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Drug resistance of tuberculosis patients at the Makassar city community lung health center hospital: case study

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ABSTRACT

Introduction: Drug-resistant tuberculosis (TB-RO) is still a health problem because of its rapid transmission with an increasing number of cases.

Objective: This study aims to discover in-depth patient knowledge about tuberculosis and the family's role in treating drug-resistant tuberculosis patients.

Methods: This research uses a qualitative case study approach with nine informants. The selection of informants was determined using a purposive sampling technique. Data collection was obtained through interviews and observations. Data analysis was carried out qualitatively.

Result: The research shows that informants' knowledge about drug-resistant tuberculosis depends on their educational history. In contrast, informants with low educational backgrounds only know the term tuberculosis but do not know the causes and dangers of drug-resistant tuberculosis. Another thing that was found was that the family also played a role in the patient's treatment by providing support and encouragement for the informant during the treatment period.

Conclusion: This research concludes that the informant's knowledge about tuberculosis plays an essential role in the occurrence of drug-resistant tuberculosis. The role of the family does not contribute to the occurrence of drug-resistant tuberculosis in the informant. It can be concluded that the earlier the age of menarche increases the risk of uterine myoma later in life. In contrast, slower menarche may be associated with a reduced risk of myomas. Other factors such as genetic, environmental, and lifestyle factors also influence the incidence of uterine myomas, but menarche age is one of the significant hormonal indicators of risk.

Keywords: drug-resistant tuberculosis, family role, knowledge.

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INTRODUCTION

Drug-resistant tuberculosis (TB-RO) is still a health problem due to its rapid transmission with an increasing number of cases. TB-RO is caused by bacteria that do not respond to OAT (Anti-tuberculosis drug), at least rifampicin and isoniazid, which are the most potent OAT for curing TB. According to the World Health Organization (WHO) Global TB Report in 2022, Indonesia has the second highest number of tuberculosis cases in the world after India. TB in Indonesia in 2022 is estimated to reach 1,060,000 instances (Hikmawati, Muhsina and Amandaty, 2023). In the case of drug-resistant tuberculosis (TB RO), Indonesia is one of the highest in the world, with an estimated 24,666 cases (Directorate General of Prevention, 2023). The number of tuberculosis case notifications in 2022 by province in Indonesia varies between 501 per 100,000 population in DKI Jakarta and 454 per 100,000 population in Papua Province. The notification rate for all tuberculosis cases in South Sulawesi Province is ranked ninth out of 34 provinces in Indonesia (Wei *et al.*, 2024).

Based on secondary data obtained from the Community Lung Health Center Hospital (BBPKM), the number of cases of patients confirmed positive for TB as of December 31, 2023, is 114 cases, while for patients confirmed to have TB RO based on the Drug-Resistant Tuberculosis Poly, there are 64 cases in 2023. The transmission source is when coughing or sneezing; sufferers spread germs through sputum splashes or nuclei droplets. Treatment that is stopped or does not comply with the Directly Observed Treatment Shortcourse (DOTS) standard can cause disease recurrence and the possibility of secondary resistance of TB germs to anti-tuberculosis drugs or Multi-Drug Resistance (MDR-TB) (Iswanti *et al.*, 2024). Inadequate drug treatment in individuals with TB will kill most bacteria but allow the growth of a small number of resistant organisms in emerging bacterial populations (Prommi *et al.*, 2024). Treatment of tuberculosis is carried out routinely for six months; if inadequate treatment continues, a small number of mutated organisms will develop resistance to other drugs and develop resistance to many anti-TB drugs. Sedangkan dengan MDR-TB, masa pengobatan menjadi lebih lama. Pengobatan dilakukan selama 24 bulan yang terdiri dari 8 bulan intensive phase and 16 months advanced phase. Heavy treatment causes patients to easily experience drug withdrawal, so efforts to provide family social support are needed while undergoing treatment. Family social support is an important aspect that can affect the success of TB-RO treatment (Duwairi and Melhem, 2023). Family social support includes informational, assessment, instrumental, and emotional support (Fan *et al.*, 2024). The higher the education, the higher a person's knowledge. Thus, through sufficient knowledge, a person will try to have clean and healthy living behaviors (Sanchini *et al.*, 2024). Public knowledge about TB disease, healthy living habits to increase body immunity, and understanding of TB treatment are essential things that must continue to be conveyed to the broader community; awareness should be constantly transferred to the wider community with its awareness in preventing the transmission of TB infection and playing a role in the success of TB treatment (Zhang *et al.*, 2024).

According to the initial information that the author obtained from the person in charge of the drug-resistant tuberculosis program at the Community Lung Health Center Hospital, information was obtained that patients diagnosed with drug-resistant TB were patients who did not complete treatment in the first line (withdrawal of drugs) and patients who contracted from sputum splashes of drug-resistant TB patients. According to the person in charge of TB RO, most patients are diagnosed with drug-resistant TB due to drug withdrawal where many factors influence patient non-compliance in taking medication, some of which are the patient's lack of understanding of tuberculosis, family support provided, isolation experienced by patients around the place of residence, the involvement of health workers in supporting the patient's treatment and the awareness of the patient himself. Based on the explanation above, I am interested in knowing more deeply about the case of drug-resistant tuberculosis patients at the Makassar City Community Lung Health Center Hospital.

MATERIALS AND METHODS

This study uses qualitative research with *a Case Study research* approach. This research was conducted at the Makassar City Community Lung Health Center Hospital in April-June 2024. The informants in this study consisted of seven primary informants, one supporting informant, and one key informant, which were taken using a *purposive sampling technique.* The primary informants in this study are drug-resistant tuberculosis patients, patient companion support informants, and key informants in charge of the drug-resistant tuberculosis program. The data collection techniques used in this study are in-depth interviews, observation, and documentation. Data analysis was carried out based on data obtained through *in-depth interviews*.

RESULTS

Description of the informant

The informants in this study amounted to nine people consisting of seven primary informants, namely drug-resistant tuberculosis patients who were undergoing treatment with an age range of 22-72 years old. One of the supporting informants is a health worker who accompanies patients with drug-resistant tuberculosis during treatment at the hospital. One key informant is a health worker and the person in charge of the drug-resistant tuberculosis program at the Community Lung Health Center Hospital.

Informant knowledge

In this study, it revealed the informant's knowledge about drug-resistant tuberculosis. The results of the interviews showed that not all the primary informants knew about the drug-resistant tuberculosis disease suffered, which was supported by the following statements:

"*I don't know what disease*" (I do not know, what disease) (NR)

"*I don't know that tong ii*" (I do not know that) (NA)

The two informants in this study did not know anything about tuberculosis, especially drug-resistant tuberculosis, because it was caused by several factors, including a lack of desire to access information. Five informants in this study knew about drug-resistant tuberculosis. They could recognize the symptoms of early-stage tuberculosis that occurred in them, such as fever, coughing up blood, fatigue, and weakness. Supported by the following statement:

"*Tuberculosis if the initial symptoms start to cough and cough for a long time, it is easy to get tired*" (The initial symptom is a prolonged cough and easy to get tired) (HW, AA, AL, AY, JS).

The results of the interview with the informant show that some informants know that tuberculosis can be transmitted to the closest people or other people and can become MDR TB. However, some informants say that if they have been affected by TB disease, they can no longer do their usual activities. These diseases can be recognized from the symptoms experienced, so they have the initiative to conduct examinations at the nearest health facility. The following is the statement of the informant:

"*It can be that the symptoms are like coughing up blood, so take the initiative to check at the health center because the danger of contagion is so*" (Dangerous diseases that are contagious with early symptoms can be recognized so that they can immediately carry out a direct examination to the health center) (AY).

The interviews with key informants confirmed that their understanding of tuberculosis disease was influenced by their knowledge, which was related to their background. Research has found that there are still informants who do not know about the causes, dangers, or prevention of drug-resistant tuberculosis. This is due to several factors, such as their educational background and the massive lack of information they receive.

Family Support

The informants in this study received family support for the treatment. The support of the family can be emotional, informative, and instrumental. The following is the statement of the informant:

"*The support of the NDIK family is extraordinary; they always told me to rest and pay attention to me. Every time they come to control, they are accompanied by neck, they are also reminded to take India*'s medicine" (the family provides support in the form of attention and is accompanied by treatment and reminded to take medicine) (AA)

"*That's just the spirit of being given the spirit of taking medicine so that the heart can heal so that you can be with your family again, or all the standard* gatherings again" (given the spirit to take medicine) (JS)

"*Family na give ja ka support ee take your medication regularly, the hours are also regular, don't buy what is prohibited with the doctor, take care of your health also don't stay up late so you manage your diet too*" (family provides support to take medication regularly and get enough rest and maintain a diet) (AY).

The interview results with the informant show that, in general, the informant received support and encouragement from his family during the treatment period. The family support provided was in the form of encouragement to the informant so that he could complete the treatment. The family's role in treating tuberculosis patients is quite significant, in addition to reminding informants to regularly take medication and accompanying informants for routine examination or control of taking medicines promptly. This is supported by a statement from a critical informant, in this case, the person in charge of the drug-resistant tuberculosis program in the hospital. The following is the informant's statement:

"It's huge; it's great if there is family support because those who don't have family support will give up if they take medicine and don't get regular like that. The influence is very great because, on average, those who have family support are all cured. Those who do not have support from the family, some are cured but do not regularly take their medication, and some quit" (family support contributes quite a lot in the treatment process of the main informant) (AM).

The results of interviews with key informants showed that the support provided by families to tuberculosis patients during the treatment period was very controversial in the patient's recovery process. The family support provided is in the form of encouraging and reminding them to take medication regularly. In addition, regarding the advice and instructions for taking medicine, the informant followed the advice given by the health worker, who was also helped to be reminded by the family. At the control or routine examination stage, the informant is reminded and accompanied by his family.

DISCUSSION

Knowledge

According to Bloom, Knowledge results from knowing, which happens after people sense a particular object. Sensing occurs through the five human senses, namely the senses of sight, hearing, smell, taste, and touch. Most of human knowledge is acquired through the eyes and ears. Knowledge is a critical domain in shaping a person's actions (overt behavior); many factors influence the knowledge possessed by individuals. Generally, the factors that affect knowledge can be classified into internal and external factors. Factors that affect this are age and gender, while external factors are education, work, experience, sources of information, interests, environment, and socio-cultural (Okumu *et al.*, 2024). One of the factors that can affect the incidence of drug-resistant tuberculosis in tuberculosis patients is the patient's knowledge of tuberculosis disease. The lack of knowledge about tuberculosis causes the patient to be at risk of being diagnosed with drug-resistant tuberculosis and becomes a source of transmission for those

around him (Hasan *et al.*, 2024). The knowledge of the primary informants in this study illustrates that most of the informants only know about tuberculosis but do not understand the causative factors and dangers of drug-resistant tuberculosis. From the information obtained, informants who know about tuberculosis can reveal the symptoms that occur if infected with tuberculosis, which informants also experience (Rao *et al.*, 2023).

However, some informants do not know and understand tuberculosis at all; it is known that informants see that they are sick with drug-resistant tuberculosis because they have experienced symptoms of tuberculosis for a long time, such as a prolonged cough accompanied by blood and fatigue quickly, then examine the nearest health facility (puskesmas) and obtain positive laboratory results for tuberculosis, so that the informant tries to carry out treatment (Muda *et al.*, 2024). Furthermore, from the results of the interview, it is known that most of the informants had previously received first-line tuberculosis treatment (6 months of treatment). However, they did not complete the therapy thoroughly (withdrawal from treatment), and most of the informants dropped out of treatment near the end of the treatment period; this is because the informants already felt healthy and did not experience symptoms like at the beginning of treatment (Madaki *et al.*, 2024). However, some informants stop taking medication at the beginning of treatment because they feel stressed about seeing the number of drugs that must be consumed. From the aspect of knowledge, the informant only knows the term tuberculosis disease in general but does not understand the causes, dangers, or impacts of tuberculosis disease; some informants do not understand at all about tuberculosis disease and the causes of drug-resistant tuberculosis disease because it is caused by several factors, one of which is the educational background of patients who only graduated from elementary school (SD) (Simsek *et al.*, 2024).

Education is one of the external factors and an essential thing in influencing a person's knowledge. For example, education is a means to get information in the health sector, so it positively influences a person's quality of life (Schwab *et al.*, 2024). Generally, the higher the level of education, the easier it is to receive information. The higher the education of a person or society, the easier it is for one to absorb information and implement it in daily life, especially in their health. Higher education will help people optimize and pay more attention to their health and nutrition, including in the prevention and treatment of TB (Bokolia *et al.*, 2024). The educational status of tuberculosis patients supports changes in health behavior, and high education will help a person absorb the information obtained (Desikan *et al.*, 2024). Patient education will affect patient knowledge because, with high education, patients will better understand the information received and the disease experienced in depth. Another factor contributing to the understanding of tuberculosis sufferers is age; age influences a person's grasp and mindset; the older he gets, the more developed a person's grasp and mindset, with the increase in the individual's age (Derendinger *et al.*, 2023). However, on the other hand, in this study, there is a lack of understanding about drug-resistant tuberculosis disease in the age group of >40 years because of limitations in accessing various sources of information in multiple media with current technological developments (Lina Yunita *et al.*, 2023).

Family Role

The role of the family is needed in the treatment process of tuberculosis patients. The family has a considerable role in providing support during the patient's treatment (Messah *et al.*, 2024). The family is the closest person to the patient and knows about the patient's condition or the person with whom the patient communicates daily. The family's existence is seen from the support and care provided in the treatment process of patients, both in the intensive and advanced phases (Wang *et al.*, 2023). The role of the family in this study is seen from the form of support provided to the patient in the form of enthusiasm, being reminded to take medication regularly, being reminded of the control schedule, being paid when going to treatment, and getting enough rest so as not to be too tired of activities (Du *et al.*, 2024).

The role of the family in this study is instrumental support in the form of material

providing socio-economic support in the form of cash to provide nutritional supplements such as milk, eggs, grains, and others (Mokrousov *et al.*, 2024). Second, information support in the form of this support is to provide advice, proposals, suggestions, instructions, and schedule information to conduct inspections. Third, emotional support. This type of support involves a sense of empathy and caring for someone to give comfort and make the patient feel better. Patients regain their self-confidence and feel loved when they experience stress due to treatment. In this case, the patient feels they have received social support (de Vos *et al.*, 2024). According to research, families provide support through instrumentals, namely facilitating clean and comfortable housing, transportation, and funds during control visits and providing adequate nutrition. Emotional support and assessment in the form of motivation and enthusiasm, listening to complaints, and assuring that the tuberculosis disease suffered can be cured if the patient adheres to taking medication. Furthermore, the support provided by the family has a significant influence on tuberculosis patients during treatment so that patients do not quit medication, which has an impact on the occurrence of drug-resistant tuberculosis (Jin *et al.*, 2024).

CONCLUSIONS

Informant's knowledge of tuberculosis plays an essential role in drug-resistant tuberculosis, where the patient's knowledge is related to their educational background. Where there are still informants with low educational backgrounds, so it has the consequence of delays in treatment and prevention that have an impact on healing. Meanwhile, the role of the family does not contribute to the occurrence of drug-resistant tuberculosis because, in the treatment phase, the family has participated in providing support to the informant both instrumentally, informationally, and emotionally.

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