# Factors Related to Pulmonary Tuberculosis Patients Compliance to Anti Tuberculosis Drugs: Observational Analytic Study in Working Area of Puskesmas Pekauman Banjarmasin City

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Abstract: Tuberculosis (TB) is a disease with a high risk of transmission. One of the determinants of successful management of tuberculosis treatment is patient adherence to therapy. Adherent patients completing treatment is regular and complete treatment without interruption for at least six months to 9 months. Based on Report South Kalimantan Provincial Health Office in 2017 discovered 6,656 cases / 10 177 suspected. Judging from the data that the city of Banjarmasin is the highest town invention pulmonary TB incidence rates as much as 2,238 cases. Judging from the data on the number of pulmonary TB patients per health centre in Banjarmasin showed that Puskesmas Pekauman occupies the highest case detection rate of pulmonary TB incidence by 2018 as many as 94 people with relapsing patients were three people and as many as seven people edited. Therefore, Pekauman Health Center is selected as research sites. This study aims to clarify the relationship between age, sex, education, medication side effects, knowledge, and attitude of health personnel with compliance to anti-tuberculosis drugs. This research is an observational analytic with a cross-sectional design using a purposive sampling technique. The population in this study were 45 patients and a sample of 30 patients. The instrument used was a questionnaire. Bivariate data analysis with fisher exact test because it does not meet the Chi-Square test is a normal distribution of data, frequency expectation value <5 and more than 20%. Based on the results of the research knowledge variable (p-value = 0.019) was associated with compliance with anti-tuberculosis drugs. However, the sex variable (p-value = 1. 000) was not associated with compliance with anti-tuberculosis drugs. The number of samples is still small, and the number of research variables is limited.

## 1 INTRODUCTION

Tuberculosis (TB) is an infectious disease caused by the bacterium Mycobacterium tuberculosis. This infection usually attacks the lungs (pulmonary TB), but can also attack other organs (extrapulmonary TB). The source of transmission is smear-positive TB patients (acid-resistant bacteria) through sputum that it releases. TB with smear-negative also still has the possibility of transmitting TB disease, even with a low transmission rate. Ending the tuberculosis epidemic is one of the goals of the SDGs (sustainable development goals) by 2030 (Sinaga, Farida, and Husnul, 2016; Indonesian Statistics Agency, 2016).

Tuberculosis (TB) is a disease with a high risk of transmission. One of the determinants of the successful management of tuberculosis therapy is patient compliance with therapy. Patients who adhere to treatment are those who finish treatment regularly and thoroughly without interruption for at least six months to 9 months. Meanwhile, non-compliance with treatment in tuberculosis patients according to Sari's study (2016) is if the patient does not seek treatment for two consecutive months or more before the treatment period is complete (Sari, Rofingatul, and Sudibyo, 2011) . Non-compliance with treatment will cause failure and recurrence, resulting in resistance and continuous transmission of disease. This condition can increase the risk of morbidity, mortality and drug resistance both inpatients and on the broader community. The consequences of long-term non-compliance with treatment are deteriorating health and increasing costs of care. Disobedience of



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pulmonary TB sufferers causes low cure rates, high mortality rates and increased recurrence and more fatal is the occurrence of germ resistance to several anti-tuberculosis drugs or multidrug resistance so that pulmonary tuberculosis is complicated to cure (Ministry of Health of the Republic of Indonesia, 2011) .

Indonesia is the country with the second-largest number of new cases in the world after India. Based on the WHO global tuberculosis report (2017), Indonesia's tuberculosis incidence rate was 391 per 100,000 population and mortality rate was 42 per 100,000 population, whereas according to the modelling based on tuberculosis prevalence survey data in 2013-2014 the prevalence rate in 2017 was 619 per 100,000 population, while in 2016 it was 628 per 100,000 population. The target of tuberculosis prevalence in 2016 is 271 per 100,000 population. It is followed with achievements of 257 per 100,000 population in 2017. The target is 262 per 100,000 population with achievements of 254 per 100,000 population (World Health Organization, 2017; The Indonesian Ministry of Health, 2018).

Data from the Basic Health Research (Riskesdas) in 2013 showed that the prevalence of pulmonary TB diagnosed by health workers in Indonesia was 0.3% and South Kalimantan Province was ranked 12th as a contributor to the prevalence of pulmonary TB in Indonesia (RI Ministry of Health, 2013) . The South Kalimantan Provincial Health Office report in 2017 found 6,656 cases / 10,177 suspected. Judging from the data that the city of Banjarmasin is the highest city finding pulmonary TB incidence as many as 2,238 cases (South Kalimantan Provincial Health Office, 2017). Judging from the data on the number of pulmonary TB patients per PUSKESMAS in Banjarmasin City, it was found that the Pekauman PUSKESMAS occupies the highest number of cases of pulmonary TB in 2018 with 94 people with three patients recurring and seven deaths (Banjarmasin City Health Office, 2018) . Therefore Pekauman Health Center was chosen as a research site.

Based on this description, it is felt necessary to research factors related to adherence to taking anti-tuberculosis medication in pulmonary tuberculosis patients in the working area of Pekauman Health Center.

# 2 METHOD

This research is a type of quantitative research. This study uses a cross-sectional study design using a purposive sampling technique. The number of respondents in this study totalled 30 pulmonary tuberculosis patients who were still being treated. The instrument used in this study was a questionnaire. The questionnaire in this study consisted of 2 types, namely, a questionnaire that included self-identity such as gender and a questionnaire relating to the knowledge and attitudes of health workers. The bivariate analysis uses the fisher exact test statistic test because it does not meet the Chi-Square test, which is typically distributed data, the expected frequency value <5 and more than 20%.

# 3 RESULTS AND DISCUSSION

## 3.1 Univariate Analysis

This analysis aims to get a picture of the frequency distribution data of each variable, namely an independent variable that includes gender, knowledge and attitude of health workers and the dependent variable, compliance with medication). The description of independent and dependent variables are as follows:

Table 1: Frequency distribution of adherence to taking anti-tuberculosis drugs, gender, knowledge and attitude of health workers.

| Variable | Respondents | |
|---|---|---|
| | Amount (n) | Percentage (100%) |
| Compliance with Anti-Tuberculosis Medication | | |
| Obedient | 25 | 83.3 |
| Not obey | 5 | 16.7 |
| Gender | | |
| Male | 19 | 63.3 |
| Girl | 11 | 36.7 |
| Knowledge | | |
| High | 21 | 70 |
| Low | 9 | 30 |
| Attitudes of Health Workers | | |
| Positive | 30 | 100 |
| Negative | 0 | 0 |

Source: Primary Data from 2019 Research Results

Table 1 shows that the frequency of compliance shows that the number of respondents is higher than the number of non-adherent respondents (83.3% compared to 16.7%). In the gender frequency distribution, it shows that the number of respondents is male - greater than the number of women (63.6% compared to 36.7%).In the frequency distribution of knowledge shows that the number of respondents with high knowledge is greater than the number of respondents with low knowledge (70% versus 30%).

In the frequency distribution of attitudes of health workers showed that all the number of respondents rated the attitude of health workers positive (100%).

## 3.2 Bivariate Analysis

This analysis aims to explain the relationship between two variables, namely between each independent variable which includes the sex, knowledge and attitude of health workers with the dependent variable, namely medication adherence. However, the independent variable is the attitude of health workers not included in the bivariate analysis because the results of the univariate analysis did not show varied results.

Table 2: Relationship Between Gender and Knowledge with Compliance with Taking Anti-Tuberculosis Drugs.

| Variable | Compliance with Anti-Tuberculosis Medication | | Total | P-value |
|---|---|---|---|---|
| | Obedient | Not obey | | |
| Gender | | | | 1,000 |
| Male | 16 (84.2%) | 3 (16.7%) | 19 (100%) | |
| Girl | 9 (83.3%) | 2 (16.7%) | 11 (100%) | |
| Knowledge | | | | 0.019 |
| High | 20 (95.2%) | 1 (4.8%) | 21 (100%) | |
| Low | 5 (55.6%) | 4 (44.4%) | 9 (100%) | |

Source: Primary Data from 2019 Research Results

Based on table 2, the results of the study show that knowledge is a variable that is related to adherence to taking anti-tuberculosis medication, while gender is not related to adherence to taking anti-tuberculosis medication.

Based on the Fisher exact test results, it can be seen that there is no relationship between sex with adherence to taking anti-tuberculosis drugs (p-value = 1,000). Based on the results of this field because all patients with pulmonary TB male or female want to recover from the disease and do not want to transmit it to their families, so they are obedient to follow the guidelines given despite the drug-taking a long time. This finding is in line with research by Dewanty et al. in 2016, obtained a p-value of 1,000 which shows that there is no significant relationship between sex with adherence to treatment of patients with pulmonary TB in the working area of Nguntoronadi I Puskesmas Wonogiri District. The results showed that there were no significant differences in the number of disobedient men and women because both men and women have the same workload (Sinaga, Farida, and Husnul, 20160]. Besides, according to Kondo et al. in 2014 the results of the chi-square test showed p-value = 0.459, that gender did not have a relationship with the level of adherence for treatment of pulmonary TB patients. Based on the results of research in the field in one house, several generations in the house affected by pulmonary TB, starting from parents and children. Even so, not all family members were genuinely obedient in completing their treatment. However, the high number of male patients allows broad transmission. The finding is because the men are mostly out of the house for a living. The frequency of leaving the house allows transmission of pulmonary TB disease. Therefore, compared to the women, their possibility is higher,

Based on the Fisher exact test results, it can be seen that there is a relationship between knowledge and adherence to taking anti-tuberculosis drugs (p-value = 0.019). The higher the respondent's knowledge, the more compliant with taking TB medicines. Conversely, the lower the knowledge, the more disobedient respondents are taking pulmonary TB medicine. The respondent's tremendous knowledge about the length of TB treatment until it was declared healed, so the respondent was compliant in taking TB medication according to the schedule from the health worker's statement. Based on field results, this is because every new pulmonary TB patient will undoubtedly be explained related to pulmonary TB diseases such as an explanation of how transmission, treatment, and prevention of transmission. The results of this study are in line with research conducted by Aprianor in 2018 obtained p-value 0.006> 0, 05 shows that there is a significant relationship between knowledge and medication adherence (Sinaga, Farida, and Husnul, 2016Indonesian Statistics Agency, 2016). Besides, Prihananta research in 2016 that knowledge with the level of treatment compliance in pulmonary tuberculosis patients in Dr Soehadi Prijonegoro Sragen Hospital with a significance value (p) of 0.009. So it can be interpreted that there is a significant relationship between knowledge and the level of medication adherence in tuberculosis patients at RSUD Dr Soehadi Prijonegoro Sragen. The better the knowledge of pulmonary tuberculosis patients, the better the compliance of pulmonary tuberculosis patients in treatment. Factors that influence the regularity of taking medication in pulmonary tuberculosis patients in addition to the knowledge of the patient itself is also the knowledge of the person who supervises in taking medication, for example, family or health workers. With a positive relationship

between knowledge and level of compliance, this requires the relevant parties to provide counselling to the public about the dangers of pulmonary tuberculosis and the importance of compliance in treatment. Consultation with the right media is the right way to the right target. It will undoubtedly be able to help increase the knowledge of patients so that the level of adherence in treatment will also increase (Sinaga, Farida, and Husnul, 20163).

# 4 CONCLUSIONS

Based on the results of this study, the conclusion obtained is that there is a relationship between knowledge and adherence to taking anti-tuberculosis medication in pulmonary tuberculosis patients in the working area of Pekaumaun Public Health Center, Banjarmasin. While gender variables did not show a relationship with adherence to taking anti-tuberculosis drugs in pulmonary tuberculosis patients in the working area of Pekaumaun Public Health Center, Banjarmasin, it is suggested that the patients with pulmonary TB should undergo treatment according to doctor's advice and adhere to treatment. They should listen and observe the rules and directions form health workers and PMO. When there are complaints or side effects of drugs such as fall risk, mortal risk, because of the side effects of drugs, they should notify the carer and overcome it by administering drugs or vitamins. Moreover, increase knowledge about pulmonary tuberculosis by attending counselling and communication with health workers at the health centre. For Pekauman Health Center, it is better to play an active role by conducting counselling/inserting materials in every meeting with patients or the community in posyandu activities / other activities, because the role of health workers and PMO is very influential on the success of treatment. For the Banjarmasin Health Office, it is better to conduct monitoring and evaluation in all PUSKESMAS, hospitals, private clinics, private doctor practices so that TB management must be following DOTS. For Pekauman Health Center, it is better to play an active role by conducting counselling/inserting materials in every meeting with patients or the community in posyandu activities / other activities, because the role of health workers and PMO is very influential on the success of treatment. For the Banjarmasin Health Office, it is better to conduct monitoring and evaluation in all PUSKEMAS, hospitals, private clinics, private doctor practices so that TB management must be following DOTS. For Pekauman Health Center, it is better to play an active role by conducting counselling/inserting materials in every meeting with patients or the community in posyandu activities / other activities, because the role of health workers and PMO is very influential on the success of treatment. For the Banjarmasin Health Office, it is better to conduct monitoring and evaluation in all PUSKESMAS, hospitals, private clinics, private doctor practices so that TB management must be following DOTS.

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