



Qualitative Study of Household Contacts' Perceptions of Barriers to Pulmonary Tuberculosis Transmission in the Kedaton Community Health Center Work Area, Bandar Lampung, Indonesia

Gusti Maharani¹, Dyah Wulan Sumekar Rengganis Wardani^{2*}, Sutarto Sutarto³, Reni Zuraida⁴,
Fitria Saftarina⁵

^{1,2,3,4,5}Master of Public Health Program, Faculty of Medicine, Universitas Lampung, Jl. Prof.Dr. Sumantri Brojonegoro No.1,
Bandar Lampung, Lampung 35145, Indonesia

ABSTRACT: Pulmonary Tuberculosis (TB) remains a public health problem due to the high potential for transmission to family members living in the same house as the sufferer. Although various health education has been provided, transmission prevention behavior has not been carried out optimally and continuously. This study aims to examine the perception of barriers in household contact families regarding the transmission of pulmonary TB. The study was conducted using a qualitative method through a case study design in the working area of the UPT Kedaton Health Center, Bandar Lampung, Lampung province Indonesia. Research informants consisted of 15 household contact family members, 1 health cadre, and 1 health worker selected using a purposive sampling technique. Data collection was carried out through in-depth interviews, observation, and documentation, then analyzed thematically based on the HBM construct. The results of the study indicate that the perception of barriers (perceived barriers) in the prevention and treatment of Pulmonary TB in household contact families still varies. Some informants admitted that they did not experience significant obstacles in carrying out preventive behaviors or accessing health services. Factors of cost, time, and access to health services were considered quite affordable due to the support of health facilities, BPJS, the environment, and family. This study found that perceived barriers were the most dominant factor influencing TB prevention behavior. These barriers included daily habits, environmental influences, social stigma, economic constraints, and low social support, all of which contributed to suboptimal TB prevention behavior. Furthermore, there are still beliefs that TB is caused by hereditary factors or mystical elements such as witchcraft. These findings emphasize the need for communicative, ongoing, and culturally appropriate health education to improve TB prevention behavior among household contacts.

KEYWORDS: Health belief model, Household contact families, Health perception, Pulmonary tuberculosis, Preventive behavior, Qualitative study.

INTRODUCTION

Pulmonary Tuberculosis (TB) remains a major public health problem worldwide due to its high incidence, mortality, and ongoing risk of transmission in the community. This disease, caused by *Mycobacterium tuberculosis*, is transmitted through respiratory droplets and most often occurs in environments with close contact, especially families living in the same house as sufferers (Zhang et al., 2024). Globally, Pulmonary TB remains one of the infectious diseases with the highest case burden and is a major challenge in achieving the TB elimination target by 2030. (Goletti et al., 2025) In Indonesia, the achievement of Pulmonary TB case detection still faces various obstacles, including low consistency of early detection and the still high transmission at the household level. (Wardani et al, 2018) This condition shows that controlling Pulmonary TB requires an approach that focuses not only on treatment, but also on efforts to prevent transmission within the family environment (Ministry of Health of the Republic of Indonesia, 2024).

In Lampung Province, the TB case detection rate in 2024 was recorded at approximately 76.3%, still below the national target of 90%. This figure indicates that there are still a significant number of unidentified TB cases, potentially perpetuating the chain of transmission in the community (Lampung Provincial Health Office, 2025). Meanwhile, in Bandar Lampung City, the number of TB cases continues to increase, reaching approximately 4,073 cases in 2022, increasing to approximately 4,500 cases in 2023, and again to approximately 4,986 cases in 2024 (Bandar Lampung Municipality Health Office, 2024). This increase in cases



indicates that TB transmission in the community is still active and requires strengthening early detection efforts, household contact investigations, and ongoing health education for the community (Lampung Provincial Health Office, 2025).

A similar situation was also found in the working area of the Kedaton Community Health Center in Bandar Lampung. Pulmonary TB program data shows that the Case Notification Rate (CNR) in 2022 was 279 cases, or 68%, in 2023 279 cases, or 68%, and in 2024 231 cases, or 67%. These figures remain below the national target of 90% for pulmonary TB control, indicating that there are still undetected pulmonary TB cases in the community. This increases the potential for Mycobacterium tuberculosis transmission in households and communities. In fact, household contacts are the most vulnerable group due to their high frequency of contact with active pulmonary TB patients (UPT Puskesmas Kedaton, 2025).

Various efforts to prevent and control pulmonary TB have been implemented by health workers through educational programs for patients and household contacts since the beginning of treatment. This education includes the use of masks, maintaining home ventilation, cough etiquette, and adopting a healthy lifestyle. However, in practice, preventive behaviors are still not consistently implemented. This condition indicates that health knowledge alone is not enough to form optimal preventive behavior. From the perspective of the Health Belief Model (HBM), health behavior is influenced by individual perceptions of susceptibility to disease (perceived susceptibility), the level of seriousness of the disease (perceived severity), the benefits of preventive measures (perceived benefits), perceived barriers, triggers for action (cues to action), and self-efficacy. Therefore, the HBM approach is considered relevant to understanding the behavior of preventing pulmonary TB transmission in household contact families (Khormi, 2025). Based on these conditions, this study was conducted to analyze the perceptions of household contact families about pulmonary TB transmission using the HBM approach in the work area of the Kedaton Health Center, Bandar Lampung. The study used a qualitative method with a case study design to explore in depth the family's perceptions regarding susceptibility, seriousness, benefits, barriers, cues to action, and self-efficacy in pulmonary TB prevention behavior. This research is expected to contribute scientifically to the development of health behavior theory and serve as a basis for health workers and policymakers in designing more communicative, sustainable, and culturally based health education programs to improve TB prevention behaviors among household contacts (Supinganto et al., 2020).

Based on this background, although various TB education and prevention programs have been implemented, preventive behaviors among household contacts are still not consistently implemented. This situation indicates that perceived barriers are a significant factor influencing families' decisions to take preventive measures against TB transmission. These barriers are not only physical and economic factors, but also include smoking habits, discomfort wearing masks, social stigma, low family awareness, and cultural beliefs that still persist in the community. Therefore, a deep understanding of perceived barriers among household contacts is crucial for designing more effective, communicative, and culturally appropriate TB education interventions and prevention strategies in Indonesia, particularly in the Kedaton Community Health Center working area in Bandar Lampung. This study aims to examine the perception of barriers in household contact families regarding the transmission of pulmonary TB.

METHODS

This research uses a qualitative approach with a case study design to deeply understand the perceptions of barriers among household contacts regarding the transmission and prevention of pulmonary TB in a real-life context. The case study approach was chosen because it allows researchers to intensively explore phenomena within specific time, place, and situational boundaries, thus obtaining a comprehensive picture of the experiences and dynamics occurring within the family environment. The research focuses on how household contacts interpret the risk of pulmonary TB transmission and implement preventive behaviors in their daily lives. This approach does not aim to produce statistical generalizations, but rather to provide a deep and contextual understanding of the phenomenon under study within the local sociocultural context.

In this research, the case study approach is combined with the HBM as a conceptual framework for interpreting the research findings. The HBM constructs; perceived susceptibility, perceived severity, perceived benefits, perceived barriers, cues to action, and self-efficacy, are used as guidelines for identifying and organizing themes emerging from the field data. The HBM is not used as a statistically measured quantitative variable, but rather as an analytical framework to understand how families perceive the vulnerability and seriousness of pulmonary TB, assess the benefits and barriers to preventive measures, and build confidence in implementing preventive behaviors. With this approach, the study was able to produce a more holistic and in-depth description of family perceptions of pulmonary TB transmission.



The study was conducted over two months, from March to April 2026, in the working area of the Kedaton Community Health Center in Bandar Lampung, Lampung province, Indonesia. Seventeen informants were selected using purposive sampling, a deliberate selection of participants based on specific criteria relevant to the study's objectives. Key informants were family members of household contacts of pulmonary TB patients, specifically adult males aged 17 and over who had received education on pulmonary TB transmission and prevention from health workers. In addition to considering the suitability of informant characteristics to the research focus, this technique also allowed researchers to obtain more in-depth information from individuals who truly understood the experiences and situations being studied. Data collection was conducted through in-depth interviews as the primary technique to explore informants' experiences, perceptions, and interpretations regarding the transmission and prevention of pulmonary TB. The interviews were conducted semi-structured, allowing researchers the flexibility to explore informants' answers through follow-up questions (probing). The data obtained were then analyzed descriptively and thematically through the stages of data reduction, data presentation, conclusion drawing, and verification. To ensure data validity, the study employed triangulation techniques through comparisons of interview results, observations, and documentation, as well as member checking with informants to ensure that the researcher's interpretations aligned with the participants' experiences and intended meanings. Thematic analysis was used for data analysis.

RESULTS

The working area of the Kedaton Community Health Center covers approximately 4.72 km², encompassing seven sub-districts: Kedaton, Sidodadi, Surabaya, Sukamenanti, Sukamenanti Baru, Penengahan, and Penengahan Raya. Geographically, this area borders several sub-districts in Bandar Lampung City and is dominated by land and hilly areas with fairly good transportation access. The distance between sub-districts to health facilities is relatively close, approximately 1 km, so access to health services is considered adequate and supports the implementation of various health programs, including the control of infectious diseases such as tuberculosis. In 2025, the population in the Kedaton Community Health Center working area was recorded at 61,429 people with uneven distribution, where Kedaton Village had the highest population of approximately 15,799 people, while Penengahan was the area with the lowest population of approximately 4,079 people. The majority of the population worked as civil servants, traders, and laborers, and the majority of the population was Muslim. The high population density and high social interaction in some areas have the potential to influence disease transmission patterns, including pulmonary tuberculosis. Nevertheless, the tuberculosis control program in the Kedaton Community Health Center has shown quite good results, marked by 100% coverage of suspected TB cases, a treatment success rate of approximately 94% in 2025, and no deaths during the treatment period. The number of active TB cases recorded in March–April 2026 was 17 (UPT Puskesmas Kedaton, 2025).

Informant Characteristics

Table 1. Informant Characteristics (n=17)

No.	Informant Code	Age (years)	Gender	Relationship with the patient	Education	Occupation
A.	Household Contact Family					
1.	I 1 – AW	24	Male	Nephew	Senior high school	Employee
2.	I 2 – F	25	Male	Younger brother	Vocational School	Freelancer
3.	I 3 – AD	17	Male	Son	Senior high school	Student
4.	I 4 – MD	31	Male	Son	Vocational School	Employee
5.	I 5 – B	51	Male	Father	Senior high school	Laborer
6.	I 6 – MD	82	Male	Husband	Junior high school	Unemployed



No.	Informant Code	Age (years)	Gender	Relationship with the patient	Education	Occupation
7.	I 7 – H	55	Male	Father	Senior high school	Employee
8.	I 8 – I	25	Male	Younger brother	Vocational School	Laborer
9.	I 9 – R	35	Male	Younger brother	Senior high school	Employee
10.	I 10 – R	32	Male	Older brother	Bachelor	Civil servant
11.	I 11 – S	66	Male	Father	Senior high school	Laborer
12.	I 12 – S	46	Male	Cousin	Diploma	Employee
13.	I 13 – M	65	Male	Husband	Senior high school	Laborer
14.	I 14 – M	55	Male	Younger brother	Senior high school	Employee
15.	I 15 – S	56	Male	Father	Senior high school	Employee
B.	Health Cadre					
16.	I 16 – K	43	Female	TB cadre	Senior high school	Housewife
C.	Health professional					
17.	I 17 – N	57	Female	Nurse	Bachelor	Nurse

Perceived Barriers

Research results indicate that perceived barriers to the prevention and treatment of pulmonary TB among household contacts vary. Some informants reported experiencing no significant barriers in implementing preventive behaviors or accessing health services. Cost, time, and access to health services were considered affordable due to support from health facilities, the National Health Insurance (*BPJS*), the community, and family. Although some informants still experienced social stigma and shame, these conditions did not significantly impact their prevention efforts. However, other groups identified practical barriers such as limited time due to work, smoking habits at home, a lack of masks, and low family awareness of consistently implementing preventive behaviors. On the other hand, some informants experienced more complex and fundamental barriers to the prevention and treatment of pulmonary TB. These barriers included difficult-to-change habits, laziness, frequently forgetting to wear masks or take medication, and low adherence to treatment. Furthermore, cultural factors, the use of alternative medicine, lack of family support, and busy work schedules also influenced the consistency of preventive behaviors. This condition shows that the perception of barriers is not only influenced by economic factors and access to health services, but also by psychological, social, and habitual factors that develop in the daily lives of household contact families.

Based on triangulation of sources, information from household contacts regarding perceptions and behaviors related to TB prevention was corroborated by statements from health cadres and community health center staff. Some families were found to have received education on mask use, cough etiquette, home ventilation, and testing of household contacts, but implementation remained inconsistent. Health cadres reported that some families still viewed TB as a common disease, a hereditary disease, or even associated with non-medical factors such as witchcraft. Health workers also explained that although education had been provided since the beginning of treatment, families' understanding was still influenced by education levels, culture, and community habits. These findings indicate that barriers to TB prevention are not only caused by a lack of information, but also influenced by families' subjective perceptions of the disease. Triangulation and field observations also indicated that families' self-efficacy in implementing TB prevention behaviors remains low. Some families understand the importance of mask use and maintaining environmental cleanliness, but often feel uncomfortable, forget, or are not yet accustomed to doing so consistently.



Furthermore, social stigma and fear of ostracism remain barriers to implementing screening and preventive behaviors in the household. Field observations revealed that some homes still suffer from poor ventilation, high occupancy rates, minimal lighting, and the practice of coughing without covering the mouth and suboptimal mask use when interacting with active TB patients. These conditions indicate that psychological, social, cultural, and physical home environments remain key challenges in efforts to break the chain of TB transmission among household contacts.

Thematic Analysis

Table 2. Thematic Analysis

Main theme	Sub-theme	Quote	Explanation
Perceived Barriers	Habits and forgetting to apply prevention, lack of awareness and family compliance	“Smoking is difficult” (I1), “Sometimes I forget to wear a mask” (I11), “Sometimes I use it, sometimes I don’t.” (I6). The healthy are less sensitive” (I5), “Less aware” (I16), “Don’t want to wear a mask” (I12)	Old habits and negligence are major barriers to TB prevention. Low awareness among family members hinders prevention efforts.
	Time and work constraints	“Because of work” (I1), “It’s hard to find time” (I5), “He has no time to work” (I17)	Workload is an obstacle to accessing services and adherence to treatment.
	Economic and facility barriers	“Cost” (I8), “It costs money” (I16), “There isn’t always a mask” (I11)	Economic factors and limited resources influence preventive behavior.
	Social stigma and shame	“Afraid of being told” (I5), “Embarrassed” (I12), “Often talked about me” (I12)	The existence of social stigma causes some informants to be reluctant to be open or consistent in carrying out prevention.
	Cultural beliefs and alternative medicine	“Black magic” (I16), “Hereditary disease” (I17)	Traditional beliefs cause delays in medical treatment.
	There are no significant obstacles	“There isn’t any” (I4), “None” (I7), “Nothing” (I15)	Some informants felt they had no obstacles in carrying out TB prevention.
	Support from healthcare professionals and family strengthens confidence. Inconsistency and low self-efficacy	“Very influential” (I1), “Very helpful” (I7), “Family reminds” (I12) “Not so sure” (I1), “Sometimes forget” (I6), “Not wearing a mask” (I3)	External support increases self-confidence and adherence to preventive behaviors. Some informants still show doubts and inconsistent behavior.

DISCUSSION

Interview results indicated that daily habits and low family awareness were the main barriers to pulmonary TB prevention. Several informants admitted to finding it difficult to quit smoking, often forgetting to wear masks, and inconsistently



implementing healthy lifestyle habits at home. This situation illustrates that preventive behaviors have not been fully implemented due to difficult-to-change habits and a lack of awareness of the risks of pulmonary TB transmission. In the HBM theory, these conditions are considered perceived barriers that influence the consistency of individual and family health behaviors (Aldila et al., 2024). In addition to habitual factors, busy work schedules and limited time also pose barriers to undergoing treatment and preventive measures for pulmonary TB. Informants stated that work demands make it difficult to have regular health check-ups, take medication on time, and consistently implement preventive behaviors. This situation has the potential to lead to delayed examinations and low treatment adherence, increasing the risk of transmission within the family and workplace. These barriers indicate that work factors and economic pressures significantly influence the success of pulmonary TB control (Bio et al., 2024).

Economic factors and limited healthcare facilities were also identified as significant barriers to pulmonary TB prevention and treatment. Several informants mentioned financial difficulties for transportation, medication, and even the provision of masks as a preventative measure. These financial limitations prevent some families from optimally implementing preventive behaviors. From the perspective of the HBM, these conditions constitute perceived barriers that can hinder an individual's ability to optimally implement health behaviors, especially in communities with low socioeconomic status (Daehn et al., 2024). This study also found that social stigma and cultural beliefs still influence community attitudes toward pulmonary TB. Some informants felt ashamed, afraid of being shunned, or being the subject of community discussion, making them reluctant to open up about their illness. Furthermore, there is still a widespread belief that pulmonary TB is caused by witchcraft or hereditary factors, rather than a contagious infectious disease. This misperception can lead to delays in testing and treatment, as communities are more influenced by cultural beliefs than medical understanding. These psychosocial and cultural barriers are important factors influencing TB prevention and treatment behaviors (Fuady et al., 2024; Marin et al., 2025). Nevertheless, several informants stated that they did not experience significant obstacles in implementing TB prevention and treatment. Informants felt that mask use, maintaining good hygiene, and medication adherence could be achieved with family support and adequate access to healthcare services. Family support, easy access to health information, and accessible healthcare services helped reduce perceived barriers. This suggests that lowering perceived barriers can encourage optimal TB prevention behaviors and adherence to treatment in daily life (Aldila et al., 2024).

Research Implications

The study results indicate that perceived barriers are a significant factor influencing TB prevention behavior among household contacts. These barriers include social stigma, economic constraints, suboptimal access to health services, and the influence of social and cultural conditions. Low awareness of disease risks, coupled with psychosocial barriers, leads to individuals being inconsistent in implementing TB prevention behaviors. These findings reinforce the HBM theory, which explains that perceived barriers significantly influence individual decisions regarding health actions.

This study demonstrates the need for health interventions that focus not only on increasing knowledge but also on reducing perceived barriers among families. Health workers need to provide more applicable education, provide regular mentoring, and strengthen social support through home visits, health cadres, and regular reminders. Furthermore, stigma against TB patients needs to be reduced through public education and community-based approaches to encourage families to be more open to TB testing and treatment. Family and social support are also important factors in increasing adherence to preventive behaviors. From a policy and research perspective, strengthening family-based TB control programs is necessary, taking into account social, economic, and environmental barriers. Health policies need to support easy access to services, provide affordable screening facilities, and improve housing conditions, such as ventilation and density. Furthermore, further research is needed to develop more measurable HBM-based interventions to reduce perceived barriers and increase the effectiveness of TB prevention behaviors in the community.

Limitation of study

This research has limitations because it uses a qualitative approach so that the research results are contextual and cannot be generalized widely.

CONCLUSION

Based on the research objectives, it can be concluded that the perceptions of household contact families regarding pulmonary TB transmission are formed through personal experiences, education from health workers, and the influence of the surrounding social environment. This study used a qualitative approach with a case study design to provide an in-depth description of how families understand and interpret the risk of TB transmission in their daily lives. The results showed that the formation of family perceptions is influenced by the interaction between knowledge, experience, culture, and socioeconomic conditions they experience. not yet fully understand the serious impact and risk of complications of the disease. This study found that perceived barriers are the most dominant factor influencing pulmonary TB prevention behavior. These barriers include daily habits, environmental influences, social stigma, economic limitations, and low social support, which cause prevention behavior to be less than optimal. Overall, this study shows that the prevention behavior of pulmonary TB transmission in household contact families is still less than optimal due to the influence of low perceptions of risk and seriousness of the disease and high barriers felt by families. Therefore, health workers are expected to improve education that is more communicative, contextual, and sustainable, accompanied by routine assistance so that families are better able to implement preventive behavior consistently. Community health centers also need to develop family-based prevention programs that consider social, cultural, and environmental factors. Furthermore, families are expected to be more active in maintaining healthy lifestyles and raising awareness of the risks of TB transmission. Further research is recommended to use a broader, longitudinal approach to assess sustainable changes in TB prevention behavior.

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