

Enhancing Family Support to Combat Treatment Non-Adherence in Multi-Drug Resistant Tuberculosis Patients at H. Adam Malik Hospital, Medan

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ABSTRACT

This study aims to analyze the impact of family support on treatment non-adherence in MDR-TB patients at H. Adam Malik Central General Hospital, Medan, in 2021. The research utilized a case-control design, with the study population comprising all outpatient MDR-TB patients who were adherent and non-adherent to treatment at H. Adam Malik Central General Hospital in 2022. The sample size included 51 adherent and 51 non-adherent patients. Data were analyzed using logistic regression. The results showed that family support significantly influenced treatment non-adherence in MDR-TB patients (OR=16,640; 95% CI 4,584-60,399; p=0.001). Integrating family support into the care of MDR-TB patients is recognized as an effective strategy to enhance adherence and treatment outcomes. Collaboration between medical teams and families can provide a foundation for a holistic MDR-TB treatment program.

INTRODUCTION

In the context of achieving the Sustainable Development Goals (SDGs), Multi-Drug Resistant Tuberculosis (MDR-TB) has a significant impact on various dimensions of sustainable development. Directly related to SDG 3 on Health and Well-Being, MDR-TB poses a barrier that must be overcome in the global effort to end the epidemic of infectious diseases and ensure universal access to quality healthcare services. Additionally, the high treatment costs associated with MDR-TB can become an economic burden, widening inequalities and creating challenges in achieving SDG 1 related to Poverty Eradication (SDGs, 2015). Beyond these impacts, MDR-TB also has serious implications for health inequality, posing a threat to the vision of SDG 10, which emphasizes the importance of achieving equality in access to healthcare services. Therefore, addressing MDR-TB is not only a health agenda but also an integral part of the sustainable development agenda that promotes inclusivity and equality (SDGs, 2015).

The importance of global partnerships in tackling MDR-TB reflects the spirit of SDG 17 on Partnerships for the Goals. Joint efforts between countries, international organizations, and the private sector are necessary to develop effective, holistic solutions to comprehensively address the challenges of MDR-TB. Integrating health dimensions, prevention, and treatment of MDR-TB into sustainable development strategies is essential to achieve the holistic, sustainable, and inclusive vision of the SDGs (SDGs, 2015). Tuberculosis (TB) is the second leading infectious disease causing death after COVID-19 (WHO, 2021). There are several challenges in TB treatment, one of which is the emergence of Multi-Drug Resistant Tuberculosis (MDR-TB). Factors contributing to MDR-TB include non-adherence to treatment and direct transmission from other MDR-TB patients (Ministry of Health RI, 2015). Once a patient falls into the MDR-TB category, treatment and recovery become more difficult because isoniazid and rifampicin, the strongest therapies for *Mycobacterium tuberculosis*, are ineffective. Additionally, the longer treatment duration affects patient adherence to therapy (WHO, 2021).

Globally, in 2019, an estimated 465,000 incident cases of MDR-TB were reported. Geographically, nearly 50 percent of MDR-TB cases were in India (27 percent), China (14 percent), and the Russian Federation (8 percent). Of the total global MDR-TB cases, an estimated 13.1 percent of new cases and 17.4 percent of previously treated cases had isoniazid resistance. This proportion translates to approximately 1.4 million incident cases of isoniazid-resistant TB in 2019, with 1.1 million cases also resistant to rifampicin. In 2020, 150,359 people were registered for MDR-TB treatment. The cumulative number of people reported to have started treatment for MDR-TB from 2018 to 2020 was 482,683, only 32 percent of the five-year target (2018-2022) of 1.5 million people set by the UN (WHO, 2021).

Indonesia ranks third among the 30 countries with the highest TB burden and ranks first for MDR-TB cases in the ASEAN region. In 2020, Indonesia reported 79,000 confirmed MDR-TB cases, with 52,000 cases starting treatment (WHO, 2021). Additionally, 55 percent of MDR-TB patients were undiagnosed, thus not receiving optimal treatment. According to national MDR-TB data in 2015, Indonesia had 18,000 MDR-TB cases, with 15,300 suspected cases, 1,860 confirmed cases, and 1,566 cases undergoing treatment (Ministry of Health RI, 2015). In 2018, an estimated 24,000 MDR-TB patients were reported, but only 9,038 cases were diagnosed, with 46 percent of those cases starting treatment (USAID, 2021). In 2021, North Sumatra was the fifth-highest province for MDR-TB cases, with 1,838 cases, 555 of which were in Medan. In 2022, Medan reported 24,666 MDR-TB cases (Ministry of Health RI, 2022). Family support is a key factor in patient adherence to treatment.

A preliminary survey conducted at H. Adam Malik Central General Hospital on Wednesday, June 15, 2022, revealed that there were 770 MDR-TB cases in 2021, with 202 inpatient cases and 568 outpatient cases. The preliminary survey indicated that out of 78 outpatient MDR-TB patients at H. Adam Malik Central General Hospital in 2021, 47 patients, or 60 percent of the total MDR-TB patient population, were non-adherent to the treatment regimen. This finding highlights a significant level of non-adherence among MDR-TB patients during the year, underscoring the importance of identifying, understanding, and addressing factors contributing to non-adherence to enhance the effectiveness of clinical management and interventions in MDR-TB treatment within the hospital setting. A brief interview with healthcare workers at the MDR-TB clinic of H. Adam Malik Central General Hospital revealed that the main reason for patients attending the MDR-TB clinic was non-adherence to returning for medication and taking their medication.

A brief interview with five MDR-TB patients undergoing treatment at the same clinic at H. Adam Malik Central General Hospital identified several factors behind patients' lack of adherence to completing treatment. Male patients, young adults, those with low education levels, and the unemployed tended to be more frequently categorized as non-adherent. Conversely, female patients, older adults, those with higher education levels, and those employed showed higher adherence rates to MDR-TB treatment. In addition to patient characteristics, these factors include family support, which is suspected to influence non-adherence to MDR-TB treatment. Based on the above phenomena and data, this study will analyze the Determinants of Treatment Non-Adherence in Multi-Drug Resistant Tuberculosis Patients at H. Adam Malik Central General Hospital, Medan, in 2021.

LITERATURE REVIEW

The importance of global partnerships in tackling MDR-TB reflects the spirit of SDG 17 on Partnerships for the Goals. Joint efforts between countries, international organizations, and the private sector are necessary to develop effective, holistic solutions to comprehensively address the challenges of MDR-TB. Integrating health dimensions, prevention, and treatment of MDR-TB into sustainable development strategies is essential to achieve the holistic, sustainable, and inclusive vision of the SDGs (SDGs, 2015). Globally, in 2019, an estimated 465,000 incident cases of MDR-TB were reported. Geographically, nearly 50 percent of MDR-TB cases were in India (27 percent), China (14 percent), and the Russian Federation (8 percent). Of the total global MDR-TB cases, an estimated 13.1 percent of new cases and 17.4 percent of previously treated cases had isoniazid resistance. A preliminary survey conducted at H. Adam Malik Central General Hospital on Wednesday, June 15, 2022, revealed that there were 770 MDR-TB cases in 2021, with 202 inpatient cases and 568 outpatient cases. The preliminary survey indicated that out of 78 outpatient MDR-TB patients at H. Adam Malik Central General Hospital in 2021, 47 patients, or 60 percent of the total MDR-TB patient population, were non-adherent to the treatment regimen.

METHODOLOGY

This study employs an analytical observational approach with a case-control study design to investigate non-compliance determinants in Multi-Drug Resistant Tuberculosis (TB-MDR) patients. The case group includes non-compliant TB-MDR patients aged 15-65 at RSUP H. Adam Malik, while the control group comprises compliant TB-MDR patients in the same age range at the same hospital. The research is conducted within the operational area of RSUP H. Adam Malik in Medan. The study period spans from July 2022 to August 2023, and the location is RSUP H. Adam Malik in Medan. The research population consists of all outpatient TB-MDR patients, both compliant and non-compliant, at H. Adam Malik Teaching Hospital throughout 2022.

The sample size is determined using the formula (Lemeshow et al., 1990), resulting in a minimum sample size of 51 with a 1:1 ratio of cases to controls. Consecutive sampling is employed to select samples meeting the research criteria until the required sample size is reached. Inclusion criteria encompass TB-MDR patients aged 15-65 at RSUP H. Adam Malik, both compliant and non-compliant, willing to participate and fill out the questionnaire. Exclusion criteria involve newly treated TB-MDR patients (<1 month of treatment), those lacking complete medical records, and those unwilling to fill out the questionnaire. Patients attending the TB-MDR clinic weekly and taking medication regularly are considered compliant, while those not regularly attending the clinic weekly or not taking medication daily are classified as non-compliant.

Data analysis involves univariate analysis to describe the proportion distribution based on variables such as patient knowledge, treatment side effects, and disease complications. Bivariate analysis examines the correlation or influence between variables using simple logistic regression.

RESEARCH RESULT AND DISCUSSION

Characteristics of TB-MDR patients, as explored in this study, encompass gender, age, education, and occupation, presented in the table below.

Table.1 Characteristics of TB-MDR Patients Based on Gender, Age, Education, and Occupation

Characteristics of TB-MDR patients	Case		Control	
	n = 51	%	n = 51	%
Gender				
Male	36	70,6	32	62,7
Female	15	29,4	19	37,3
Age				
Early adulthood	26	50,9	20	39,2
Late adulthood	25	49,1	31	60,8
Education				
Low	8	15,7	2	3,9
High	43	84,3	49	96,1
Occupation				
Unemployed	19	37,2	26	50,9
Employed	32	62,8	25	49,1

The table of MDR-TB patient characteristics provides a comprehensive overview of the variations in treatment adherence within this population, considering factors such as gender, age, education, and employment. In the non-adherent category, there were 36 males (70.6 percent) and 15 females (29.4 percent), while in the adherent category, there were 32 males (62.7 percent) and 19 females (37.3 percent). In terms of age, 26 young adults (50.9 percent) and 25 older adults (49.1 percent) were non-adherent, compared to 20 young adults (39.2 percent) and 31 older adults (60.8 percent) who were adherent.

Regarding education, in the non-adherent category, 8 out of 51 patients (15.7 percent) had a low level of education, while 2 patients (3.9 percent) with a low level of education were adherent. On the other hand, 43 patients (84.3 percent) with a high level of education were non-adherent, and 49 patients (96.1 percent) with a high level of education were adherent. In terms of employment, 19 patients (37.2 percent) who were unemployed fell into the non-adherent category, while 32 patients (62.8 percent) who were employed were adherent. Conversely, 26 patients (50.9 percent) who were unemployed were adherent, and 25 patients (49.1 percent) who were employed were also adherent.

The assessment of family support for TB-MDR is based on good and poor family support, as depicted in the table below.

Table.2 The Influence of Family Support on Non-Compliance in TB-MDR Patients

Family Support	Non-Compliance in Taking TB-MDR Medication				<i>p</i>	OR	95 % CI
	Case		Control				
	n = 51	%	n = 51	%			
Poor	26	50,9	3	5,9	0,001	16,640	4,584-60,399
Good	25	49,1	48	94,1			
Total	51	100	51	100			

This table provides an overview of the significant role family support plays in the non-adherence rates of MDR-TB patients. The level of family support is evaluated in two categories: poor and good. Among the 51 patients, it was observed that 25 patients (49.1 percent) in the case group received good family support, while 26 patients (50.9 percent) received poor family support. In contrast, in the control group, the majority of MDR-TB patients (48 patients or 94.1 percent) received good family support, and only three patients (5.9 percent) received poor family support. Statistical analysis showed a p-value of 0.001, achieving the 0.05 level of significance. Additionally, the Odds Ratio (OR) was 16.640 with a 95 percent confidence interval (CI) between 4.584 and 60.399, indicating that patients with poor family support are 16.64 times more likely to be non-adherent to MDR-TB treatment compared to patients with good family support. Based on these findings, it can be concluded that family support significantly affects patient adherence. Patients with good family support tend to have lower non-adherence rates, while lack of family support can increase the risk of non-adherence.

The impact of family support for TB-MDR patients on adherence to TB-MDR drug consumption is based on the results of this study. A significant difference in the adherence rate to TB-MDR drug consumption is observed between the group receiving poor family support and the group receiving good family support. In the group receiving poor family support, 14.5% of individuals are non-adherent, while only 1.6% adhere to the treatment. Meanwhile, in the group receiving good family support, 85.5% are non-adherent, and 98.4% adhere to the treatment. This finding reflects that a lower level of family support correlates with a higher level of non-adherence to TB-MDR drug consumption. With an Odds Ratio of 10.258 and a 95% Confidence Interval (1.270-84.463), it confirms that individuals with poor family support have a significantly higher risk (10.258 times) of non-adherence to TB-MDR drug consumption. This result is statistically significant ($p = 0.029$), indicating that the role of family support has a substantial impact on the success of TB-MDR treatment. Therefore, interventions focused on enhancing family support can be an effective strategy to improve adherence and the overall effectiveness of TB-MDR treatment among patients.

Family plays a crucial role as an effective means to improve health outcomes. This is achieved through knowledge and behaviors that support all family members with a common goal, especially for family members who are ill and need emotional support (Hasanah, 2018). Friedman (2016) highlights that family support involves attitudes and actions of acceptance, becoming a driving force for family members so that they are ready to help when needed. This support includes informational, appraisal, instrumental, and emotional aspects, which can influence patient self-efficacy (Prasetyaningsih, et al., 2022). Research by Monita (2021) shows that 60.9% of TB-MDR patients receive good family support. However, the study by Jasmiati, et al. (2017) found that perceptions of family support vary, with 52.9% of respondents feeling supported, while 47.1% feel unsupported.

The research results from Setianingsih, F.D. & Makmuroch, Andayani, T.R. (2011), Maulidia, Desy. F., & Nia, D. Karyadi (2014), and Rumimpunu, R., Franckie, R.R. Maramis., Febe, F. Kolibu (2015) support the idea that family support significantly contributes to the recovery of TB MDR patients. Maria, Ulfa (2011) found that family support, especially emotional support, can motivate TB MDR patients. However, there is variation in research findings. The study by Nugroho, F.S., Zahroh, S., & Sakundano, A. (2018) indicates that some informants do not advocate for continued treatment for families suffering from TB MDR due to severe side effects. In contrast, the study by Maulana, Shaupatus Sara (2017) found that family's emotional support can provide positive motivation for treatment. The duration of TB treatment can lead to patient non-adherence because they feel bored and fatigued, especially without family support. Syafruddin's research (2022) confirms that family support is a significant risk factor for non-adherence to TB treatment. This is consistent with Mulyana's (2022) findings, highlighting the importance of family support in improving the quality of life, expectations, and self-efficacy of TB patients.

The research results of Monita & Fadhillah (2022) show a significant relationship between family support and adherence to drug consumption in TB patients. Family support is measured through emotional, informational, instrumental, and spiritual dimensions. This aligns with the research by Suarnianti et al. (2021), which shows that family support, especially emotional support, has a positive impact on TB treatment adherence. Family support for TB MDR treatment also includes the phase of emotional support, information, appreciation, and the active role of the family as the Drug Consumption Supervisor (DCS). Kalengkongan et al. (2020) emphasize that family support needs to be enhanced to maintain patients' spirits and keep them optimistic during the long and complex treatment. In the context of TB MDR treatment, patient self-efficacy is also significantly influenced by family support. Wijayanti et al. (2022) show that family's emotional support can reduce anxiety and increase patient adherence. This is also in line with Murwanti's research (2021), which highlights that family support includes emotional, physical, informational, instrumental, and spiritual aspects.

CONCLUSIONS AND RECOMMENDATIONS

In conclusion, family support plays a crucial role in TB MDR treatment. In terms of emotional, informational, and instrumental aspects, family support can enhance patient self-efficacy, drug adherence, and ultimately, treatment outcomes. Therefore, the development of interventions that strengthen family support can enhance the overall effectiveness of TB MDR treatment.

ADVANCED RESEARCH

Still conducting further research to find out more about Enhancing Family Support to Combat Treatment Non-Adherence in Multi-Drug Resistant Tuberculosis Patients at H. Adam Malik Hospital, Medan

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