SURAT KETERANGAN

Nomor: 757/UNUSA-LPPM/Adm-I/III/2024

Lembaga Penelitian dan Pengabdian Kepada Masyarakat (LPPM) Universitas Nahdlatul Ulama Surabaya menerangkan telah selesai melakukan pemeriksaan duplikasi dengan membandingkan artikel-artikel lain menggunakan perangkat lunak **Turnitin** pada tanggal 28 Maret 2024.

Judul	: *The Convention Of Regular Treatment With Sphetic Conversion During Intensive Tuberculosis Treatment*
Penulis	: Chilyatiz Zahroh, Nanang Nurrachmat Setiadi, Nur Ainiyah, Eppy Setiyowati, Erik Kusuma, Mulyadi
No. Pemeriksaan	: 2024.03.28.312

Dengan Hasil sebagai Berikut:

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THE CONVENTION OF REGULAR TREATMENT WITH SPHETIC CONVERSION DURING INTENSIVE TUBERCULOSIS TREATMENT

by Eppy Setiyowati

THE CONVENTION OF REGULAR TREATMENT WITH SPHETIC CONVERSION DURING INTENSIVE TUBERCULOSIS TREATMENT

Chilyatiz Zahroh[1]
Nanang Nurrachmat Setiadi[2]
Nur Ainiyah [3]
Eppy Setiyowati[4]
Erik Kusuma[5]
Mulyadi[6]

ABSTRACT

Purpose: The primary objective of this research is to investigate the relationship between medication regularity and sputum conversion following the intensive treatment phase of pulmonary tuberculosis (TB) at Banyu Urip Public Health Center in Surabaya. Recognizing the importance of sputum conversion as a key determinant of treatment success in pulmonary TB, this study aims to assess the impact of medication regularity on the achievement of sputum conversion among TB patients.

Methods: This study adopts an analytic correlation approach with a cross-sectional design. The study population comprises tuberculosis patients receiving treatment at the Public Health Center. Data collection involves simple random sampling of 51 respondents, focusing on variables related to medication regularity and sputum conversion. Questionnaires based on the Morisky Medication Adherence Scale-8 (MMAS-8) and observation sheets are utilized as instruments. Data analysis is conducted using logistic binary regression to examine the relationship between medication regularity and sputum conversion.

Results and Discussion: Among the 51 respondents, 70.6% demonstrated regularity in treatment, with 76.5% achieving sputum conversion. The Spearman rank test analysis indicates a significant relationship between medication regularity and sputum conversion ($p = 0.011$; $p < \alpha = 0.05$; $r = 0.352$). These findings suggest that adherence to medication is positively associated with successful sputum conversion following the intensive treatment phase of tuberculosis. Such results underscore the critical role of medication regularity in achieving positive treatment outcomes in TB patients.

Implications of the Research: The research outcomes hold important implications for healthcare providers and policymakers involved in tuberculosis management and control. The findings highlight the significance of promoting medication regularity among TB patients to enhance treatment efficacy and increase the likelihood of sputum conversion. It underscores the importance of providing comprehensive counseling and support services to TB patients and their families, along with engaging other relevant stakeholders, to ensure adherence to treatment protocols throughout the course of therapy.

Originality/Value: This study contributes to the existing literature by focusing on the relationship between medication regularity and sputum conversion specifically within the context of tuberculosis treatment. By

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[1] Universitas Nahdlatul Ulama Surabaya, East Java, Indonesia. E-mail: chilyatiz@unusa.ac.id
Orcid: https://orcid.org/0000-0002-7466-0963
[2] Banyu Urip Public Health Centre, Surabaya Health Service, Ministry of Health of the Republic of Indonesia, Indonesia. E-mail: nanangnurrachmatsetiadi@gmail.com Orcid: https://orcid.org/0009-0007-3944-1224
[3] Universitas Nahdlatul Ulama Surabaya, East Java, Indonesia. E-mail: ainiyahannuri@unusa.ac.id
Orcid: https://orcid.org/0009-0007-3944-1224
[4] Universitas Nahdlatul Ulama Surabaya, East Java, Indonesia. E-mail: eppy@unusa.ac.id
Orcid: https://orcid.org/0000-0001-9930-6218
[5] Universitas Jember, East Java, Indonesia. E-mail: erikkusuma.akper@unej.ac.id
Orcid: https://orcid.org/0000-0002-1670-1325
[6] Universitas Nahdlatul Ulama Surabaya, East Java, Indonesia. E-mail: mulyadi@unusa.ac.id
Orcid: https://orcid.org/0000-0002-7619-0440

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employing logistic binary regression analysis and incorporating the MMAS-8 questionnaire, the research offers valuable insights into the factors influencing treatment outcomes in TB patients. The findings provide a basis for targeted interventions aimed at improving medication adherence and enhancing treatment success rates in pulmonary tuberculosis, thereby contributing to more effective tuberculosis management strategies.

Keywords: Medication Regularity, Sputum Conversion, Intensive Treatment Phase.

A CONVENÇÃO DE TRATAMENTO REGULAR COM CONVERSÃO ESFÉTICA DURANTE O TRATAMENTO INTENSIVO DA TUBERCULOSE

RESUMO

Objetivo: O objetivo principal desta pesquisa é investigar a relação entre a regularidade da medicação e a conversão de escarro após a fase de tratamento intensivo da tuberculose pulmonar (TB) no Centro de Saúde Pública de Banyu Urip em Surabaya. Reconhecendo a importância da conversão do escarro como um determinante chave do sucesso do tratamento na TB pulmonar, este estudo visa avaliar o impacto da regularidade da medicação na obtenção da conversão do escarro entre os pacientes com TB.

Métodos: Este estudo adota uma abordagem de correlação analítica com um design transversal. A população estudada compreende pacientes com tuberculose que recebem tratamento no Centro de Saúde Pública. A coleta de dados envolve amostragem aleatória simples de 51 entrevistados, com foco em variáveis relacionadas à regularidade da medicação e à conversão do escarro. Questionários baseados na Escala de Adesão à Medicação Morisky-8 (MMAS-8) e fichas de observação são utilizados como instrumentos. A análise de dados é realizada utilizando regressão binária logística para examinar a relação entre a regularidade da medicação e a conversão de escarro.

Resultados e Discussão: Entre os 51 entrevistados, 70,6% demonstraram regularidade no tratamento, sendo que 76,5% alcançaram a conversão de escarro. A análise do teste de classificação de Spearman indica uma relação significativa entre a regularidade da medicação e a conversão do escarro ($p = 0,011$; $p < \alpha = 0,05$; $r = 0,352$). Estes achados sugerem que a adesão à medicação está positivamente associada com a conversão bem sucedida do escarro após a fase de tratamento intensivo da tuberculose. Esses resultados destacam o papel crítico da regularidade da medicação na obtenção de resultados positivos de tratamento em pacientes com TB.

Implicações da Pesquisa: Os resultados da pesquisa têm implicações importantes para os provedores de saúde e formuladores de políticas envolvidas no gerenciamento e controle da tuberculose. Os achados destacam a importância de promover a regularidade da medicação entre os pacientes com TB para aumentar a eficácia do tratamento e aumentar a probabilidade de conversão do escarro. Ele destaca a importância de fornecer aconselhamento abrangente e serviços de apoio aos pacientes com tuberculose e suas famílias, juntamente com o envolvimento de outras partes interessadas relevantes, a fim de garantir a adesão aos protocolos de tratamento ao longo do curso da terapia.

Originalidade/valor: Este estudo contribui para a literatura existente, focando-se na relação entre a regularidade da medicação e a conversão escarro, especificamente no contexto do tratamento da tuberculose. Ao empregar a análise de regressão binária logística e incorporar o questionário MMAS-8, a pesquisa oferece informações valiosas sobre os fatores que influenciam os resultados do tratamento em pacientes com TB. Os resultados proporcionam uma base para intervenções direcionadas destinadas a melhorar a adesão à medicação e aumentar as taxas de sucesso do tratamento na tuberculose pulmonar, contribuindo assim para estratégias mais eficazes de manejo da tuberculose.

Palavras-chave: Regularidade Medicamentar, Conversão Esputal, Fase de Tratamento Intensivo.

CONVENIO SOBRE EL TRATAMIENTO REGULAR CON CONVERSIÓN ESFÉTICA DURANTE EL TRATAMIENTO INTENSIVO DE LA TUBERCULOSIS

RESUMEN

Propósito: El objetivo principal de esta investigación es investigar la relación entre la regularidad de la medicación y la conversión del esputo después de la fase de tratamiento intensivo de la tuberculosis pulmonar (TB) en el Centro de Salud Pública Banyu Urip en Surabaya. Reconociendo la importancia de la conversión del esputo como

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un determinante clave del éxito del tratamiento en la TB pulmonar, este estudio tiene como objetivo evaluar el impacto de la regularidad de la medicación en el logro de la conversión del esputo entre los pacientes con TB.

Métodos: Este estudio adopta un enfoque de correlación analítica con un diseño transversal. La población de estudio comprende a los pacientes con tuberculosis que reciben tratamiento en el Centro de Salud Pública. La recopilación de datos implica un muestreo aleatorio simple de 51 encuestados, centrándose en variables relacionadas con la regularidad de la medicación y la conversión de esputo. Se utilizan como instrumentos cuestionarios basados en la Escala de Adherencia a la Medicación Morisky-8 (MMAS-8) y hojas de observación. El análisis de datos se realiza utilizando regresión binaria logística para examinar la relación entre la regularidad de la medicación y la conversión del esputo.

Resultados y discusión: Entre los 51 encuestados, el 70,6% demostró regularidad en el tratamiento, con el 76,5% logrando la conversión de esputo. El análisis de la prueba de rango de Spearman indica una relación significativa entre la regularidad de la medicación y la conversión del esputo ($p = 0,011$; $p < \alpha = 0,05$; $r = 0,352$). Estos hallazgos sugieren que la adherencia a la medicación se asocia positivamente con la conversión exitosa del esputo después de la fase de tratamiento intensivo de la tuberculosis. Estos resultados subrayan el papel fundamental de la regularidad de la medicación para lograr resultados positivos en el tratamiento de los pacientes con tuberculosis.

Implicaciones de la investigación: Los resultados de la investigación tienen implicaciones importantes para los proveedores de atención médica y los responsables de políticas involucrados en el manejo y control de la tuberculosis. Los hallazgos destacan la importancia de promover la regularidad de la medicación entre los pacientes con TB para mejorar la eficacia del tratamiento y aumentar la probabilidad de conversión del esputo. Subraya la importancia de proporcionar servicios integrales de asesoramiento y apoyo a los pacientes de tuberculosis y sus familias, junto con la participación de otras partes interesadas pertinentes, para garantizar el cumplimiento de los protocolos de tratamiento a lo largo del curso de la terapia.

Originalidad/Valor: Este estudio contribuye a la literatura existente al centrarse en la relación entre la regularidad de la medicación y la conversión del esputo específicamente en el contexto del tratamiento de la tuberculosis. Al emplear análisis de regresión binaria logística e incorporar el cuestionario MMAS-8, la investigación ofrece información valiosa sobre los factores que influyen en los resultados del tratamiento en pacientes con tuberculosis. Los resultados proporcionan una base para intervenciones específicas destinadas a mejorar la observancia de la medicación y mejorar las tasas de éxito del tratamiento de la tuberculosis pulmonar, contribuyendo así a estrategias de manejo de la tuberculosis más eficaces.

Palabras clave: Regularidad de la Medicación, Conversión de Esputo, Fase de Tratamiento Intensivo.

1 INTRODUCTION

Pulmonary tuberculosis has been known more than a century ago, namely since the discovery of germs that cause tuberculosis by Robert Koch in 1882, but until now tuberculosis remains a world health problem, especially in Indonesia. The pulmonary tuberculosis eradication program with the DOTS strategy is to achieve a conversion rate of at least 80% in the early phase and a cure rate of at least 85%, especially in new cases of TB patients with positive Acid-Resistant Bacilli (BTA). The conversion rate is the percentage of BTA positive pulmonary TB patients who experience conversion to BTA negative after undergoing intensive treatment (Ministry of Health RI, 2022). In some patients undergoing TB treatment, conversion

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failure was found after intensive phase treatment (Ministry of Health RI, 2022).

Indonesia is the country with the third highest TB burden after India and China (WHO, 2021). The discovery of TB cases is greatly influenced by the conditions of the COVID-19 pandemic. However, in the midst of the pandemic atmosphere, East Java Province managed to find 43,268 TB sufferers in 2021. This number is the third highest in Indonesia. Surabaya occupies the highest TB cases in East Java with 12,374 patients (East Java Provincial Health Office, 2021). This number is the third highest in Indonesia. Surabaya occupies the highest TB cases in East Java with 12,374 patients (East Java Provincial Health Office, 2021). The success of TB treatment begins with the conversion of the patient's sputum. Data on the TB program report in the Tuberculosis Information System (SITB) at the Banyu Urip Health Center Surabaya in 2018 achieved a conversion rate of 72.6% and in 2019 a conversion rate of 70.3%. From this data, there was a decrease in the achievement of conversion rates (Surabaya City Health Office, 2020).

Several studies say that the risk factors for conversion failure are caused by several things including irregularities in taking TB drugs caused by patient knowledge and education, the role of health counseling, drug availability, drug swallowing supervisors (PMO), drug side effects, comorbidities and feeling healthy (Ministry of Health RI. 2020). In increasing conversion and cure rates, the national TB program adopts the DOTS (directly observed treatment, short course) strategy recommended by WHO. The DOTS strategy has 5 interrelated elements, namely strong political commitment from local governments and other sectors, good diagnosis using binocular microscopes, sufficient and uninterrupted drug procurement and distribution, the existence of drug swallowing supervisors for each patient with the support of a standard recording and reporting system (Ministry of Health RI, 2020). The results of the end of the second month determine the OAT package for advanced phase patients, calculate the scope of conversion rates and assess the performance of the TB puskesmas program. The success of a high conversion rate will be followed by a high cure rate and improve the patient's health status. Health status is the result of the interaction of various factors, both factors from within humans (internal) and from outside humans (external). These internal factors consist of individual physical and psychological factors, while external factors include socioeconomic, socio-cultural, environmental, political, knowledge, educational and so on. Factors that still influence a person's behavior in undergoing treatment include age, occupation, health services, support from family and discrimination received by patients (L. Green, 2012). The impact of sputum conversion failure requires attention because of the risk of drug resistance and increased disease severity.

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The regularity of taking OAT as a patient control can be overcome by the presence of drug swallowing supervisors (PMOs) and health workers who always provide guidance to PMOs and sufferers. With guidance and motivation, individuals will experience changes in behavior from within and from outside, aspects that affect them from within the individual, namely perception, attitude, motivation, and emotions (Pasaribu, 2014). Thus, support and cooperation from many parties are needed, such as cross-sector, cross-program, cross-profession and leaders as policy makers in increasing the conversion and cure rates of TB patients. Further evaluation and research on the timing of intensive treatment is needed considering that each patient's condition is different, such as nutritional status, comorbidities and socioeconomic conditions. Based on the above problems, the author wants to prove the relationship between the regularity of treatment and sputum conversion in patients with pulmonary tuberculosis after the intensive treatment phase at the Banyu Urip Health Center Surabaya.

2 MATERIALS AND METHODS

2.1 MATERIAL

The type of research used is correlational analytics with a cross sectional approach. In this study, observations or measurements of data on independent variables and dependent variables were assessed once at the same time. The variables studied were regularity of treatment as an independent variable, and sputum conversion after the intensive treatment phase of tuberculosis as the dependent variable.

2.2 DATA COLLECTION PROCEDURES

The population in this study was tuberculosis patients undergoing DOTS TB treatment at the Banyu Urip Health Center Surabaya from October 2021 to February 2022. The total population that was the object of research in this thesis was 68 patients. The sample size in this study was 51 patients. In this study, the sampling technique uses Purposive Sampling, which is a sampling technique by selecting samples among the population as desired by the researcher, so that the sample can represent previously known population characteristics (Nursalam, 2016).

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2.3 DATA ANALYSIS

After the data is processed, the next step of the data is analyzed, the analysis used is the statistical test of Spearman Rank using the SPSS program version 25.0 for windows with a significant level of $\alpha = 0.05$. If the results of statistical tests show $p < \alpha$ 0.05 then the hypothesis is rejected which means there is a relationship between the independent and dependent variables.

3 RESULTS AND DISCUSSION

3.1 RESULT

Tabel 1

Distribution of Respondents' Frequency by Gender, Age, and Education

Characteristic	Frekuensi (n=51)	Presentase (%)
Jenis Kelamin		
Women	**16**	**31,4**
Men	**35**	**68,6**
Age (years old)		
16 - 25	9	17.6
25 - 35	3	5.9
36 - 49	21	41.2
50 - 60	10	19.6
> 60	8	15.7
Education		
Elementary	24	**39**
Intermediate	25	**49**
Higher	2	**47.1**

Source: Prepared by Authors (2024)

The results showed that 68.6% respondents were male, 41.2% aged 36-49 years old, and 49.0%) have Senior High School.

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Table 2

the corelation test betwee regularity oh treatment and sputum conversion

Regularity of treatments	Sputum Conversion			
	Negative		Negative	
	f	%	f	%
Irregular	7	46.7	8	53.3
Regular	5	13.9	31	86.1
Spearman Rho p= 0,011; Koefisien korelasi (r) = 0,352				

Source: Prepared by Authors (2024)

The results of the spearman rho correlation test showed that respondents who did not regularly seek treatment as many as 15 people and most (53.3%) did not convert. While respondents who regularly seek treatment as many as 36 people and most (86.1%) occur sputum conversion.

The results of statistical tests using the Spearman Rank correlation test with a level of significance $\alpha = 0.05$ obtained a significant level (α) = 0.011 < 0.05 and a correlation coefficient (r) = 0.352 then H0 rejected means that there is a significant relationship between the regularity of treatment and sputum conversion at the TB Room.

4 DISCUSSION

4.1 IDENTIFICATION OF MEDICATION REGULARITY

Based on the frequency distribution of regular treatment for pulmonary tuberculosis patients at the TB Poly Puskesmas Banyu Urip Surabaya that of the 51 respondents, most of them were regularly treated with a frequency of 36 respondents (70.6%). Patients are said to regularly seek treatment if they finish their medicine according to the recommendations of health workers and come back to the Puskesmas to take the next medicine according to the schedule determined by the health worker. Meanwhile, irregularity in treatment in pulmonary TB patients according to WHO (2018) is if the patient does not seek treatment for 2 consecutive months or more before the treatment period is over.

Notoadmodjo (2012) said many things that influence a person in his health behavior include attitudes, beliefs, values, perceptions, demographic factors such as socioeconomic, age, gender, family support, transportation distance, time, health facilities and health workers. Adherence to taking medication is influenced by several factors including gender, age,

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education, work and income (Budiman, 2018). The Indonesian Ministry of Health (2018) stated that 75% of cases of pulmonary TB patients in Indonesia are in productive ages between 15-50 years. Table 5.2 shows that of the 51 respondents, almost half (41.2%) were aged 36-49 years (late adulthood). Productive age is the age at which a person is at the stage to work or produce something both for themselves and others, both inside the home and outside the home (WHO, 2020). Risk factors that cause TB disease at that age include environmental factors, malnutrition, lifestyle (smoking), and environmental sanitation (WHO, 2020). This causes the high incidence of TB in productive groups and can reduce the quality of a person's life.

Factors that affect the regularity of treatment for pulmonary tuberculosis patients conveyed by Chairil (2017) include motivation to want to recover, side effects, supervision from drug swallowing supervisors (PMO), work and education. Data collection of respondents' job characteristics in this study shows that there is no number of respondents who dominate a particular job. Table 5.4 shows that out of 51 respondents almost half (31.4%) work as private employees. The type of work determines the risk factors that must be faced by each individual (Erawatyningsih, 2017). Private employees usually work in closed rooms so that they can trigger pulmonary TB disease. A closed room without sufficient ventilation causes lack of exposure to sunlight (humid temperature), causing TB germs to live for a long time. Workers who have daily contact with many people in a closed environment have a greater risk of contracting TB. In addition, some patients do not comply with wearing masks and lack of rest periods. and unhealthy lifestyle patterns that eventually interfere with his health and easily experience pulmonary TB disease (Arditia, 2018).

The regularity of treatment in TB disease has a correlation with the educational background of respondents. Education is one of the efforts for someone to do what has been taught. The higher the education, the more you will have broad insight and act well. Table 5.3 shows that out of 51 respondents, almost half (49.0%) have a high school education. This shows that the patient has a sufficient understanding in receiving information about the treatment program. While low education makes it difficult to receive new information and has a narrow mindset, there are still some patients with low educational backgrounds who have non-compliant behavior in undergoing TB treatment therapy (Riskesdas, 2018; Zahroh, 2023).

Among the conditions of tuberculosis patients who are mostly regular in treatment, there are some who are less regular. The results of data collection stated that there are two indicators that are often the cause of irregular treatment of patients. The first is that patients claim to sometimes forget to take anti-tuberculosis drugs. This is actually non-negotiable, but the long time causes patients to forget to take medicine because of traveling so they forget to bring their

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medicine and are busy at work. The second most frequent cause of not regularly taking medication according to data collection is that patients feel their condition is better so they slightly ignore taking medication. The feeling of a better body condition sometimes becomes forgetting the obligation to take medication regularly. Thus, there must be a family or closest party to remind and motivate to continue to comply with the regularity of treatment.

4.2 IDENTIFICATION OF SPUTUM CONVERSION

Based on table 5.6 shows that of the 51 respondents, most (76.5%) of the final sputum examination results of the intensive phase were negative (sputum conversion occurred). The Indonesian Ministry of Health said sputum is the most important material and must be examined in every lung disease because the results of microscopic examination of sputum can help establish the diagnosis. In the intensive (early) stage, patients get drugs every day and are monitored directly to prevent immunity to all OAT, especially rifampicin. If the intensive stage treatment is given appropriately, it can reduce transmission within 2 weeks. The final sputum examination of the intensive stage is carried out to determine whether there is sputum conversion, which is a change from positive BTA to negative. Treatment evaluation is carried out at the end of the intensive stage and the end of treatment (Riskesdas, 2022).

The success of sputum conversion is influenced by the regularity of treatment. However, there are some patients who do not experience sputum conversion. In this study, 23.5% did not convert on intensive final sputum examination but there was a decrease in the number of TB germs with improvement in the patient's condition. This shows that sputum conversion can be caused by other factors such as the disease suffered by the patient and TB drug resistance.

The duration of treatment and side effects that arise during treatment affect the irregularity of treatment. Some patients feel from mild to severe side effects. Many OAT side effects occur in the first and second months of treatment (Mulyadi, 2017). Side effects that are felt are flu symptoms, changes in body fluid color including sweat, tears and urine. While nausea, vomiting, heartburn, constipation (constipation) are the most frequent effects experienced by sufferers during the treatment period. According to the Indonesian Ministry of Health (2018), if side effects occur, it is difficult to determine which OAT is the cause. Side effects will decrease over time of treatment. Long-term treatment can cause boredom and risk dropping out of treatment or forgetting to take OAT. The role of PMO is very important in ensuring the regularity of treatment for TB patients.

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4.3 ANALYSIS OF THE RELATIONSHIP BETWEEN REGULARITY OF TREATMENT WITH SPUTUM CONVERSION

Based on the static tests described in the previous chapter, a significant level (α) = 0.011 < 0.05 and a correlation coefficient (r) = 0.352, H0 is rejected, which means there is a significant relationship between the regularity of treatment and sputum conversion at the TB Poly, Banyu Urip Health Center, Surabaya.

Regularity of treatment is the most important factor in sputum conversion, namely the change from positive BTA to negative at the end of the intensive TB treatment phase. As is known that the DOTS TB treatment program has high effectiveness but the conversion rate is still low from the target. The main factor is that the patient does not comply with the provisions of the treatment program regularly, especially the regular use of OAT at 2 months of the intensive phase. Without the regularity of taking drugs, TB disease is difficult to cure and TB germs in the body will develop more and more and attack other organs, so it takes longer to heal with large medical costs, especially in drug-resistant TB conditions.

5 CONCLUSION

The DOTS TB treatment system at the Banyu Urip Health Center is in accordance with the National TB control guidelines whose treatment is carried out through 2 stages, namely intensive stages and advanced stages. The Ministry of Health of the Republic of Indonesia (2018) set a treatment success standard of 85% where the Banyu Urip Health Center has exceeded the achievement of the target by 95% in the performance of the TB program.

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