



DETERMINANTS OF TREATMENT DISCONNECT STATUS IN TUBERCULOSIS PATIENTS MULTIDRUG RESISTANT (MDR-TB) AT LABUANG BAJI HOSPITAL MAKASSAR CITY YEAR 2021-2023

Andi Husnul Fahimah ¹, A. Arsunan Arsin ¹, Wahiduddin ¹, Andi Zulkifli ¹, Hasanuddin Ishak ², Erniwati Ibrahim ²

¹ Department of Epidemiology, Faculty of Public Health, Hasanuddin University - Indonesia

² Department of Health Environment, Faculty of Public Health, Hasanuddin University-Indonesia

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ABSTRACT

Multidrug Resistance Tuberculosis (MDR-TB) is type of tuberculosis caused bacteria resistant to 2 lines of anti-TB drugs First namely isoniazid and rifampicin . Ratio level the incidence of loss to follow-up TB was 12.19% . A total of 37 patients is a loss to follow-up with level incidence 11.26 per 1000 person-months of observation (PMO) . Lack of factors support family , lack of fulfillment nutrition , distance to facility health in a way significant influential to occurrence of loss to follow-up ¹⁰ . Indonesia bears it TBC RO load as one disease highest in the world. His height number separated treatment around (20-30%) and high number deaths (15-20%) impact the numbers success ongoing RO TB treatment ranges from 20-50% in One decade . One of factor can background matter the like provision guide RO TB treatment without injection with longer duration short (guide treatment period short oral) ⁸ . Objectivestudy This is For know determinant separated treatment for MDR-TB patients . Study This nature analytic observational with design studies case control with approach retrospective . Research sample This consisting of 128 people from group case is MDR-TB dropped out patients treatment as many as 32 people, and controls is subject MDR-TB sufferers Which Still do treatment , and have finished treatment as many as 96 people. Risk factors for dropping out of treatment that is Motivation (OR 5) CI 95% (1.96-12.87), side effects (OR 7.05) CI 95% (0.79-3.11), the role of the PMO (OR 5.63) CI 95% (0.52-2.93), treatment time (OR3.23) CI 95% (1.14-10.40), herbal medicine (OR 21.97) CI (1.67-4.08) . Regression analysis Logistics show that herbal treatment is the main determinant of dropping out of treatment in MDR-TB sufferers.

Keywords: MDR-TB, Treatment withdrawal, Side effects, History of herbal treatment

INTRODUCTION

Tuberculosis is disease infectious disease caused by the bacterium *Mycobacterium tuberculosis*. The germ spread from TB sufferers through air . This TB germ usually attacks the lung organs , however can also attack besides lung (extra lungs). Almost quarter the world's population is infected with *Mycobacterium tuberculosis* bacteria . Approximately 89% of TB is suffered by

adults (56.5% of men and 32.5% of women) and 11% is suffered by children . Until moment Currently , TB is still there is reason death highest after HIV/AIDS, and is one of 20 causes main deaths worldwide . Most of the estimation deaths caused by TB were recorded in four countries, namely India, Indonesia, Myanmar and the Philippines. Amount death due to tuberculosis (among HIV negative

patients) globally in 2021 amounted to 1.4 million , p This experience enhancement If compared to 2020 that is amounting to 1.3 million ⁹.

The TB RO burden in Indonesia is one of the highest in the world. According to WHO, 2023 Global TB report data on November 7 2023 shows the order of percentage of cases in the world, namely India (27%), Indonesia (10%), China (7.1%), Philippines (7.0%), Pakistan (5.7%), Nigeria (4.5%), Bangladesh (3.6%), and the Democratic Republic of the Congo (3.0%). The report informs that TB cases continue to increase from 10 million people in 2020 to 10.3 million people in 2021 and again rise to 10.6 million people in 2022. This data shows that Indonesia is the second largest contributor to TB disease in the world ¹⁷.

By absolute *C ase Notification Rate* (CNR) amount invention case tuberculosis in 2022 obtained 724,309 cases , 12,531 of them is resistant TB cases medication (TB RO). TB cases reported through application a number of source that is System Information Tuberculosis (SITB) was 722,675, integration between SIM RS and SITB of 1,309 as well via WIFI TB amounted to 325 cases . CNR case tuberculosis 2021-2022 experience enhancement by 63%. Number *C ase Notification Rate* all case Tuberculosis which is national show trend enhancement Notifications invention case tuberculosis in 2022 and is condition highest during the period ¹⁰.

Makassar city become most areas accept reference MDR TB patients and the Labuan Baji General Hospital, Makassar City are the most numerous accept reference MDR TB patients in South Sulawesi. Data from Labuang Hospital wedge show that TB RO at Labuang Baji Regional Hospital in 2021-2023 shows number fluctuating where in 2021 there were 101 cases , in 2022 an increase of 106 cases and 78 cases in 2023.

Although experience decline in 2023 but number the Still become highest case between House Sick or place service health others in Makassar City. Based on data from Labuang Baji Regional General Hospital from In 2021-2023 there were 32 MDR-TB patients who dropped out drug of 285 patients treated ⁷.

Drop Out (DO) is a condition where a patient has undergone treatment for >1 month and does not take medication for 2 consecutive months or more before the treatment period is completed. Based on Munawaroh's 2013 research In Amala 2021 , data was obtained on the risk factors most frequently complained about by MDR TB sufferers, namely boredom with the length of treatment, treatment costs and side effects ³.

Based on Febriana's 2020 research, it shows that there is a relationship between the role of the medication taking supervisor (PMO) and compliance with taking medication in pulmonary TB sufferers at Tidar Magelang District Hospital ¹⁶. The presence of strong motivation from sufferers will lead to regularity in taking medication. One of the main concerns in handling TB cases is how to motivate sufferers to complete treatment within the specified time ¹⁴. Based on study Himawan 2015 shows that subjects who use it drug traditional risky to TB DO of 7.4 times ⁸.

Dropping out of treatment for MDR-TB patients makes it possible to experience XDR TB. XDR TB is TB caused by strains that are resistant to isoniazid and rifampicin, accompanied by resistance to one of the fluoroquinolones and one of the three second-line injectable drugs (amikacin, capreomycin or kanamycin) ¹³. Based on description of the data above , then writer interested For do study about Determinant Incident Drug withdrawal in MDR-TB patients at Labuang Baji Regional General Hospital, Makassar City , 2021 – 2023.

METHOD

The type of research used is quantitative research. This research is analytical in nature observational with a case control study design with a retrospective approach. The cases in this study were MDR-TB patients who experienced treatment withdrawal at Labuang Baji Regional Hospital in 2021-2023. The controls in this study were MDR-TB patients who did not experience treatment withdrawal such as patients who were still undergoing treatment.

Based on preliminary data taken from the Provincial Health Service, it shows that the Labuang Regional Hospital Wedge is

The following are the results of analysis of motivation variables, side effects, role of PMO, comorbidities, length of treatment time, and history of herbal treatment.

Referral hospital which receives the most MDR-TB patients in South Sulawesi. Sampling was also carried out using total sampling in the case group of 32 respondents. Ratio of number of cases And control used Formerly 1: 3, by because of that caseThe number of respondents was 32, so the number of controls respondents totaling 96 respondents. Data analysis This will be done using the OR value to see which variables have the most influence on dropping out of treatment for MDR-TB patients. This research uses questionnaires and SITB Labuang Baji data as supporting data in collecting data for this research.

Table 3.1 Distribution Respondent Based on Characteristics of Respondents at Labuang Baji Regional Hospital, Makassar City Year 2021-2023

Characteristics Respondent	Case		Control		Total	
	n=32	%	n=96	%	n=128	%
Gender						
Man	20	62.5	60	62.50	80	62.50
Woman	12	37.50	36	37.50	48	37.50
Age						
15-24	0	0.00	5	5.21	5	3.91
25-34	7	21.88	20	20.82	27	21.9
35-44	7	21.88	20	20.82	27	21.9
45-54	8	25.00	20	20.82	28	21.88
55-64	6	18.75	26	27.08	32	25.00
65-74	4	12.50	5	5.21	9	7.02
Education						
Not completed in primary school	0	0.00	2	2.08	2	1.56
Finished elementary school	6	18.75	8	8.22	14	10.94
Finished middle school	5	15.62	20	20.82	22	17,19
Finished high school	15	46.88	42	44.79	58	45.31
Finished PT	6	18.75	22	23.96	29	22.66
Work						
Doesn't work	20	62.50	48	50.00	68	53.13
Laborer	2	6.25	4	4.17	6	4.69

Farmer / fisherman	0	0.00	1	1.04	1	0.78
Employee Private	4	12.50	10	10.42	14	10.94
PNS/TNI/POLRI	0	0.00	2	2.08	2	1.56
Self-employed	6	18.75	31	32.39	37	28.91
Place declared MDR TB						
Hospital	4	12.50	15	15.63	19	14.84
Public health center	28	87.50	80	82.32	108	84.38
Practicing Doctor	1	1.04	0	0.00	1	0.78

Source : Primary Data 2024

Based on Table 3.1 . show that in cases and controls , respondents more Lots manifold sex man with proportion the most on group case as big as 60.50% whereas group control amounting to 62.50. Most of the respondents in the group case is at in range age 45-54 year as big as 25.00% whereas on group control is at in range age 55-64 year amounting to 27.08%.

On characteristics education , respondents the most with education Completed high school. Education Completed

high school in group case amounted to 46.88% and in group control amounting to 44.79%. Characteristics work , some big No working , fine on group case as big as 62.50% And group control as big as 50.00%. So as with characteristics place declared MDR TB, some big declared MDR TB at the Community Health Center Good it's in the group case of 12.50% and group control 87.50%. Characteristics respondents depicted in group cases and groups control as following :

Table 1 Bivariate Analysis Based on Characteristics of Respondents at Labuang Baji Regional Hospital Makassar City 2021—2023

Variable	Case		Control		P Value	Odds Ratio (95% CI)
	n=32	%	n=96	%		
Motivation						
High Risk	20	62.50	24	25.00	0.00*	5
Low Risk	12	37.50	72	75.00		(1.96-12.87)
Side effects						
High Risk	24	75.00	21	21.88	0.00*	10.71
Low Risk	8	25.00	75	78.13		(3.87-31.14)
The role of the PMO						
High Risk	19	59.38	25	26.04	0.00*	4.15
Low Risk	13	40.63	71	73.96		(1.65-10.50)
Concomitant Diseases						
High Risk	15	46.88	60	62.50	0.12	0.52
Low Risk	17	53.13	36	37.50		(0.21-1.28)
Treatment Time						
High Risk	26	81.25	55	57.29	0.01	3.23
Low Risk	6	18.75	41	42.71		(1.14-10.40)
History of Herbal Medicine						
High Risk	23	71.88	10	10.42	0.00*	21.97

Low Risk	9	28.13	86	89.58	(7.22-68.66)
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Source: Primary Data, 2024

- 1) Motivational Risk Factors for Dropping Out of Treatment
- The results of the bivariate analysis show that motivation has an *Odds Ratio* (OR) value of 5, meaning MBR-TB sufferers who have low motivation will experience treatment dropout 5 times compared to MDR-TB sufferers who have high motivation. Judging from the 95% *Confidence Interval* (CI) value of (1.96-12.87) with the *Lower Limit and Upper Limit* (LL-UL) values not including the value 1 so the OR value obtained is statistically significant.
- 2) Risk Factors for Treatment Side Effects on the incidence of Treatment Dropout
- With a 95% *Confidence Interval* (CI) of (3.87-31.14) and value Limit Lower And Limit On (LL-UL) Which No covers mark 1, suggests that treatment side effects are a significant risk factor significant impact on the incidence of treatment dropout in MDR-TB sufferers. There is enhancement risk dropped out of treatment as much 10.71 times in MDR-TB sufferers who had serious side effects compared with they which has mild side effects.
- 3) Risk Factors: The Role of PMO in the Event of Dropping Out of Treatment
- The results of bivariate analysis show that the role of PMO is a risk factor for dropping out of treatment for MDR-TB sufferers. It can be seen from the OR value of 4.15, the 95% *Confidence Interval* (CI) is (01.65-10.50) with the *Lower Limit and Upper Limit* (LL-UL) values not including

- the value 1 so that the OR value obtained is statistically significant.
- 4) Risk Factors for Concomitant Diseases in the Event of Dropping Out of Treatment
- Comorbidities are not a risk factor for having mark *Odds Ratio* (OR) as big as 0.52 (CI 95%: 0.21-1.28) with mark *lower limit* and *upper limit* (LL-UL) include the value 1 and statistically do not meaningful to dropped out of treatment.
- 5) Risk factors for treatment time for withdrawal from treatment
- Long treatment time is a risk factor because it has mark *Odds Ratio* (OR) as big as 3.23 (CI 95%: 01.14-10.40) Which No covers mark 1, shows that the length of treatment time is a risk factor significant impact on the incidence of drug withdrawal in MDR-TB sufferers. There is enhancement risk drug withdrawal as much 10.71 time fold in MDR-TB sufferers who had a long period of long-term treatment compared with they Which have a short-term treatment period.
- 6) Risk Factors History of Herbal Treatment
- Mark *Odds Ratio* (OR) on a history of herbal treatment amounting to 21.97 (95% CI: 7.22-68.66). A history of herbal treatment is a risk factor significant impact on the incidence of treatment dropout in MDR-TB sufferers. Respondents who took herbal medicines had a 21.97 times increased risk of dropping out of treatment compared to with sufferers who do not take herbal medicine.

Table 3 Analysis of Multivariate Final Results of Determinants of Dropping Out for MDR-TB Treatment at Labuang Baji Regional Hospital, Makassar City, 2021-2023

Variable Study	Coef	p-value	Adjusted Odds Ratio (AOR)	CI 95%
Effect Side	1.95	0.00	7.05	0.79-3, 11
Herbal medicine	2.87	0.00	17, 74	1.67-4.08
The role of the PMO	1.72	0.00	5.63	0.52-2.93

Source: Primary Data, 2024

Based on the final results of multivariate analysis using regression Logistics in Table 3 shows that there are two variables still significant risky to dropped out of treatment namely side effects, and history of herbal treatment. After

Based on the final results of multivariate analysis using regression Logistics in Table 3 shows that there are two variables still significant risky to dropped out of treatment namely side effects, and history of herbal treatment.

Probability of dropping out of treatment from proven variables significant is factor risk dropped out of treatment as following :

$$p = \frac{1}{(1 + e^{-x})}$$

$$p = \frac{1}{(1 + e^{-(-3.840476 + 2.876056 + 1.954431 + 1.728422)})}$$

$$p = \frac{1}{(1 + \exp(-2.718433))}$$

$$p = .93810561$$

$$p = 93,81\%$$

DISCUSSION

Sufferers who have motivation tall part big are in a group control (75.00) and who has motivation low on group case (62.50). Study This in line with Aufiena , 2019 which shows that motivation sufferer relate with happen separated treatment with p-values of 0.046 and 0.004, with OR values 11.33% and 10.38% ². Respondents who have motivation

doing the calculations it shows the Probability side effects, have herbal remedies, and the role of PMO will experience probability or risk experience dropped out of treatment amounting to 93.81%.

low as many as 18 respondents (27.3%), meanwhile respondents who have motivation tall as many as 48 respondents (72.7%). Based on Antoni's 2021 research , found that Level of motivation self tuberculosis-MDR respondents , namely 10 respondents (62.5%) had motivation high , and 6 respondents (37.5%) had sufficient motivation ⁵.

The results of other research show that motivation own connection to obedience drink possible medication minimize happen separated seek treatment for MDR-TB patients at the Community Health Center Customer Sekotong Barat ⁵. Motivation will basically determine the occurrence of MDR-TB. Motivating oneself to face societal stigma and increasing knowledge is also important to prevent TB. Motivation will basically determine the occurrence of MDR-TB. Motivating oneself to face societal stigma and increasing knowledge is also important to prevent TB ¹².

Effect side Most respondents risky high in cases as big as 59.38% and low risk in controls at 76.04%. Based on the OR value, it shows that MDR-TB sufferers who have side effects have a 4.62 times risk of dropping out of treatment. This is in line with research

shows that the side effects of OAT are 32.32 times riskier. The results of this research are in line with Maharja's research, 2021 which shows that drug side effects are associated with the occurrence of treatment withdrawal with $p\text{-value}=0.04$ ¹¹. Many sufferers experience side effects, both mild and severe, which often make sufferers decide to stop treatment because they are afraid that if they continue, it will get worse and they will not be able to stand it if they continue to experience it².

On research This show that there is connection between separated treatment with PMO activity. That matter in line with Amala's 2021 research shows that There is a relationship between the role of the PMO in the incidence of dropping out of treatment for Multidrug Resistant Tuberculosis (MDR TB) in Semarang City³.

Research result show that all respondents have good PMO originate from House Sick or the TB Labuang Baji Foundation also came from from member family. The PMO's role is not active more Lots risky high in cases of 50.00% and control amounting to 85.42%.

Study this is also obtained that on the group control almost part big have an active PMO so that sufferer can be controlled and supervised more effective in obedience drink drug. Study This No in line with (Maharja *et al.*, 2021) was obtained OR value that shows that MDR-TB sufferers who have PMO do not active 0.17 times risk of experiencing fail treatment. This is also the same with study (Amala and Cahyati, 2021) which shows that There is a relationship between the role of the PMO in the incidence of dropping out of treatment for Multidrug Resistant Tuberculosis (MDR TB) in Semarang City³.

In contrast to research (Nazilatul Fadlilah, 2017) showing that there is no relationship between the closeness of PMO and treatment compliance in TB patients, which can influence the occurrence of

dropping out of morning treatment for MDR-TB sufferers¹³. This is proven by several PMO cases with patients dropping out saying that these patients chose to drop out because they were not strong enough to face the side effects of taking OAT, and then chose to take drugs given by private practice doctors and pharmacies. This illustrates the importance of full support and motivation from the PMO to prevent drop out¹³.

On research This show that No there is connection between separated treatment with disease accompanying. Respondents in groups case more Lots own disease sufferer 87.50 % are at risk tall. And respondents in groups control more Lots No own disease accompanying 54.17 % were at risk low. The analysis results show that comorbidities are not a risk factor for dropping out of treatment with an OR value as big as 0.52 (CI95%: 0.21-1.28) with mark *lower limit* and *upper limit* (LL-UL) include the value 1 and statistically do not meaningful to dropped out of treatment.

The absence of a relationship between comorbidities and dropping out of treatment is because this variable does not directly influence the incidence of dropping out of treatment. This is because the distribution of respondents who had comorbidities was actually greater in the control group than cases. This is because health services in Labuang Baji will provide additional examinations and treatment for patients who have congenital diseases, such as administering DM and asthma medication to laboratory tests and respiratory therapy equipment. Because apart from environmental conditions, there are also host and agent factors that can influence the incidence of pulmonary TB¹⁶.

Based on interviews with case respondents, the main reason for dropping out of treatment was due to side effects and the inactive role of PMO. According to Bates *et*

all 2015, in states that the success of treatment and death rates due to TB are also worsened by medical conditions that often accompany TB such as DM, HIV and cancer, where these conditions will weaken the body's immune system to fight TB bacteria ⁶.

This study shows that there is a relationship between treatment time and dropping out of treatment. The results of this study showed that the majority of respondents underwent long-term treatment in both the case group 81.25% and the control group 57.29%. The same thing was also obtained by Amala's 2021 research showing that there were more respondents with TB treatment duration >6 months, namely 25 respondents (37.9%), 2-6 months as many as 30 respondents (45.5%), and <2 months as many as 11 respondents. (16.6%) ².

The main reason for treatment failure is that patients do not want to take their medication regularly, because they feel bored having to take a lot of medication for several months at a predetermined time, sufferers tend to stop the treatment themselves (Ministry of Health of the Republic of Indonesia, 2014). However lack of knowledge sufferer in TB treatment makes sufferer take action Alone consuming herbal medicine so decide separated treatment Because feel more comfortable consumed . Knowledge determine attitude in make a decision ¹.

On research This show that there is connection between separated treatment with consumption herbal medicine . Respondent with risk tall are in a group case amounted to 71.88% and risk low are in a group control amounting to 89.58%. Based on OR value shows that respondents who consume herbal medicines have a risk of 21.97 times separated treatment . The same research results were also obtained Himawan 2015 shows that respondents who use traditional medicine have a risk of developing TB DO of 7.4 times ⁸.

Based on interviews with respondents, the average herbal medicine consumed is propolis. Some respondents admitted that they had consulted a doctor or PMO, but there were also those who consumed it without the knowledge of the doctor or PMO because they were still trying. The reason for consuming propolis is to combine it with a doctor's medicine to speed up healing and make it an alternative to other medicines because of the side effects that are felt. The propolis consumed by TB sufferers is hepro propolis. This product is a *nutraceutical product* produced by stingless bees (trigona bees) . This product helps minimize side effects and is a *booster* in the TB healing process so that many TB sufferers feel more comfortable consuming this product compared to drugs given in hospitals.

CONCLUSION

Based on results study , conclusion in study This that is :

- Motivation risky by 5 times broken treatment MDR-TB sufferers
- Effect Side risky amounting to 7.05 times breaking up treatment for MDR-TB sufferers
- The PMO role is risky amounting to 5.63 times breaking up seek treatment for MDR-TB sufferers .
- Disease Participant No is factor risk happen separated treatment for MDR-TB sufferers .
- Treatment Time risky of 3.23 times broken treatment for MDR-TB sufferers .
- History of Herbal Medicine is risky amounting to 17.74 times broken treatment for MDR-TB sufferers .
- The most influential determinant to separated MDR-TB treatment is in history herbal treatment 17.74 times increase separated treatment MDR-TB sufferers .

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