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Low Tuberculosis Screening among Household Family Members of Tuberculosis Patients in Banyuarang and Sidowarek

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A B S T R A C T

Early tuberculosis detection is vital, necessitating widespread screening. The WHO's End Tuberculosis strategy aims to combat this epidemic. Active screening is critical for identifying asymptomatic individuals at risk. Data from Pulorejo Primary Health Center, Jombang, indicates a low 10% coverage of suspected cases in 2021, particularly among household contacts, resulting in continued transmission, late detection, post-treatment symptoms, and even death. Therefore, this study was conducted to determine the number of screening participation of households of tuberculosis patients in Banyuarang and Sidowarek Village. This research is a descriptive observational. The data collected was primary data from questionnaires. The study population consisted of households of tuberculosis patients in the Banyuarang and Sidowarek Villages, Jombang Regency. Data collected from 12 respondents showed the prevalent characteristics among the 12 respondents were predominantly female, adult age, high school education, working, limited knowledge about tuberculosis, and easy access to healthcare services. Among the 12 respondents in Banyuarang and Sidowarek, 9 respondents had never been screened, while 3 respondents had undergone screening. The primary reasons for respondents not undergoing screening were lack of awareness regarding the necessity of screening and busy schedules.

1. Introduction

Tuberculosis (TB) is a highly contagious infectious disease primarily caused by the Mycobacterium tuberculosis bacterium. Although it primarily affects the lung parenchyma, these resilient bacteria have the capability to infect various organs throughout the body. The prevalence of TB remains a pressing concern, especially in Indonesia, where it ranks third globally in terms of new TB cases, trailing only behind India and China. With a staggering 824,000 new cases and 93,000 annual deaths, the TB crisis in Indonesia continues to exact a heavy toll on public health. This alarming scenario underscores the need for urgent and comprehensive intervention from all stakeholders, as it places a substantial burden on both morbidity and mortality rates within the nation. Given this critical context, early detection of TB cases becomes imperative. Consequently, a robust TB screening program is an essential component of the public health response. In line with these efforts, the World Health Organization (WHO) has unveiled the End Tuberculosis strategy as part of its broader sustainable development goals. The overarching objective of this strategy is to combat and ultimately eliminate the global tuberculosis epidemic. To achieve this ambitious aim, it is crucial to conduct systematic and widespread TB screening programs. TB screening plays a pivotal

role in actively identifying individuals who may be infected but asymptomatic. These individuals are often at high risk of spreading the disease unknowingly. By pinpointing TB cases early on, appropriate medical interventions can be initiated promptly, curbing the transmission of the disease and reducing its impact on communities. In essence, the implementation of effective TB screening programs is not merely a healthcare initiative but a vital public health strategy. It serves as a cornerstone in the global effort to control and eventually eliminate tuberculosis, thereby safeguarding the well-being of populations worldwide [1].

As outlined in the Minister of Health Regulation No. 67 of 2016, TB screening, or case finding, is an integral component of the multifaceted strategy for TB control. It can be executed through various approaches, including active, passive, intensive, and extensive methods. However, to be truly effective, these screening efforts must be complemented by robust promotional activities designed to raise awareness and encourage early detection of suspected TB cases. In this regard, the importance of proactive promotion cannot be overstated. Active promotion campaigns play a pivotal role in ensuring that individuals, particularly those at risk, are well-informed about the signs, symptoms, and significance of TB. This knowledge empowers individuals to recognize potential TB cases and seek early diagnosis and treatment. While the regulations and guidelines are clear, the practical application of TB screening can face challenges, as evidenced by data from Pulorejo Primary Health Center in Jombang. The figures for 2021 indicate a troubling reality: TB screening coverage within its jurisdiction remains distressingly low, hovering at around 10%. This underwhelming screening rate, especially among individuals in close contact with TB patients within households, has dire consequences. A persistently low rate of TB screening contributes to the continued transmission of the disease within communities. This can lead to delays in the detection of TB cases, resulting in advanced stages of the disease upon diagnosis. Late-stage diagnoses, in turn, often translate into more severe symptoms, prolonged treatment periods, and increased residual health issues among patients even after successful treatment. Tragically, it can also lead to fatalities. In light of these sobering facts, it becomes increasingly evident that TB screening is not merely a matter of compliance with regulations but a critical lifeline for communities. It represents an opportunity to halt the transmission of TB, detect cases in their early stages, and ultimately save lives. Therefore, addressing the challenges in TB screening, especially in household contacts, is essential for improving public health outcomes and reducing the burden of TB in affected areas [2], [3].

A study showed a significant relationship between age, gender, marital status, race, education, occupation, distance, transportation, timing, health insurance, and knowledge with TB screening behavior, with occupation being the most dominant factor associated with TB screening behavior among household contacts. This emphasis on occupation underscores the intricate interplay between one's livelihood and healthcare-seeking behaviors. It suggests that the demands and constraints of one's job can have a profound impact on their ability to engage in health-promoting activities such as TB screening. Understanding this nuanced relationship between occupation and TB screening allows for more targeted interventions and support systems tailored to specific occupational groups. Furthermore, the sobering estimate that around 10 million individuals received a TB diagnosis in 2020 underscores the global magnitude of the TB burden. This statistic serves as a stark reminder of the urgent need for comprehensive TB control measures. It's essential to note that a significant portion of these diagnoses may come too late, as many TB patients exhibit mild or no symptoms initially. This delayed diagnosis, particularly when dealing with drug-resistant TB strains, has far-reaching consequences. Late-stage TB diagnoses are synonymous with more severe disease presentations, prolonged and intensive treatment regimens, and an increased likelihood of residual health issues even after successful treatment. Tragically, delayed diagnosis and misdiagnosis contribute to elevated rates of morbidity and mortality among affected individuals, compounding the already substantial toll exacted by TB. Moreover, the persistence of undiagnosed TB cases in communities allows for sustained TB transmission, perpetuating the cycle of infection. This underscores the critical role of early and accurate diagnosis not only in patient outcomes but in stemming the broader TB epidemic. In light of these findings, it becomes abundantly clear that addressing the complex web of factors influencing TB screening behavior is paramount. Such efforts must extend beyond healthcare facilities to encompass occupational settings, educational initiatives, and improved access to screening services, all of which can contribute to the prevention and control of TB on a global scale [4], [5].

2. Research Method

This research is descriptive observational. Primary data was gathered through the distribution of questionnaires. The study population consisted of households of TB patients in the Banyuarang and Sidowarek Villages, Jombang Regency. The sample represented a portion of the population that meets the criteria for sample selection. The sampling technique used was total sampling. Inclusion criteria for the study were ages 18-65, family members present at the time of sampling, and willingness to participate as respondents, while the

exclusion criterion was if the sample experiences a cognitive function decline.

Conceptual framework of this research is shown in Figure 1. One of the factors that increases a person's risk of contracting TB is living in the same household as a TB patient. This situation can make someone a suspected TB patient who needs to be screened. The demographic characteristics assessed for suspected TB patients include gender, age, highest level of education, and occupation. Then, factors that can influence someone to undergo TB screening include knowledge, access, occupation.

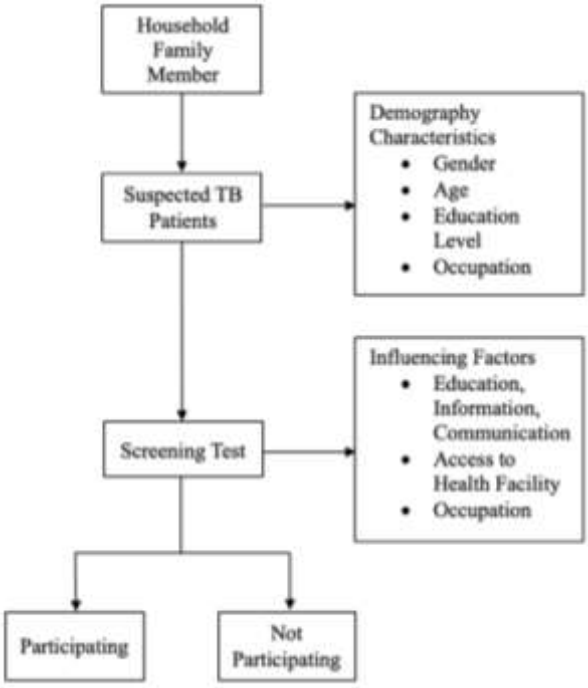

Figure 1. Conceptual Framework

3. Result and Discussion

3.1. Result

Data collection for this research was conducted on June 24, 2022, by gathering primary data using questionnaires about TB knowledge and access to healthcare services. Data collection was carried out by visiting each TB patient's household in Banyuarang and Sidowarek Villages. The study population consists of households of TB patients, with sample criteria being respondents aged 18-65, family members present at the time of sampling, and willing to participate as respondents. A total of 12 respondents were obtained, and their names, ages, genders, highest education level, occupations, and the number of household members were recorded. Subsequently, interviews were conducted using the research questionnaires shown in Table 1.

Table 2. Criteria Distribution

Characteristics	Total (n=12)	Percentage (%)
Gender		
Male	4	33.3
Female	8	66.7
Age Group		
Adult	10	83.3
Elderly	2	16.7
Education Level		
No Education	1	8.3
Elementary	2	16.7
Middle School	3	25.0
High School	6	50.0
Working		
Yes	7	58.3
No	5	41.7
Level of Knowledge, Attitude, and Behaviours		
Good	4	33.3
Fair	2	16.6
Poor	6	50.0
Access to health services		
Easy	12	100.0
Difficult	0	0.0

Table 1 shows the distribution of respondent characteristics, including gender, age, highest education level, occupation, knowledge level about TB, and access to healthcare services. Regarding gender, there were 4 males (33.3%) and 8 females (66.7%). The majority of the respondents were adults, totaling 10 individuals (83.3%). Furthermore, the distribution of the highest education level, from the most to the least, included 6 respondents (50%) with a high school education, 3 respondents (25%) with a junior high school education, 2 respondents (16.7%) with an elementary school education, and 1 respondent (8.3%) with no formal education. The proportion of working respondents was 7 individuals (58.3%), while 5 individuals (41.7%) were not employed. In terms of knowledge about TB among the respondents, the majority had a limited knowledge level, with 6 individuals (50%), followed by good knowledge in 4 individuals (33.3%), and fair knowledge in 2 individuals (16.6%). All respondents had easy access to healthcare services, with a 100% accessibility rate shown in Table 2.

Table 2. Tuberculosis Screening Participation

Tuberculosis Screening Participation	Total (n=12)	Percentage
Yes	3	17,6%
No	9	11,8%

The results of the interviews conducted using the research questionnaire revealed that 75% (9 out of 12 individuals) had never undergone screening, while 25% (3 out of 12 individuals) had undergone screening at least once shown in Table 3.

Table 3. Reasons for Not Participating

Reasons	Total (n=9)	Percentage (%)
Uninformed	6	66,7
Busy	3	33,3

The most common reason why the families of patients did not participate in screening was due to a lack of awareness about screening, with 6 out of 9 individuals (66.7%) stating this, while 3 individuals (33.3%) mentioned being busy as the reason for not undergoing screening.

3.2. Discussion

From the survey we conducted, we obtained 12 respondents, 4 of whom were male, and 8 were female. The number of female respondents was higher than male respondents who participated in our survey. Among the female respondents, a significant proportion identified as housewives and students, a factor contributing to the higher representation of females in our survey. This phenomenon can be attributed to the nature of these professions, which often entail longer periods spent at home. Consequently, our survey, conducted primarily through home visits, naturally favored the inclusion of female participants.

The age distribution of respondents among the total 12 individuals we surveyed shows that 10 out of 12 people are adults, while the remaining are elderly. This distribution aligns with the demographic profile of the surveyed area, where the adult population significantly outweighs the elderly population. This demographic disparity serves as one of the key drivers behind the observation that 10 of the 12 respondents in our study belong to the adult age group [3].

The educational status of the respondents in our data included 50% who had completed high school, and the remaining 50% had education levels other than high school (no education, elementary school, and middle school). Out of the 12 respondents, only 3 individuals had ever undergone TB screening. Among them, 2 had completed high school, and 1 had finished elementary school. Education is the process of acquiring knowledge and skills through teaching, training, or research. In the context of TB screening, according to a study conducted by Prameyllawati et al., education is related to non-participation in TB screening (p=0.01). The study states that respondents who did not complete high school were 4.20 times more likely not to participate in TB screening compared to those who had completed high school. This finding contrasts with the research conducted by Fitriani, which stated that there was no relationship between the education of TB patients and the occurrence of TB. Nonetheless, education does play a pivotal role in shaping an individual's knowledge base, including awareness of health-compliant housing and pulmonary TB. A well-informed individual is more likely to adopt a clean and healthy lifestyle. Furthermore, the Ministry of Health highlights the correlation between education and a patient's knowledge, which subsequently influences an individual's propensity to seek medical attention. Knowledge holds a pivotal position in guiding a person's actions, as behavior grounded in knowledge tends to exhibit greater sustainability than behavior that lacks such a foundation. Hence, it can be inferred that individuals with higher levels of education are better equipped to assimilate information regarding the symptoms and treatment of their illnesses, resulting in a more comprehensive and effective treatment and recovery process [6], [7], [8].

Based on a total of 12 respondents we surveyed, 10 out of 12 respondents are employed, while 2 are not employed. In a study conducted by Nurkumalasari et al., employment was not associated with TB case discovery in Ogan Ilir. Employment can influence the risk of TB exposure, depending on factors like job type, workplace conditions, and the socioeconomic status of individuals in particular professions. The quality of the work environment also affects an individual's susceptibility to diseases, as poor working conditions can contribute to the transmission of TB. Additionally, one's employment status can impact family income, subsequently influencing daily lifestyles, including dietary choices and healthcare practices [9].

The results of our survey using a questionnaire recorded that individuals with good knowledge, attitudes, and behaviors were 4, those with fair levels were 2, and those with poor levels were 6. Among all respondents, there were more respondents with poor knowledge about TB. Based on the results of a study conducted by Prameyllawati regarding the relationship between TB knowledge and non-participation in TB screening, there is a relationship with a value of (p=0.01). Respondents with poor TB knowledge are at a 3.77 times greater risk of not participating in TB screening compared to those with good knowledge. Attitude is one of the factors related to tuberculosis transmission prevention behavior, but some research results on family attitudes and tuberculosis transmission prevention behavior show inconsistent results. Research conducted by Djannah and Linda showed a relationship between attitude and tuberculosis transmission prevention behavior. Negative family attitudes lead to poor behavior in preventing tuberculosis transmission. However, this is in contrast to the research by Nasirudin and Nugroho, which found no relationship between attitude and tuberculosis transmission prevention behavior. Meanwhile, research conducted by Fitriani stated that there is a relationship between behavior (such as opening windows every morning and smoking) and the incidence of TB [6], [7], [10], [11], [12], [13].

Detecting TB patients is the first step in TB control program activities. One of the activities to find TB patients is by screening suspected TB cases. Screening is carried out at healthcare units or by examining household contacts of TB patients, especially those showing similar symptoms who should have their sputum examined. Based on the survey conducted, a total of 12 respondents, namely family members living in the same household as TB patients, were obtained. It was found that 9 individuals (75%) had never undergone TB screening, while the remaining 3 individuals (25%) had undergone screening. When asked about the reasons for not undergoing screening among these 9 individuals, it was found that the majority, which is 6 individuals, were unaware that they needed to undergo screening, while the other 3 individuals stated that they were too busy and did not have time to collect sputum samples at healthcare facilities. The lack of awareness among household members of TB patients regarding screening may be due to a lack of knowledge and information, education, and communication (IEC) from healthcare workers. One study showed that health workers providing IEC on TB patients had an 8.85 times greater chance of finding new cases compared to health workers who did not provide IEC to TB suspects or patients with pulmonary TB symptoms. Research conducted by Sukarna showed that there was a significant relationship between age, gender, marital status, race, education, occupation, distance, transportation, timing, health insurance, and knowledge with TB screening behavior, with occupation being the most dominant factor associated with TB screening behavior among household contacts. Difficulty in finding the right time, having no symptoms, stigma, and having to visit healthcare facilities were also the main reasons why household contacts did not undergo TB screening [4], [14], [15].

4. Conclusion

The most common characteristic distribution found among the 12 respondents included female gender, adult age, high school education, working, limited knowledge about TB, and easy access to healthcare services. Out of the 12 respondents in Banyuarang and Sidowarek, 75% of the respondents had never undergone screening, while 25% had undergone screening. The reasons for respondents not undergoing screening were not knowing that screening is necessary (66.7%) and being busy (33.3%).

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