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Communication-Based Tuberculosis Transmission Prevention in Indigenous Communities in South Nias Regency

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Abstract. *The current Tuberculosis Detection Target in Indonesia for 2024-2025 has not been fully achieved. Many challenges remain to be overcome. Some patients do not complete treatment and discontinue treatment prematurely, which can lead to relapse, further transmission, and the emergence of drug resistance (MDR-TB or XDR-TB). Patients do not understand the importance of completing treatment even though they feel healthy and the dangers of MDR-TB if treatment is discontinued. The Community Service Method used in this community service activity consists of several systematic stages: preparation (Pre-Activity), socialization, interactive lectures, focused discussions or Focus Group Discussions (FGDs), evaluation, and follow-up. The results of this community service activity showed an increase in knowledge, attitudes, and actions in indigenous communities in preventing tuberculosis transmission. It is recommended that health workers always involve community leaders in TB prevention through an active communication approach as traditional leaders serve as role models in decision-making.*

Keywords: *Communication, Traditional Leaders, Medication Adherence, TB*

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INTRODUCTION

Tuberculosis (TB) remains one of the most persistent global public health challenges, particularly in low- and middle-income countries where structural, cultural, and economic barriers hinder effective prevention and treatment (Harries et al., 2020; Teibo et al., 2024). Although global TB incidence has gradually decreased in recent years, the disease continues to spread in marginalized communities that lack access to timely information, adequate health services, and culturally appropriate health communication strategies. As TB transmission is heavily influenced by social interaction patterns and behavioral practices, communication plays a pivotal role in interrupting the chain of infection (Simanjuntak et al., 2022; Frieden & Lee, 2020).

In Indonesia, TB continues to represent a significant national health burden despite decades of intervention. Kustanto (2020) and Nurbaya et al. (2025) said that, indonesia consistently ranks among the countries with the highest TB incidence worldwide, driven by factors such as population density, socioeconomic disparities, and varying levels of community health literacy. National programs have made considerable progress in expanding diagnostic

technologies and treatment availability; however, gaps remain in community-based awareness, adherence to preventive behaviors, and understanding of transmission mechanisms (Obeagu & Obeagu, 2024).

These gaps become more pronounced in geographically isolated and culturally distinct regions, where biomedical models of disease prevention may not fully align with local belief systems (Haydon et al., 2023; Awoke & Cosendey, 2025). Indigenous communities often maintain strong traditions, social hierarchies, and communication norms that shape their perceptions of illness and influence their health-seeking behaviors. As a result, standardized health messages may not resonate with these communities, reducing the effectiveness of conventional TB prevention campaigns.

South Nias Regency is one such region where indigenous cultural practices, communal living arrangements, and limited access to formal health infrastructure create a unique context for TB transmission. Nuraini et al. (2023), the regency consists of numerous traditional villages characterized by close social bonds, shared spaces, and daily collective activities. These social dynamics can facilitate the rapid spread of airborne diseases such as TB if preventive communication is insufficient or culturally mismatched (Afrianto, 2024; Shaluhiyah et al., 2025; van, 2023).

Indigenous knowledge systems in South Nias also shape how health information is shared, interpreted, and acted upon. Elders, traditional leaders, and family networks play central roles in disseminating knowledge and regulating community behavior (Al et al., 2025; Lusca et al., 2025). Therefore, effective TB prevention efforts must consider the cultural authority structures that influence communication flows within these communities. Failure to align messages with local norms can lead to misunderstanding, stigma, or resistance.

Previous studies have demonstrated that TB transmission in indigenous populations often persists due to weak communication pathways between health institutions and community members (Arakelyan et al., 2021). Health messages may not be translated into the local language, may not reflect local metaphors of illness, or may ignore deeply rooted cultural interpretations of coughing, weakness, and other symptoms. These limitations underscore the need for communication approaches that are not only informative but also culturally embedded (Hasan, 2023). In South Nias, challenges are further compounded by geographical barriers that limit access to healthcare facilities and health promotion activities (Handoko et al., 2024). Many indigenous villages are located in remote or difficult-to-reach areas, with limited transportation and infrastructural support. As a result, health promotion efforts often rely on irregular visits by health workers, making sustained communication efforts difficult to maintain.

Additionally, the persistence of stigma surrounding TB in indigenous communities creates obstacles to early diagnosis and treatment (Varughese et al., 2023). Misconceptions about the causes of TB sometimes tied to spiritual beliefs or traditional views of illness can discourage individuals from seeking help or disclosing symptoms. Abi et al. (2024), effective communication strategies must therefore address not only knowledge gaps but also the cultural meanings associated with TB. Given this context, communication-based approaches have emerged as a promising strategy for addressing TB transmission in indigenous settings. Such approaches emphasize the role of culturally contextualized message design, participatory dialogue, and community empowerment in fostering preventive behaviors. Rather than merely transmitting information, communication-based strategies aim to transform how communities interpret health risks and coordinate collective action.

Integrating local cultural values and indigenous communication channels into TB prevention efforts can significantly enhance message acceptance and behavioral uptake (Nan et al., 2022; Olaoye, A., & Onyenankeya, 2023; Njenga et al., 2025). Traditional gathering spaces, community rituals, and oral storytelling traditions central features of cultural life in South Nias can serve as effective platforms for disseminating health messages. When communication aligns with communal identity, communities are more likely to perceive TB prevention as a shared

responsibility. Moreover, empowering indigenous leaders, youth groups, and women's networks as communication agents can strengthen local ownership of health initiatives (Walsh & Black, 2023; Dutta, 2020). In South Nias, where authority is often relational and community-based, involving trusted figures in the communication process can help bridge the gap between biomedical recommendations and local cultural frameworks. This aligns with participatory communication models that prioritize collaboration over top-down instruction.

Despite the recognized importance of communication in disease prevention, research focusing specifically on communication-based TB interventions in indigenous communities of South Nias remains limited (Wihastiningrum & Kusuma, 2025). Existing public health studies tend to emphasize epidemiological data or clinical interventions, with less attention to how communication practices shape preventive outcomes. This gap highlights the need for more contextualized and culturally informed research. Addressing this gap is critical for developing prevention strategies that are not only scientifically accurate but also socially and culturally appropriate. By examining how indigenous communication systems function, how TB is perceived within these communities, and how messages can be adapted to local contexts, researchers can contribute to more effective and sustainable prevention models. Such approaches can reduce disparities and improve health equity in marginalized regions.

Therefore, this study aims to explore and analyze communication-based tuberculosis transmission prevention efforts within indigenous communities in South Nias Regency. Through a culturally grounded lens, the research seeks to understand the role of communication patterns, traditional leadership structures, and community participation in shaping preventive behaviors. Ultimately, the study aspires to inform more context-sensitive public health interventions that respect indigenous identity while strengthening collective action against TB.

METHODS

Department Implementation

Preparation Stage (Pre-Activity); Initial location survey to determine the level of community knowledge about TB. Coordination with local village officials/health centers/RT/RW.

Figure 1. Socialization of Compilation

Preparation of educational materials based on facts and in accordance with community literacy (using simple language). Preparation of educational media: Brochures/leaflets, Posters/banners, short videos, PowerPoint, teaching aids.

Figure 2. Preparation of Educational Media

Implementation of Socialization (Activity): The methods used in implementing activities include: (1) Interactive Lecture: Presentation on: What is TB?, Symptoms and how it is transmitted, Dangers if not treated, Duration and importance of treatment compliance, Prevention at home and in the environment, Accompanied by a question and answer session.

Figure 3. Implementation of Socialization

(2) Focus Group Discussion (FGD): To explore participants' understanding, answer myths or misperceptions about TB, encourage community involvement in finding and accompanying patients.

Figure 4. Focus Group Discussion

(3) Distribution of Educational Media: Brochures distributed to homes, Posters installed in strategic locations (village halls, mosques, integrated health posts), Videos played during events or shared via WhatsApp community groups.

Figure 5. Distribution of Educational Media

(4) Simple Health Check (Optional): If working with a community health center: TB screening (symptom questionnaire, education for sputum examination).

Figure 6. Simple Health Check

Activity Evaluation: Short pre-test and post-test (5 questions) to measure knowledge improvement: Interviews/participatory observation of residents. Activity documentation (photos, videos, attendance). Participant feedback: suggestions for further socialization: (1) 80% of participants experienced an improvement in their post-test scores; (2) At least one TB cadre was formed in each neighborhood unit; (3) Residents understood the duration of treatment and the early symptoms of TB; (4) Reduced stigma against TB patients based on informal interviews.

Follow-up: Encourage the formation of Community TB cadres, Compile reports and submit them to partners (health centers/sub-districts), Open communication channels between residents and resource persons if there are complaints related to TB, Compile digital materials to be distributed after the activity.

Figure 7. Activity Evaluation

Tuberculosis (TB), or TB, is an infectious disease caused by the bacterium Mycobacterium tuberculosis. It most commonly affects the lungs but can also spread to other organs. The bacteria are transmitted through the air when an infected person coughs or sneezes, and symptoms include a chronic cough, fever, night sweats, weight loss, and shortness of breath. TB can be cured with appropriate and complete antibiotic treatment and can be prevented through BCG vaccination, a healthy lifestyle, and maintaining environmental hygiene. South Nias Regency is a regency in North Sumatra. According to the Tuberculosis Information System of the South Nias Regency Health Office, the number of pulmonary TB cases increases annually. In 2020, 86 cases were detected, with 66 cases treated. In 2021, the number of pulmonary TB cases increased to 126 cases, with 118 cases treated. In 2022, the number of cases increased to 213 cases, with 261 cases treated. In 2023, 317 cases were identified, with 367 treated.

Treatment for pulmonary TB involves taking several types of medication regularly for six months. A person with pulmonary TB must complete the treatment according to the doctor's recommended dosage. Many TB patients forget or even neglect to take their medication and attend regular check-ups. As a result, the six-month treatment is ineffective, and the surviving TB bacteria become resistant to the drugs. Treating drug-resistant pulmonary TB is more difficult and expensive. Currently, there are still pulmonary TB patients in Indonesia who have not recovered, possibly due to non-compliance with medication. Non-compliance with medication can lead to the development of Multidrug-Resistant TB (MDR-TB). MDR-TB occurs when a patient stops taking medication before the treatment period is completed or frequently interrupts medication during TB treatment. TB treatment takes a long time (up to six to eight months) to achieve a cure and requires a combination of several drugs. Therefore, it is not uncommon for patients to stop taking their medication before the treatment period is completed, resulting in treatment failure.

Program success is determined by complete adherence to treatment, therefore, effective interventions are needed to improve early initiation, adherence, and completion of TB treatment. Data from the WHO (2022) indicates that the most dominant factors influencing TB patient adherence are TB drug side effects, duration of treatment, immigrant status, distance from the patient's home to health services, the patient's personal history, and perceived risk of TB. The influence of TB treatment adherence can be categorized into internal and external factors. Internal factors influencing adherence in pulmonary TB patients include the patient's personal characteristics and perceptions of adherence to TB treatment. If the patient's desire for recovery decreases, their perception of TB treatment will be negative, leading to irregular adherence in completing their treatment.

External factors influencing adherence to pulmonary TB treatment include support and information from healthcare workers regarding medication adherence. Friendly healthcare workers will motivate patients to complete treatment regularly, while minimal family support and incorrect treatment regimens can alter adherence. Support from family and community leaders (traditional) is an important factor in adherence to tuberculosis treatment to foster motivation for successful treatment, motivation becomes a driving force within individuals, especially those with pulmonary TB, so that they have the desire and will to behave in a compliant manner when taking medication.

CONCLUSION

One factor contributing to the success of TB treatment is communication and family support as medication supervisors (PMO). This relates to the role of a good family medication supervisor (PMO), which will impact treatment adherence, ensuring patients adhere to taking their medication regularly and promoting recovery. This aligns with the opinion of Blandina and Marselinus (2019), who stated that the family is the primary support system that provides direct care to family members, both healthy and sick.

SUGGESTION

It is recommended that health workers in South Nias Regency establish a traditional community team as a communication tool for preventing TB, thus facilitating the detection and monitoring of TB transmission.

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