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Relationship of The Role of Superintended of Swallowing Drugs, Types of Treatment and Effective Cough with The Success of Treatment of Adult Pulmonary Tuberculosis

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Abstract. Tuberculosis is an infectious disease caused by the bacteria Mycobacterium tuberculosis. Treatment success was measured by looking at the number of all TB cases cured, and complete treatment among all TB cases treated and reported. This study aims to analyze the relationship between the role of Superintended of Swallowing Drugs, type of treatment, and effective cough with successful treatment of adult pulmonary tuberculosis in the work area of the Oesapa Public Health Center in 2021. This type of research is a quantitative correlation with a cross-sectional study design. The sample consists of 134 people. Sampling was done by simple random sampling with a confidence level of = 0.05. The data analysis used was univariate and bivariate analysis with a chi-square statistical test. The results of this study indicate that there is a relationship between the role of Superintended of Swallowing Drugs and the success of adult pulmonary TB treatment (p-value = 0.024); there is a relationship between the type of treatment and the success of adult pulmonary TB treatment (p-value = 0.000), while there is no relationship between effective cough with successful treatment of adult pulmonary TB (p-value = 0.750).

Keywords: *Tuberculosis, success, Superintended of Swallowing Drugs, type of treatment, effective cough*

Abstrak. Tuberkulosis adalah suatu penyakit menular yang disebabkan oleh kuman *Mycobacterium tuberculosis*. Keberhasilan pengobatan diukur dengan melihat jumlah semua kasus TB yang sembuh dan pengobatan lengkap diantara semua kasus TB yang diobati dan dilaporkan. Penelitian ini bertujuan untuk menganalisis hubungan peran, jenis pengobatan, dan batuk efektif dengan keberhasilan pengobatan tuberkulosis paru dewasa di wilayah kerja puskesmas Oesapa tahun 2021. Jenis penelitian ini adalah kuantitatif korelatif dengan rancang bangun *cross-sectional study*. Sampel terdiri dai 134 orang. Pengambilan sampel dilakukan secara *simple random sampling* dengan tingkat kepercayaan α=0,05. Analisis data yang digunakan adalah analisis univariat dan analisis bivariat dengan uji statistik *chi-square.* Hasil penelitian ini menunjukkan bahwa ada hubungan antara peran dengan keberhasilan pengobatan TB paru dewasa (*p-value* = 0,024), ada hubungan antara tipe pengobatan dengan keberhasilan pengobatan TB paru dewasa (*p-value* = 0,000),

sedangkan tidak ada hubungan antara batuk efektif dengan keberhasilan pengobatan TB paru dewasa (*p-value* = 0,750).

Kata kunci: *Tuberkulosis, keberhasilan, tipe pengobatan, batuk efektif*

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Introduction

Pulmonary Tuberculosis (pulmonary TB) is still a public health problem that is a global challenge. TB is an infectious disease caused by the bacteria Mycobacterium tuberculosis. (*Profil Kesehatan Indonesia*, 2018). In Indonesia, in 2018, the success rate for treating all TB cases was 84.6%. The cure rate for all cases must be achieved at least 85%, while the treatment success rate for all cases is at least 90.0% (*Profil Kesehatan Indonesia*, 2018). If referring to the target set by the Ministry of Health's strategic plan for this indicator, which is 85%, and nationally, the TB treatment success rate has been achieved, including in 2019, which was 86.6% (Kementerian Kesehatan Republik Indonesia, 2020).

The success rate for treating TB cases in the province of East Nusa Tenggara (NTT) is 71.8% (NTT Provincial Health Office, 2018). The total treatment success rate for all TB cases in 2019 was 83.4%, with the number of deaths during treatment at 2.45% (Kementerian Kesehatan Republik Indonesia, 2020).

The success rate for treating all TB cases in Kupang City in 2019 was 530 cases with a presentation of 79.5%, with the number of deaths during TB treatment of 17 cases with a presentation of 2.5%. Kupang City has 11 health centers from 5 sub-districts that handle TB patients (Dinas Kesehatan Kota Kupang, 2018).

Based on the data obtained, the treatment success rate for all TB cases at the Oesapa Public Health Center was 62.1%, with the number of deaths during treatment of 3.9%. The number of adult TB in 2019 was 645 cases with a presentation

of 58.63%, with the number of TB children being 24 cases with a presentation of 2.18% (Dinas Kesehatan Kota Kupang, 2018).

The treatment success rate was measured by looking at the number of all TB cases cured, and complete treatment among all TB cases treated and reported. The low success of pulmonary TB treatment will greatly impact the health status of the community because it will cause more serious problems if pulmonary TB disease turns into MDR-TB. Thus, pulmonary TB disease will be increasingly difficult to treat.

Pulmonary TB disease can be cured with regular treatment. The success of pulmonary TB treatment is influenced by several factors ranging from behavioral factors (type of Superintended of Swallowing Drugs, role of Superintended of Swallowing Drugs, motivation, and patient access to health services), treatment (type of patient and category of treatment), and individual characteristics (age, gender, education, occupation, status of the patient) economy and region of origin and effective cough).

Based on a preliminary study conducted at the Oesapa Public Health Center by interviewing TB managers at the Oesapa Public Health Center, there were problems found, namely the lack of Superintended of Swallowing Drugs 's role in the success of adult pulmonary TB treatment, treatment success occurred in patients classified as pulmonary TB with category one treatment, obstacles from sputum examination results where there is a patient at the Oesapa Health Center who, although already suffering from pulmonary TB disease, cannot expel phlegm optimally.

Method

The type of research used is quantitative with a correlative research design. The approach used is a cross-sectional study design (cross-sectional). This research was conducted in the working area of the Oesapa Public Health Center, Kupang city, from May to June 2021. The population in this study were all adult pulmonary

TB patients who had completed treatment at the Oesapa Public Health Center in 2019 and 2020, totaling 143 people. The sample in this study amounted to 134 people, the technique used in sampling in this study was simple random sampling.

The types of data used are primary and secondary data. The data collection instruments were questionnaires, interview guides, and observation sheets. Validity and reliability tests were carried out on TB patients who had completed treatment and successfully treated at the Sikumana Health Center in 2020, which amounted to 30 respondents. Data processing in this study using SPSS. The analysis is used in univariate and bivariate analysis. The data that has been analyzed is presented in the form of tables and narratives to discuss the results of the study and draw conclusions.

Result

1. Univariate Analysis

Table 1.
Distribution of Respondents Based on the Success of Adult Pulmonary TB Treatment in the Work Area of the Oesapa Public Health Center, Kupang City in 2021.

No	Treatment Success	Frequency	Percentage (%)
1	Not successful	6	4,5
2	Succeed	128	95,5
	Total	134	100

Table 1 shows that respondents who were successful in the treatment of adult pulmonary TB (95.5%) were more than those who were unsuccessful (4.5%).

Table 2.
Distribution of Respondents Based on the Role of Superintended of Swallowing Drugs in the Work Area of the Oesapa Health Center, Kupang City in 2021.

No	**Superintended of Swallowing Drugs 's role**	Frequency	Percentage (%)
1	No role	36	26,6
2	Play a role	98	73,1
	Total	134	100

Table 2 shows that respondents with Superintended of Swallowing Drugs who play a role (73.1%) are more than respondents with Superintended of Swallowing Drugs who do not play a role (26.6%).

Table 3.
Distribution of Respondents Based on Superintended of Swallowing Drugs in the Work Area of the Oesapa Health Center, Kupang City in 2021.

No	Superintended of Swallowing Drugs	Frequency	Percentage (%)
1	Family	132	99
2	Health workers	2	1
	Total	134	100

Table 3 shows that respondents with Superintended of Swallowing Drugs from the family (99%) are more than respondents with Superintended of Swallowing Drugs from health workers (1%).

Table 4.
Distribution of Respondents by Type of Treatment in the Work Area of the Oesapa Public Health Center, Kupang City in 2021.

No	**Type of Treatment**	Frequency	Percentage (%)
1	Category 2	5	3,7
2	Category 1	129	96,3
	Total	134	100

Table 4 shows that respondents with the most types of treatment are category 1 (96.3%), while respondents with the least types of treatment are category 2 (3.7%).

Table 5.
Distribution of Respondents Based on Effective Coughs in the Work Area of the Oesapa Public Health Center, Kupang City in 2021.

No	Effective Cough	Frequency	Percentage (%)
1	Do not do	81	60,4
2	To do	53	39,6
	Total	134	100

Table 5 shows that respondents who did not get cough effectively were the most (60.4%) while respondents who did cough effectively were (39.6%).

2. Bivariate Analysis

Table 6.
The Relationship between Superintended of Swallowing Drugs 's Role with the Success of Adult Pulmonary TB Treatment in the Work Area of the Oesapa Health Center in 2021.

No	Role of Superintended of Swallowing Drugs	Treatment Success				Total		*p-value*
		Not successful		Succeeded				
		n	%	n	%	n	%	
1	No role	4	3,0	32	23,9	36	26,9,	
2	play a role	2	1,5	96	71,6	98	73,1	*0,024*
	Total	6	4,5	128	95,5	134	100	

Table 6 shows that the respondents who were successful in the treatment of adult pulmonary TB were mostly in the category of respondents with the role of Superintended of Swallowing Drugs as many as 71.6%, compared to those who did not play a role in the success of adult pulmonary TB treatment as much as 23.9%. Meanwhile, respondents who did not succeed in the treatment of adult pulmonary TB were mostly in the category of respondents with no role in the Superintended of Swallowing Drugs category, namely 3.0%, compared to respondents who did not play a role in the success of adult pulmonary TB treatment, which was 1.5%.

The results of the Chi-Square test showed that there was a significant relationship between the role of Superintended of Swallowing Drugs and the success of adult pulmonary TB treatment in the work area of the Oesapa Health Center with p-value = 0.024 ($p<0.05$).

Table 7.

The Relationship between Type of Treatment and the Success of Adult Pulmonary TB Treatment in the Work Area of the Oesapa Health Center in 2021.

No	Type of Treatment	Treatment Success				Total		*p-value*
		Not successful		Succeeded				
		n	%	n	%	n	%	
1	Category 2	5	3,7	0	0	5	3,7	
2	Category 1	1	7	128	95,5	129	96,3	*0,000*
	Total	6	4,5	128	95,5	134	100	

Table 7 shows that the respondents who were successfully treated adult pulmonary TB were mostly respondents with category one treatment, which was 95.5%, compared to category two treatment, which was 0%. In contrast, respondents who were unsuccessful in treating adult pulmonary TB were mostly respondents with category two treatment, namely 3.7%, compared to category one treatment, which was 7%.

The Chi-Square test shows a significant relationship between the type of treatment and the success of adult pulmonary TB treatment in the work area of the Oesapa Health Center with a p-value = 0.000 (p<0.05).

Table 8.
Relationship between Effective Cough and Successful Treatment of Adult Pulmonary TB in the Work Area of the Oesapa Health Center in 2021.

No	Effective Cough	Treatment Success				Total		*p-value*
		Not successful		Succeeded				
		n	%	n	%	n	%	
1	Do not do	4	3,0	77	57,5	81	60,4	
2	To do	2	1,5	51	38,1	53	39,6	*0,750*
	Total	6	4,5	128	95,5	134	100	

Table 8 shows that the respondents who successfully treated adult pulmonary TB mostly did not cough effectively, namely 57.5%, compared to respondents who did effective coughing, 38.1%. Meanwhile, respondents who did not succeed in treating adult pulmonary TB were mostly respondents who did not cough effectively, namely 3.0%, compared to respondents who did cough effectively, which was 1.5%.

The Chi-Square test results showed no significant relationship between effective cough and adult pulmonary TB treatment success in the Oesapa Health Center work area with a p-value = 0.750 (p>0.05).

Discussion

1. The Relationship Between the Role of Superintended of Swallowing Drugs and the Success of Adult Pulmonary TB Treatment

The role of Superintended of Swallowing Drugs in the successful treatment of adult pulmonary TB is very important for adult pulmonary TB patients. Superintended of Swallowing Drugs is important to supervise patients taking medication, remind patients to recheck sputum according to the specified time, and encourage TB patients to take drugs until finished (Sitorus et al., 2016).

The results of this study indicate that respondents in this study had more Superintended of Swallowing Drugs roles in the treatment of adult pulmonary TB (75.0%) than those who did not play a role in the treatment of adult pulmonary TB (25.%). The Chi-square statistical test shows a relationship between the role of Superintended of Swallowing Drugs and the success of adult pulmonary TB treatment in the work area of the Oesapa Public Health Center in 2021. The results of this study are in line with research conducted by Fandinata & Darmawan (2019) at the Rubaru Health Center, Sumenep Regency, which shows that a significance value of 0.013 < 0.05, this means a significant relationship between the role of Superintended of Swallowing Drugs and the success of patient treatment. The correlation coefficient R obtained is 0.388, so the relationship between the role of Superintended of Swallowing Drugs and the success of patient treatment is unidirectional; this means that the greater the role of Superintended of Swallowing Drugs, the higher the success of treatment. On the contrary, the smaller Superintended of Swallowing Drugs role, the lower the success of treatment. Another study shows that the P-Value value was 0.000, meaning that there was a significant relationship between the role of Superintended of Swallowing Drugs on the

success of TB treatment at the Ulak Tano Health Center (Napitupulu & Harahap, 2020).

This research found that Superintended of Swallowing Drugs plays a role in supervising adult pulmonary TB patients in taking treatment, and Superintended of Swallowing Drugs encourages adult pulmonary TB patients in taking treatment such as helping to remind when to take medicine by setting the alarm on the cellphone so that adult pulmonary TB patients do not forget to take their medicine. In addition, Superintended of Swallowing Drugs reminded adult pulmonary TB patients to check for sputum at the community health center routinely, take adult pulmonary TB patients to receive treatment, and advise adult pulmonary TB patients to take medication regularly until they are finished. This is in line with research conducted by Sitorus et al. (2016), shows that the role of Superintended of Swallowing Drugs is very important in terms of swallowing drugs, reminding TB patients to re-examine sputum, encouraging them to seek treatment regularly, and advising TB patients to take drugs until they are finished according to medical advice.

Based on the results, it was shown that the mother or wife of the patient most often reminded the patient to take medicine; this was because a mother or wife did not work outside and did not have other activities to help the patient remind them. However, the husband who received the Superintended of Swallowing Drugs did not give his role because most of the male Superintended of Swallowing Drugs worked outside the home and had their own busy lives; most of the patients remembered it themselves.

Superintended of Swallowing Drugs of people with a role to help encourage and treat patients is 25% because they are busy working outside the home and adult pulmonary TB patients who refuse listen to Superintended of Swallowing Drugs directions. It appears to be happening because Superintended of Swallowing Drugs does not have power in the house. For

example, husbands who do not want to listen to their wives' directions from Superintended of Swallowing Drugs .

2. The relationship between the type of treatment and the success of adult pulmonary TB treatment

Long-term treatment of adult pulmonary TB patients with a large number of drugs causes adult pulmonary TB patients to get bored of taking drugs and control the health facilities at the appointed time; in addition, patients also complain of dizziness, changes in appetite, difficulty sleeping, weight loss and often feel anxious. As a result, treatment does not work and requires even longer time in treatment (Zahroh & Subai'ah, 2016).

Category 1 treatment is given to adult pulmonary TB patients with a treatment period of 6 months; at this stage, the patient is asked to take medication regularly because it greatly affects treatment success. Treatment that fails will lead to recurrence and unsuccessful treatment of adult pulmonary TB, so the patient must re-treat the treatment period for eight months (Zahroh & Subai'ah, 2016).

This study indicates that the respondents who successfully treated adult pulmonary TB were mostly respondents with category one treatment, which was 96.3%, compared to category two treatment, which was 3.7%. The Chi-square statistical test results show a relationship between the type of treatment and adult pulmonary TB treatment success in the Oesapa Public Health Center work area in 2021. The results of this study are in line with the research by Annisa & Hastono (2019) that shows a significant relationship between the types of treatment. TB with successful treatment at the Pulmonary Polyclinic, Cilegon City Hospital in 2017. Category I treatment has a 4.2 times greater chance of success in TB treatment than patients with category II treatment (RR = 4.2; 95% CI 1.08– 16.44). Patients treated with category I treatment have never

taken OAT, so the treatment process is better and does not have the potential to be resistant to OAT types that require a longer treatment time.

The interview results revealed that the relationship between the type of treatment and the success was that category one patients had never taken TB drugs before. Hence, they were still enthusiastic and obedient in taking treatment. If adult pulmonary TB patients were not obedient in taking drugs, they would experience high drug resistance, leading to a longer treatment and risk of failure. The number of drugs taken by category 1 patients is not as much as category 2; this makes patients who take drugs for too long will feel bored and bored. However, the data in the field also found that there were category 1 patients who could stop treatment because of the side effects of taking TB drugs regularly; the patient said that when taking TB drugs, the patient's skin experienced severe irritation causing the patient to stop treatment.

The interview results found that the most successful cause of adult pulmonary TB treatment in category 1 was category one pulmonary TB patients who were new patients who had just started TB treatment. The duration of treatment was only six months. In comparison, respondents who did not succeed in treatment were mostly in category two because they were relapsed patients with eight months of treatment who repeated treatment from previous treatment failures. In addition, respondents with category 2 are patients with complete treatment (pulmonary TB patients who complete their treatment completely but do not meet the requirements for recovery or failure).

3. Relationship between Effective Cough and Successful Treatment of Adult Pulmonary TB

Effective coughing is a necessary action to clear the secret. Effective coughing is a correct cough method. The client can save energy so that he is not easily tired and can expel phlegm maximally to eliminate lung expansion mobilize secretions, preventing side effects from retention to secretion (Hudak

& Gallo 1999 in Nugroho & Kristiani, 2011). According to Hudak & Gallo (2012), an effective cough is a necessary action to clear secretions.

Effective cough in the successful treatment of adult pulmonary TB is needed to make it easier for pulmonary TB patients to expel phlegm. The inability of pulmonary TB patients to expel phlegm that the body cannot expel in the patient's breathing results in the emergence of phlegm in the body of pulmonary TB patients. Sputum accumulation will cause pulmonary TB patients to experience respiratory problems due to the obstruction of the diffusion process of O2 and CO2. One way to remove phlegm from breathing is by coughing, but not all coughs can expel phlegm, among others, by coughing effectively (Firdani, 2020).

This study indicates that the respondents who successfully treat adult pulmonary TB are mostly respondents who coughed effectively, namely 60.2%, compared to respondents who coughed effectively, which is 39.8%. The Chi-square statistical test results showed no relationship between effective coughing and adult pulmonary TB treatment success in the Oesapa Public Health Center work area in 2021. Based on the interviews using questionnaires, out of 128 respondents who succeeded in did not cough effectively (60,2%), it is difficult to expel phlegm for laboratory results, and respondents do not know about effective coughing. Health workers do not teach effective coughing at the referral hospital or community health center where treatment continues. Respondents said respondents were asked to try to cough independently to expel phlegm in removing phlegm. The advice given by health workers was only to drink warm tea and give medicine to remove phlegm. The results of this study are not in line with research conducted by (Ariyanto, 2018), which states that there was an influence between effective coughing on the quality of sputum production for the discovery of MTB in pulmonary TB patients before and after effective coughing techniques, which were carried out in Rajawali Room 6B RSUD Dr. Kariadi with a p-value of 0.001 (<0.005).

Conclusion

The results of this study indicate that there is a relationship between the role of Superintended of Swallowing Drugs, and the type of treatment with the success of adult pulmonary TB treatment in the working area of the Oesapa Public Health Center in 2021, while the effective cough variable has no relationship with the success of adult pulmonary TB treatment in the work area of the Oesapa Public Health Center in 2021.

Suggestion

The staff managing the pulmonary TB program are expected to increase the frequency of counseling about the role of Superintended of Swallowing Drugs in supervising, encouraging, and assisting adult pulmonary TB patients to achieve treatment success.

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