



## DESCRIPTION OF THE CAUSES OF MDR-TB AT IBNU SINA HOSPITAL GRESIK

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Research Report

### ABSTRACT

**Introduction:** The causes of Multidrug Resistance Tuberculosis (MDR-TB) are very diverse; MDR-TB treatment, which takes a long time of approximately 18-24 months, so it becomes a severe health problem because of its rapid and increasing transmission. The purpose of this study was to describe the causes of the incident in Ibnu Sina Hospital Gresik. **Methods:** The method used in this research is a descriptive research method with a total of 55 respondents. In this study, data collection was carried out using a questionnaire. **Results:** The most common cause of MDR-TB in Ibnu Sina Hospital Gresik was a history of previous TB treatment with the results of the study obtained from 55 respondents, as many as 30 people (54.5%), and 25 people who did not have a history of previous treatment (45, 5%). **Conclusions:** Based on the study's results, the most common cause of MDR-TB at Ibnu Sina Hospital Gresik was a history of previous TB treatment. The causes of the minor incidence of MDR-TB are low family support and the subordinate role of PMO. Another more dominant factor is a history of contact with MDR-TB patients and non-adherence to taking medication.

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### INTRODUCTION

MDR-TB patients were found in the MDR-TB polyclinic of RSUD Ibnu Sina Gresik. Based on data from MDR-TB service innovations at Ibnu Sina Hospital, Gresik Regency, the number of findings of MDR-TB patients is increasing. In 2014 and 2015 there were 18 patients, in 2016 there were 21 patients, while in 2017 there were 45 patients. The more patients found the better. The number of findings of MDR-TB patients is getting higher and treatment immediately reduces the risk of MDR-TB cases in the Gresik district (Rofik 2021). Patients express the incidence of various causes of drug resistance. Some of them are economic level, history of contact with MDR-TB patients, medical history, and stress level (Buryanti and Fibriana 2021), medication adherence, alcohol consumption, smoking habits, and nutritional status (Aristiana and Wartono 2018). So far, the description of the causes of MDR-TB in MDR-TB patients is not known with certainty.

Worldwide, 150,359 people with MDR-TB were enrolled in treatment in 2020, down 15% from a total of 177,100 in 2019. The number of people with MDR-TB on treatment from 2018 to 2020 was 482,683. Indonesia is one of 10 countries that accounts for around 70% of the global incidence of MDR-TB each year and the number of people

enrolled in treatment by 2020 (WHO 2021). The number of MDR-TB cases in Indonesia in 2016 was estimated at 6,700 cases, 1.9% of new TB cases, and 12% of re-treatment TB cases (Permenkes 2016). Data from RSUD Ibnu Sina Gresik with MDR-TB patients at the MDR-TB Polyclinic from January to March 2022 recorded 557 visitors (RSUD Ibnu Sina 2022).

Multidrug Resistance Tuberculosis, also known as MDR-TB, has become the biggest and most serious health problem because of its rapid transmission and the increasing number of cases, due to inadequate treatment of TB patients, resulting in drug resistance (Ama, Suhermi, and Fradilla 2020). The impact of MDR-TB in addition to causing illness and death, if not treated will cause economic losses because the amount of treatment costs incurred is quite large. The time required for MDR-TB treatment is approximately 18-24 months which has an impact on social isolation and causes work productivity for someone with MDR-TB to continue to decline, income decreases, and national economic growth can be disrupted (Soepandi 2014).

The management of MDR-TB patients is more complex than the treatment of TB patients. Delay in diagnosis can be prevented if the diagnosis of MDR-TB is established early with resistance testing in the early TB treatment phase. Patients can

be cured with regular treatment for 18-24 months with controlled swallowing of drugs because of the accuracy of the dose, frequency, and duration of antibiotics used in MDR-TB therapy. Disease control efforts are carried out both in terms of the patient himself, health services, and the environment to prevent MDR-TB cases (Restinia, Khairani, and Manninda 2021). Appropriate management of drug side effects can affect the success of MDR-TB treatment (Reviono et al. 2014). Aims of this study was to describe the causes of the incident in Ibnu Sina Hospital Gresik

## MATERIALS AND METHODS

The design of this study used a descriptive design with a quantitative research type. The population of this study was all patients who were still on treatment for MDR-TB at RSUD Ibnu Sina Gresik. The sample was addressed to 55 respondents, with inclusion criteria for MDR-TB patients who were willing to be respondents, MDR-TB patients aged 18 years, and patients who were aware and able to communicate well. Sampling was done by applying a non-probability sampling technique with a consecutive sampling approach. The independent variables in this study were medication adherence, history of TB treatment, contact with sufferers, family support, and PMO (supervision of taking medication). Medication compliance questionnaire related to the behavior of swallowing drugs as recommended by the staff health based on Morisky Medication Adherence Scale (MMAS) which contains 3 question items with answer choices Yes and No. Contacts with MDR-TB patients related to being infected with MDR-TB patients containing 2 question items with answer choices Yes and No. Previous treatment history related to TB case history, stop taking medication, relapse, switching treatment which contains 8 question items with answer choices Yes and No. The family support questionnaire is related to statements to measure the domain of family

support, namely the informational, instrumental, and emotional domains and self-esteem which contains 15 question items with answer choices always, often, rarely, and never.

The role of PMO is related to the supervision of swallowing drugs, encouragement for treatment, attention, and information sources containing 7 question items with answer choices Yes and No. The research procedure is as follows: after the proposal obtains a letter of approval and permission to return data from the dean of the Faculty of Vocational Studies, Universitas Airlangga. Obtain approval from the institution through the Ethics Commission. After obtaining permission from the Director of RSUD Ibnu Sina, the researcher applied for permission from the Head of the MDR-TB Poly Room at RSUD Ibnu Sina Gresik to obtain data. Then the researcher met the respondent and submitted the consent form to become a respondent to the prospective respondent, and after obtaining the approval, the researcher began to conduct research in the MDR-TB Poly Room at Ibnu Sina Gresik Hospital. Furthermore, direct interviews were conducted with respondents to obtain data on age, gender, education level, employment status, regularity of taking medication, history of TB treatment, contact with sufferers, the role of health workers, family support and PMO. Documentation with research informants. Researchers documented by recording all the data obtained into field notes. This research has obtained a certificate of passing the ethical review from the Health Research Ethics Commission of the Ibnu Sina Hospital, Gresik Regency with the number 071/017/437.76/2022.

## RESULTS

Characteristics of Respondents with Multidrug-Resistant Tuberculosis (MDR-TB) Below will be described the demographic data of respondents regarding the demographic characteristics of 55 respondents in this study.

Table 1. Characteristics respondents at MDR-TB Polyclinic RSIS

| Characteristics of Respondents |                      | f  | %     |
|--------------------------------|----------------------|----|-------|
| Age                            | >60 years old        | 10 | 18.2% |
|                                | 18-40 years old      | 18 | 32.7% |
|                                | 41-60 years old      | 27 | 49.1% |
| Gender                         | Male                 | 37 | 67.3% |
|                                | Female               | 18 | 32.7% |
| Education levels               | University           | 7  | 12.7% |
|                                | High school          | 21 | 38.2% |
|                                | Guidance school      | 10 | 18.2% |
|                                | Primary school       | 17 | 30.9% |
| Job status                     | Housewife            | 12 | 21.8% |
|                                | Freelance            | 7  | 12.7% |
|                                | Government Employees | 3  | 5.5%  |
|                                | Private employees    | 16 | 29.1% |
|                                | Farmer               | 8  | 14.5% |
|                                | No work              | 9  | 16.4% |

The characteristics of the respondents studied included age, gender, last education, employment status, time declared MDR-TB, place declared MDR-TB, and length of treatment that had been undertaken.

Based on the age characteristics, it was found that the most common age group was age (41-60) years with a total of 27 respondents (49.1%) with the youngest being 18 years old and the oldest 68 years old. Based on the gender that has been done, it was found that the gender of the respondents with MDR-TB was male (67.3%) with 37 respondents.

Based on the characteristics of education, it was found that high school was the most recent education of the respondents with a total of 21 respondents (38.2%). Based on the characteristics of the work obtained by the respondents are private employees with a total of 16 respondents (29.1%).

#### Caused of MDR-TB in Ibnu Sina Hospital Gresik

This subsection presents a frequency distribution table regarding medication adherence, history of previous TB treatment, contact with patients, PMO, and family support.

Table 2. Compliance with taking medication at MDR-TB Polyclinic Ibnu Sina Hospital Gresik

| Compliance with Taking Medication | f  | %     |
|-----------------------------------|----|-------|
| Not Adherence                     | 6  | 10.9% |
| Adherence                         | 49 | 89.1% |

The results of the research table obtained, shows that the majority of MDR-TB patients who are undergoing treatment at the MDR-TB Poly

Hospital at Ibnu Sina Gresik Hospital, the results obtained are 49 patients (89.1%) and non-adherent in taking medication as many as 6 people (6%).

Table 3. History of previous at MDR-TB Polyclinic patients at Ibnu Sina Hospital Gresik

| History of Previous TB Treatment | f  | %     |
|----------------------------------|----|-------|
| Yes                              | 24 | 43.6% |
| Tidak                            | 31 | 56.4% |

From the results of the research table obtained, it shows that most of the MDR-TB patients who are undergoing treatment at the MDR-TB Poly At Ibnu Sina Hospital Gresik, was found that 31

patients had a history of previous treatment (56.4%), and who had no previous treatment history. as many as 24 people (43.6%).

Table 4. History of previous at MDR-TB Polyclinic patients at Ibnu Sina Hospital Gresik

| Contact with Patients | f  | %     |
|-----------------------|----|-------|
| No                    | 32 | 58.2% |
| Yes                   | 23 | 41.8% |

From the results of the research table obtained, it shows that most of the MDR-TB patients who are undergoing treatment at the MDR-TB Polyclinic In Ibnu Sina Hospital Gresik, obtained

patients who suffer from MDR-TB due to contact with patients as many as 23 people (41.8%), and those who do not. have had contact with patients as many as 32 people (58.2%).

Table 5. PMO (Supervision of Taking Drugs) MDR-TB at Polyclinic Ibnu Sina Hospital Gresik

| PMO      | f  | %     |
|----------|----|-------|
| There is | 51 | 92.7% |
| No       | 4  | 7.3   |

From the results of the research table obtained, it shows that most of the MDR-TB patients undergoing treatment at the MDR-TB Polyclinic In Ibnu Sina Hospital Gresik there are 4 patients who

suffer from MDR-TB due to the low role of PMO (7.3%), and 51 people. (92.7%) where PMO is a good role.

Table 6. Family Support at MDR-TB Polyclinic at Ibnu Sina Hospital Gresik

| Family Support | f  | %     |
|----------------|----|-------|
| Low            | 1  | 1.8%  |
| Moderate       | 2  | 3.6%  |
| Hight          | 52 | 94.5% |

From the results of the research table obtained, it shows that in the majority of MDR-TB patients who are undergoing treatment at the MDR-TB Polyclinic Ibnu Sina Hospital Gresik, it was

found that 52 patients received high support from their families (94.5%), who received moderate support from their families. a large family of 2 people (3.6%), and received low support from a family of 1 person (1.8%).

Table 7. Results Causes of MDR-TB Polyclinic at Ibnu Sina Hospital Gresik

| Causes of MDR-TB                 | f  | %     |
|----------------------------------|----|-------|
| Low Family Support               | 1  | 1.8%  |
| Non-compliance with Medication   | 6  | 10.9% |
| Contact with MDR-TB Patients     | 21 | 38.2% |
| History of previous TB treatment | 23 | 41.8% |
| Low PMO (Drug Drinking Control)  | 4  | 7.3%  |

The study's result found the causes of MDR-TB in Ibnu Sina Hospital Gresik with 55 respondents that the highest cause was a history of previous TB treatment (45.5%) with 25 people, the second cause was contact with sufferers (41.8%) with 23 people, the third cause was non-adherence to taking medication (10.9%) with 6 people, the fourth cause was no PMO role as many as 4 people (7.3%), and the lowest cause was low family support (1.8%) with 1 person.

## DISCUSSION

From the results of the study, it was found that the most common cause of MDR-TB in Ibnu Sina Hospital Gresik was a history of previous TB treatment, while the least result was low family support, and other causes were medication adherence, contact with patients, and the role of PMO.

### History of previous TB treatment

The study's result found that the most common cause of MDR-TB at Ibnu Sina Hospital Gresik was a history of previous TB treatment. Based on research conducted by Buryanti and Fibriani in 2021, these results show that people who have a history of TB treatment have a 3.54 times greater risk of developing MDR TB compared to people who do not have a history of TB treatment (Buryanti and Fibriana 2021). From the results of interviews and observations of respondents with a history of TB treatment because the patient did not take medication because he felt he was already healthy and there were no complaints, in line with the 2016 study by Yuni, patients who dropped out of treatment were caused because the patient had recovered, but the patient did not know the

consequences of dropping out during the period. treatment, this will lead to MDR TB (Yuni 2016). According to researchers, the lack of patient knowledge is supported by low patient education, which in turn will affect the perception of patients who think that pulmonary TB is like other diseases, if the symptoms decrease, the drug can be stopped at any time.

### Family support

The study's result found that the least cause of the incidence of MDR-TB at Ibnu Sina Hospital Gresik was the presence of high family support, with only a small amount of low family support. The family is the closest and most understanding person to the sufferer to provide full support for MDR-TB sufferers because the patient consumes the drug for a long time (Hasanah, Makhfudli, and Wahyudi 2018). Based on the results of interviews and observations, it was found that family support was high in the MDR-TB poly because kinship in Javanese culture has harmonious behavior between neighbors and family, shy attitude, feeling uncomfortable because they are worried about offending feelings (Ulya and Nugroho 2020). Family support is a form of caring for family members to respect each other and to ensure that all family members remain in a healthy condition, even though it requires the sacrifice of costs and time opportunities.

### Medication Compliance

In addition to contact with MDR-TB, another cause is non-adherence in taking medication. Adherence to treatment is important to avoid the occurrence of MDR-TB and failure in treatment (Aristiana and Wartono 2018). From the results of interviews and observations of respondents, non-

adherence to taking medication is caused by side effects. Drug side effects that arise make the patient uncomfortable and lazy to take medication, this is because drug metabolism occurs in the liver, a condition that contributes to drug resistance (Ama et al. 2020). Side effects that appear in patients receiving TB therapy, namely: nausea, vomiting, pounding feeling that makes it uncomfortable when taking medication, and then dropping out of treatment.

### PMO

In addition to contact with MDR-TB, another cause is non-adherence in taking medication. Treatment adherence is important to avoid the occurrence of MDR-TB and failure in treatment (Maesaroh, Nurjannah, and Prayoga, 2019). From the results of interviews and observations of respondents, non-adherence to taking medication is caused by side effects. Drug side effects that arise make the patient uncomfortable and lazy to take medication, this is because drug metabolism occurs in the liver, a condition that contributes to drug resistance (Pratama et al. 2018). Irregular treatment results in the virulence of mycobacterium bacteria getting stronger, so it is not effective with standard treatment, therefore it is necessary to provide family assistance so that patients still have the spirit to recover in the future by complying with the MDR-TB treatment program.

### CONCLUSIONS

Based on the results of the study, the most common cause of MDR-TB at Ibnu Sina Hospital Gresik was a history of previous TB treatment. The causes of the least incidence of MDR-TB are low family support and the role of PMO. Another factor that is more dominant is a history of contact with MDR-TB patients and non-adherence to taking medication. The need for a program to modify the home environment to maintain air ventilation and lighting in the house.

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