion

This study highlights a significant relationship between assertive communication and stress levels among families caring for pulmonary tuberculosis (TB) patients. Families who exhibited higher levels of assertiveness experienced lower stress, suggesting that effective communication functions as a critical psychosocial buffer in the caregiving process. Assertive behavior enables caregivers to express needs, seek social and professional support, and manage emotional strain more adaptively. However, despite moderate to high assertiveness, many families continued to experience moderate to severe stress, indicating that other contextual determinants—such as socioeconomic status, health literacy, and social stigma—remain influential. These findings reaffirm that caregiving in TB contexts is not solely a biomedical

challenge but also a complex psychosocial experience shaped by communication, empowerment, and environmental constraints.

In essence, assertive communication should be recognized not only as a personal skill but also as a form of health capital that enhances caregiver resilience, promotes family well-being, and indirectly supports treatment adherence among TB patients.

Conflict of Interest

The authors declare no conflict of interest related to the conduct of this research or the publication of this article.

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