JHE 7 (2) (2022)

Journal of Health Education

http://journal.unnes.ac.id/sju/index.php/jhealthedu

Medication Adherence of Tuberculosis Patients in Yogyakarta: A Cross Sectional Study

Liena Sofiana✉, Suci Musvita Ayu, Diratul Amelia, Putri Adiningsih, Umi Sa'diyah, Nawwara Putri, Anggi Rahmatul Azizah, Aqna Aulya Safitri
Universitas Ahmad Dahlan, Indonesia

Article Info

Article History:
Submitted 21 September 2022
Accepted 25 October 2022
Published 30 October 2022

Keywords:
attitude; knowledge; medication adherence; related factors; tuberculosis

DOI
https://doi.org/10.15294/jhe.v7i2.60607

Abstract

Background: Tuberculosis (TBC) is one of the infectious diseases that is a major health problem in the world. The disease usually affects the lungs but can also affect other sites. Treatment adherence is the most important component in achieving treatment success. Medication compliance can also be interpreted as the extent to which the patient consumes the drug following the provisions that have been given by the doctor. This study was conducted to determine the factors associated with adherence to treatment of TBC patients in the city of Yogyakarta.
Methods: This research is an analytic observational study with a cross-sectional approach. The population in this study included all pulmonary TBC patients in 18 health centers in Yogyakarta and still undergoing treatment, a sample of 75 people was obtained. The data was collected using questionnaires. The data were analyzed using a chi-square test with a significance value of £0,05.
Result: The results of this study indicate that factors related to medication adherence in tuberculosis patients are knowledge (sig=0.016) and attitude (sig=0.039), while the factors that are not related to medication adherence are self-efficacy (sig=1.000), motivation (sig=0.375), family support (sig=0.700), support for health workers (sig=0.353) and stigma (sig=0.754) with adherence to treatment of TBC patients in Yogyakarta City.
Conclusions: Knowledge is the most related risk factor for medication adherence in tuberculosis patients in Yogyakarta City.

✉ Correspondence Address:
Email : liena.sofiana@ikm.uad.ac.id

p-ISSN 2527-4252
e-ISSN 2528-2905

INTRODUCTION

Tuberculosis (TBC) is one of the infectious diseases that is a major health problem in the world. Tuberculosis is listed as one of the top 10 diseases that cause death in the world (WHO, 2020). Globally, in 2016 there were 10.4 million incident cases of tuberculosis, equivalent to 120 cases per 100,000 population. Most of these cases occurred in Southeast Asia, which was 45% and in Africa, 25%. Based on the overall incidence of tuberculosis in the world, there are five countries with the highest incidence including India, Indonesia, China, the Philippines, and Pakistan. WHO also categorizes High Burden Countries (HBC) for TBC based on 3 indicators, namely TBC, TB/HIV, and Multidrug-Resistant Tuberculosis (MDR-TB). Based on these three indicators, Indonesia is a country that is included in the high burden list (HBC) for each category. Based on this, it means that Indonesia has big problems in dealing with TBC (Kemenkes RI, 2018).

The incidence of tuberculosis in Indonesia in 2018 was 316 per 100,000 population. Meanwhile, the death rate for TBC patients is 40 per 100,000 population. In 2019, the number of TBC cases found was 543,874 cases. This figure decreased when compared to all cases of tuberculosis found in 2018 which were 566,623 cases. The Case Detection Rate (CDR) of tuberculosis cases in 2019 increased compared to the previous 10 years, was 64.5%. However, this figure is still far from the CDR recommended by WHO, which is 90%. Nationally, the success rate of tuberculosis treatment in 2019 has reached the target set in the strategic plan of the Ministry of Health, which is 86.6% (Kemenkes RI, 2020).

Based on the DIY Health Office Profile in 2020, the highest number of all Regency/City TBC cases in 2019 occurred in the City of Yogyakarta, which was 1,178 cases. Then followed by Bantul Regency with 1,075 cases, Kulonprogo Regency with 1,048 cases, Sleman Regency with 481 cases, and Gunung Kidul Regency with 319 cases (Dinkes DIY, 2020). Based on the health profile of the City of Yogyakarta in 2021, the number of registered and treated TBC cases was 659 cases. Of the 659 cases, only 293 cases received complete treatment. So there are as many as 366 cases that have not received complete treatment. This is one of the causes of the low success rate of TBC treatment in Yogyakarta City. Treatment success can be achieved if many TBC patients of all types successfully recover and obtain complete treatment (Dinkes Kota Yogyakarta, 2021). Based on the health profile of the City of Yogyakarta in 2021, the success rate of TBC treatment in the City of Yogyakarta in 2020 has decreased compared to 2019 from 83% to 79.38% (Dinkes Kota Yogyakarta, 2021). So this figure has not reached the target of treatment success that has been set in the Yogyakarta City Regional Action Plan (RAD) for 2017-2021.

The low success of treatment is related to the behavior of patients who are less compliant in taking medication. To achieve successful treatment, regularity or patient compliance is needed in taking anti-TBC drugs. Compliance with taking anti-TBC drugs can be interpreted as adherence to taking anti-TBC drugs according to the doctor's prescription. In addition, compliance is also very important in healthy living behavior and one of them can be influenced by behavioral factors (Tukayo et al., 2020). The low success of treatment of TBC patients in the city of Yogyakarta greatly affects the incidence of resistance which if left continuously will result in Multi Drugs Resistance (MDR) (Pameswari et al., 2016).

Every patient has the right to continue or stop treatment. However, there is one factor that influences the behavior of patients in making these decisions, namely social support. one of the efforts that can be made to improve medication adherence is by providing support by the community, social organizations, and health services. With the concern and willingness of the people around, it can be used as a form of social support for TBC patients to be obedient in carrying out treatment (Kemenkes 2014).

Social support for medication adherence in TBC patients can be provided by families and health workers. Family support can be realized through the provision of medical expenses, providing information related to the disease suffered, as well as attention is given to family members who suffer from TBC (Widiastutik et al., 2020). Social support can also be provided

by health workers. Health workers have roles as communicators, motivators, facilitators, and counselors. Overall, this role is implemented in the form of counseling, providing advice, support, motivation, and attention to TBC patients, as well as being a drug swallow supervisor (Pengawas Menelan Obat/PMO) for patients who do not have PMO (Widiastutik et al., 2020).

Factors that exist within the individual also affect medication adherence, namely good knowledge will raise awareness of TBC sufferers to take treatment (Sutarto et al., 2019; Sirait et al., 2020). A positive attitude of patients will also make it easier for them to carry out treatment (Gendhis, 2011). High self-efficacy can make the patient aware of taking the medication regularly and able to survive with the habit every day (Noorratri et al., 2016; Sutarto et al., 2019; Novitasari, 2017). The patient's self-motivation factor can also create enthusiasm and increase discipline to comply with the treatment program (Febriyanto, 2016; Gurning & Manoppo, 2019).

Environmental factors also affect medication adherence in patients, one of which is the stigma in the environment around tuberculosis sufferers, the stigma that is widely accepted by tuberculosis sufferers is that patients are often kept away because the transmission of the disease is very easy and fast to others, the impact of this environmental stigma makes Tuberculosis sufferers experience self-stigma in the form of lack of confidence, shame, fear and stress on the surrounding environment and do not want to meet people, this will then have an impact on the treatment process. Stigma in society must be removed so that tuberculosis sufferers no longer feel ashamed of taking treatment, if the stigma in the environment changes, the patient will be consistent in his treatment (Rizqiya, 2021). Environmental stigma is related to medication adherence in tuberculosis patients (Muhardiani & Mardjan, 2017). Based on the problems found from the results of previous studies and the decrease in the success rate of tuberculosis treatment in the city of Yogyakarta so that it has not met the national target, the authors want to examine the analysis of adherence to treatment for tuberculosis patients in the city of Yogyakarta with the aim of research to determine factors related to adherence to treatment in patients with tuberculosis. tuberculosis in the city of Yogyakarta.

METHODS

This type of research is analytic observational with a cross-sectional approach. This research was carried out in Yogyakarta covering 18 health centers in the city of Yogyakarta namely Danurejan I, Danurejan II, Gedongtengen, Gondokusuman I, Gondokusuman II, Gondomanan, Jetis, Kotagede I, Kotagede II, Kraton, Mantrijeron, Mergangsan, Ngampilan, Pakualaman, Tegalrejo, Umbulharjo I, Umbulharjo II, and Wirobrajan. The study was conducted in March-June 2022 the population in this study were all pulmonary TBC patients at 18 Puskesmas in Yogyakarta City who was still undergoing treatment during the study.

The sample size used in this study was calculated using the cross-sectional sample size formula, with a degree of confidence of 5%, absolute precision of 10%, a proportion of 50% and a population size of 133. we got as many as 75 people and all samples obtained were used in the analysis of this study. The sampling technique was carried out using a purposive sampling technique. The purposive sampling technique is a technique with a subjective sample selection of respondents who have information and meet the criteria determined by the researcher. Determination of respondents in this study using inclusion and exclusion criteria. The inclusion criteria used were pulmonary tuberculosis patients who were still undergoing treatment at the time of data collection, domiciled in the city of Yogyakarta at the time of the study, namely at least 6 months and ≥ 15 years of age, while the exclusion criteria were patients who were not willing to become respondents, had comorbidities based on medical records. such as HIV/AIDS, diabetes mellitus, drug resistance and hearing and vision impairments. Information about comorbidities suffered by tuberculosis patients was obtained from the holder of the tuberculosis program by looking at medical record data. All respondent data in this study was kept confidential, referring to the

ethical protocol issued by the Ahmad Dahlan University Ethics Commission (Number: 012203022)

Collecting data in this study using a questionnaire that has been tested for validity and reliability. The process of collecting data in this study was assisted by six skilled and trained enumerators, and during data collection, briefings were carried out and monitoring of the completeness of the data. Cronbach's alpha scores from each questionnaire were as follows: medication adherence (0.773), family support (0.752), health worker support (0.780), knowledge (0.719), attitude (0.904), self-efficacy (0.761), motivation (0.875), stigma (0.964). The data obtained were then processed and analyzed bivariate using the chi-square test and multivariate analysis using logistic regression to determine the association between research variables. The level of confidence used in this test is 95% (α = 0.05).

RESULTS AND DISCUSSIONS

The results of the analysis between family support variables and treatment adherence of TBC patients in Yogyakarta are obtained the results in table 1 below:

Table 1. The association between knowledge, attitudes, self-efficacy, motivation, family support, support from health workers, and environmental stigma and adherence to treatment of tuberculosis patients in Yogyakarta City

Variable	Medication Adherence				Total		*Sig*	RP (CI 95%)
	Not Obey		Obey					
	n	%	n	%	n	%		
Knowledge								
Negative	12	52.2	11	65.4	23	100.0	0.016	2.466
Positive	11	21.2	41	79.3	52	100.0		(1.282-4.746)
Attitude								
Negative	7	58.3	5	41.7	12	100.0	0.039	2.450
Positive	15	23.8	47	76.2	63	100.0		(1.278-4.698)
Self-Efficacy								
Low	11	31.4	24	68.6	35	100.0	1.000	1.048
High	12	30.0	28	70.0	40	100.0		(0.530-2.070)
Motivation								
Low	13	37.1	22	62.9	35	100.0	0.375	1.486
High	10	25.0	30	75.0	40	100.0		(0.746-2.957)
Family Support								
Poor	12	34.3	23	65.7	35	100.0	0.700	1,247
Good	11	27.5	29	72.5	40	100.0		(0.631-2.463)
Health Personnel Support	6	22.2	21	77.8	27	100.0	0.353	0.627
Poor	17	35.4	31	64.6	48	100.0		(0.281-1.400)
Good								
Stigma								
Yes	9	27.3	24	72.7	33	100.0	0.754	0.818
No	14	33.3	28	66.7	42	100.0		(0.405-1.652)

Table 2. Result of multivariate logistic regression analysis

Variable	Koefisien	S.E	Wald	df	Sig	OR	CI 95%	
							Min	Max
Knowledge	1.330	0.566	5.529	1	0.019*	3.783	1.248	11.468
Attitude	1.173	0.696	2.838	1	0.092	3.232	0.826	12.652

Knowledge about tuberculosis with adherence to treatment of tuberculosis patients

The results of the chi-square test that tested the association between knowledge about tuberculosis and adherence to tuberculosis treatment were obtained (sig= 0.016 and Prevalence Ratio= 2.466). Based on multivariate analysis using logistic regression, knowledge is also the most related factor with medication adherence among other variables with a value of sig= 0.019 and an Odds Ratio of 3.783 (95% CI: 1.248-11,468). These results indicate that statistically there is an association between knowledge and medication adherence. These results indicate that statistically there is an association between knowledge and medication adherence. This study is the same as the research conducted by Utisman (2021) which shows that there is a significant association between knowledge and adherence to the treatment of tuberculosis patients.

Knowledge relates to adherence to treatment of tuberculosis sufferers because based on the observations of researchers conducting research in the field directly, it shows that most respondents already have good knowledge about tuberculosis, tuberculosis sufferers have a good understanding of the disease they are suffering from, this is supported by previous research which states that if tuberculosis sufferers believe in themselves to understand and apply knowledge well then this will affect the level of knowledge of a patient (Mientarini et al., 2018). Knowledge is important and needs attention to live a better life. With knowledge, tuberculosis sufferers understand the disease they are suffering from so it is hoped that knowledge about tuberculosis can increase their adherence to treatment (Notoadmodjo, 2012).

One of the factors causing the association can also be caused by the education of the respondent. The results of the analysis of the characteristics of the respondents showed that 49.3% had a high education, when analyzed more deeply, patients who had higher education had good knowledge that influenced the patient's understanding of tuberculosis. Education is an individual or community-planned effort to be able to do what is taught by educational behavior, someone who has higher education when experiencing illness will increasingly need health facilities for treatment. The more individuals have a higher level of education, the more they will realize that health is an important thing in life so they are motivated to take medication adherence (Absor et al., 2020).

Another factor that has an association between knowledge and medication adherence is age. The results of the analysis of the characteristics of the respondents obtained that 85.3% have a productive age, at this productive age someone has good knowledge because they can find their information about the disease they are suffering from. productive a person's age is, the better the knowledge they have and the older a person is, the more mature they are in thinking (Anita et al., 2018).

Attitudes about tuberculosis with adherence to treatment of tuberculosis patients

The results of statistical tests using the chi-square test which tested the association between attitudes and adherence to tuberculosis treatment obtained sig= 0.039 and the Prevalence Ratio= 2.450 (95% CI: 1.278-4.698). These results indicate that there is a statistically significant association between attitude and medication adherence.

Attitudes are related to adherence to treatment of tuberculosis sufferers because based on the observations of researchers conducting research in the field directly, it shows that most of the respondents have positive attitudes about tuberculosis such as a conscious attitude in carrying out routine treatment, an attitude that always takes their medicine. Have good knowledge so that in taking a stand for the illness he is suffering from is also good. respondents who have a positive attitude will be obedient in their treatment (Mientarini et al., 2018). respondents who have a positive attitude are in the compliance and identification stage. The compliance stage is the stage where an individual obeys the suggestion without any self-awareness and obeys this recommendation for fear of the sanctions that will be obtained and the identification stage is the stage where an individual will obey something because they feel interested or admire a character so they want to imitate the character's actions

(Alhamda, 2015).

Attitude has an association with medication adherence and is also caused by other factors, namely family support, in this study family support owned by respondents had good family support. An individual suffering from tuberculosis requires attention and affection during treatment so that tuberculosis sufferers achieve success in treatment. The role of the family is very important for tuberculosis sufferers because it is able to provide enthusiasm and motivation to patients in their treatment (Marini et al., 2021).

Attitude has an important role in the treatment process, a positive attitude that a person has towards his illness will lead to positive behavior and actions as well so it is hoped that this positive attitude will lead a person to complete his treatment (Mientarini et al., 2018). Attitude is a reaction of a person close to a particular object, this reaction involves an opinion and emotion that will be used in response. Attitudes have several main components, namely the first beliefs, ideas and concepts, the second emotional life and the third tendency to act (Notoadmodjo, 2012).

Self-efficacy with adherence to treatment of tuberculosis patients

The results of the analysis obtained sig= 1,000 indicating that self-efficacy does not have a significant association with treatment adherence of tuberculosis patients in Yogyakarta City with a Prevalence Ratio of 1.048 (95% CI: 0.530-2.070) indicating that people who have low self-efficacy are not necessarily at risk for not adhering to treatment. The results of this study are in line with previous studies that self-efficacy is not related to adherence to taking advanced OAT in patients with pulmonary tuberculosis at Candi Lama Health Center (Suryani et al., 2021).

Based on the observations of researchers in the field, it is known that there are some respondents who feel the side effects of drugs are unpleasant and disturbing so sometimes it makes them feel that taking medicine makes them sicker as a result they feel lazy to take medicine. The results of the study showed that tuberculosis patients had low self-efficacy but were obedient in treatment, it could be influenced by awareness and social support from both family and health workers so that patients had a fear of not taking OAT. The role of health workers is very important in growing self-efficacy (Sutarto et al., 2019).

The results of the study also found that some patients had high self-efficacy and were obedient in treatment. Self-efficacy in social cognitive theory is known to be the most dominant and significant determinant in increasing compliance (Holmes et al., 2014). Someone with a high level of self-efficacy will have the confidence to recover. The high self-efficacy of tuberculosis sufferers will make them aware of taking the medication regularly and be able to survive with these habits every day (Noorratri et al., 2016). High self-efficacy can foster self-confidence in responding to something in getting help. Conversely, if self-efficacy is low, a person will be anxious and unable to do so (Yusuf & Nurihsan, 2011). Self-efficacy encourages a person to behave in a healthy manner, someone who is not confident in his ability to behave in a manner that supports health will tend to be lazy to try (Friedman & Schustack, 2008 dalam Arzit et al., 2021).

Motivation with adherence to treatment of tuberculosis patients

The results of statistical analysis showed that motivation did not have a significant association with treatment adherence of tuberculosis patients in the city of Yogyakarta and not necessarily people who have low motivation will be at risk for non-adherence to treatment (sig= 0.375; Prevalence Ratio= 1.486; 95% CI: 0.746-2.957). Based on the observations of researchers in the field, the possibility that there is no association between motivation and medication adherence is influenced by the respondent's lack of knowledge about tuberculosis. In generating motivation in a person, it is necessary to have good knowledge of the intended object. The higher the knowledge a person has, the higher self-awareness of health and motivation to recover (Sirait et al., 2020).

Respondents' knowledge can be obtained from education, experience, health counseling, and information from health workers (Rahmiyanti et al., 2019). The higher a person's level of education, the easier it will be to receive information as a result, the knowledge

gained will be more and more (Atu et al., 2017). In addition, it is known that some of the respondents have started to feel bored and lazy to take medicine because the treatment time is long and the medicine consumed is quite a lot and has a bitter taste. This is supported by the presence of 26 respondents who answered "agree" and 4 respondents who answered "strongly agree" on the statement item "Taking medicine continuously for a long time makes me feel bored and lazy to take medicine".

The longer the treatment time for pulmonary tuberculosis, the less adherent to treatment, and fewer patients with pulmonary tuberculosis who were recorded to be compliant with treatment until completion. The length of time for pulmonary tuberculosis treatment which takes 6 months makes people with pulmonary tuberculosis feel bored to take drugs (Gunawan et al., 2017). Patients stopping taking medication can be caused by several things, including the emergence of boredom due to a long treatment time, feeling healthy after receiving treatment for some time and then cutting off treatment, lack of awareness of the patient due to lack of knowledge about pulmonary tuberculosis, distance from the patient's home to the place of service. distant health (Yulisetyaningrum et al., 2019).

The results of this study are in line with previous studies that motivation is not related to adherence to taking tuberculosis medication (Fitriani et al., 2019; Muna & Soleha, 2014). Meanwhile, several other studies have stated that motivation is related to medication adherence (Angraini & Nofia, 2022; Alwi et al., 2021). The existence of differences in the results of research from several researchers may be influenced by several factors that affect motivation. Several factors influence motivation, which include internal factors and external factors. Internal factors include the desire from within the individual, individual knowledge, education level, and age. While external factors include economic factors, religion, family support factors and nurses (Gurning & Manoppo, 2019).

Family support with adherence to treatment of tuberculosis patients

The results of the analysis obtained a value of sig= 0.700, meaning that statistically there was no association between family support and medication adherence in tuberculosis patients in the city of Yogyakarta. The Prevalence Ratio value is 1.247 (95% CI = 0.631-2.463) which means that family support is not necessarily a risk factor for treatment adherence in TBC patients in the city of Yogyakarta. There is no association between family support and treatment adherence in TBC patients because family support is not a strong reason for respondents to fully comply or not comply with treatment. The low adherence to treatment in TBC patients is caused by other factors from TBC patients that affect their treatment adherence. One of these factors is the inadvertence of TBC patients who delay taking medication so that they eventually forget. This can be seen in the medication adherence instrument, especially in the aspect of timeliness in taking medication, there were still 21 TBC patients who answered that they forgot to take their medication.

Age is one of the factors that influence medication adherence in pulmonary tuberculosis patients. Based on the data obtained, most of the respondents fall into the category of productive age. the number of the productive age population is also higher than the non-productive age population (BPS Kota Yogyakarta, 2022). In addition, the number of working population based on age also shows that most of the respondents who work are aged 15 years and over or are in productive age. Productive age is an age with a period of high activity and is exposed to the environment so that the intensity of meeting with other people is also getting bigger (Ulfah et al., 2018). age a person has a high level of mobility and is more concerned with activity than the disease (Lasutri et al., 2021).Age was a determining factor for patients' non-adherence to treatment. In old age, a person's medication adherence is higher because he is not busy with work so he can seek treatment regularly (Budianto & Inggri, 2015).

Another factor that can affect the compliance of pulmonary TBC patients in treatment is work status. Based on the data obtained, most of the pulmonary tuberculosis patients in the city of Yogyakarta are self-employed. Entrepreneurship is one type of work that is mostly done outdoors. The type of work

a person does affects his treatment adherence. If workers work in a dusty environment, exposure to particles will affect the occurrence of disorders of the respiratory tract. Exposure to polluted air can increase morbidity, especially the occurrence of symptoms of respiratory tract diseases and generally pulmonary tuberculosis (Ulfah et al., 2018). Respondents who did not work tended 4,736 times to comply with pulmonary TBC treatment compared to respondents who worked. This is because when a person works his time will decrease and the possibility to pay attention to his environment tends to decrease (Lasutri et al., 2021).

The absence of an association between family support and medication adherence in TBC patients in the city of Yogyakarta does not mean that the effect of family support on treatment adherence of TBC patients is not considered. Family support must still be given so that TBC patients are more obedient in their treatment. family support is related to the compliance of tuberculosis patients. Good social relations between family members have a significant effect on patient health outcomes, especially for patients who are in the adaptation stage and the disease recovery process. The family providing support can be in the form of informational, instrumental, emotional, and reward support (Putra, 2019) (Herawati et al., 2020).

Support of health workers with adherence to treatment of tuberculosis patients

The results of statistical analysis showed that there was no association between the support of health workers and adherence to medication for TBC patients in the city of Yogyakarta (sig= 0.353) with a Prevalence Ratio value of 0.627 (95% CI= 0.281-1.400) which means that the support of health workers is not necessarily a factor. risk of adherence to treatment of TBC patients in the city of Yogyakarta. This is because many other factors affect the adherence to treatment of TBC patients. Other factors referred to can come from the patient himself, such as a feeling of fear with the long-term impact of taking anti-TBC drugs regularly. So TBC patients choose to stop taking drugs that have been given by doctors or health workers. This feeling of fear can be caused by the lack of information provided by health workers about the possible side effects of OAT. This is evidenced by the respondent's answers to the health worker support instrument regarding the side effects of OAT. Based on this instrument, 9 respondents answered that health workers never explained the possibility of side effects of OAT. Inadequate information by patients makes it clear that the failure of communication between health workers and patients will have an impact on the form of compliance. This can be seen from the results of the analysis that 24 of 75 respondents stated that they had not received support in the aspect of good communication from health workers. Based on the results of interviews, respondents stated that there is still a lack of interpersonal communication between health workers and patients (Ulfah et al., 2018). Interpersonal communication is very important in establishing mutual trust between officers and patients

The role of health workers is not related to drug adherence in pulmonary tuberculosis patients. The low adherence to treatment in pulmonary TBC patients occurs due to less open communication between health workers and TBC patients. The quality of interaction between TBC patients and health workers is a determinant of the success of treatment (Widiastutik et al., 2020). TBC patients who misunderstand the recommendations given by health workers cause patients to not comply with their treatment (Sugiono, 2017).

A health worker is someone who understands more about health, both regarding the disease and the treatment of the disease. Therefore, the absence of an association between the support of health workers and adherence to the treatment of TBC patients in the city of Yogyakarta does not mean that the support of health workers is not needed. the role of health workers and family support in the level of adherence to taking medication in pulmonary TBC patients, shows that there is an association between the role of health workers and the level of adherence to taking drugs for pulmonary TBC with a positive smear (Netty et al., 2018).

Stigma with adherence to treatment of tuberculosis patients

The results of statistical tests using the

chi-square test which tested the association between stigma and adherence to tuberculosis treatment show a sig value= 0.754 and a Prevalence Ratio= 0.818 (95% CI: 0.405-1.652). These results indicate that there is no statistically significant association between knowledge and medication adherence. Based on the observations of researchers conducting research in the field, some people with tuberculosis have a stigma in their environment but sufferers do not care about the stigma that society gives them because patients have the confidence to recover and have support from their families so that the existing stigma does not reduce the patient's confidence in taking treatment. It is until they healed. Another factor is also because of high education, in this study the respondents had a level of education, and the higher the education, the better the knowledge and attitudes possessed by tuberculosis sufferers which made the awareness to recover greater so that the stigma that existed in the environment did not affect compliance in treatment. Confidence in patients is very important in the healing process for people with tuberculosis and the stigma of society is influenced by one's education because education is one way to increase one's knowledge (Astuti et al., 2019).

Other factors that influence the no association between stigma and medication adherence are the public's fear of tuberculosis and the lack of public understanding of infectious diseases. Society stigmatizes tuberculosis sufferers because they are afraid of contracting the disease, besides that many people have not received health education about tuberculosis, and this is what makes people stay away from acknowledging the existence of sufferers which causes a high stigma in the environment around tuberculosis sufferers. Researchers also state that a tuberculosis patient who has a high education will easily understand the disease he is suffering from and will easily build self-confidence and self-confidence to recover from his illness (Pribadi et al., 2017).

Stigma exists because someone suffers from chronic and infectious diseases, one of which is pulmonary tuberculosis. A tuberculosis sufferer who is labeled a stigma will usually be ashamed, afraid and stressed so that they limit themselves from the surrounding environment and even those closest to them, with this condition many tuberculosis sufferers do not want to seek treatment and even find it difficult to make decisions for the disease they suffer. tuberculosis that has a stigma in the environment that is not compliant with treatment (Sari, 2018).

CONCLUSION

Based on the results of research and discussion that the most related factor to TB treatment adherence is knowledge. Tuberculosis program staff are expected to continue to provide counseling to patients and their families who are undergoing treatment. The counseling provided is related to the causes, transmission, prevention, and treatment of TB disease as well as counseling to TB patients to establish good communication between health workers and TB patients. This outreach, it is hoped that it will increase the adherence of TB patients to treatment. The patient's family is expected to continue to provide support to members who are undergoing TB treatment to always comply with their treatment by providing emotional, instrumental, informational, and rewarding support.

REFERENCES

Absor, S., Nurida, A., Levani, Y., & Nerly, W. S. (2020). Hubungan Tingkat Pendidikan Dengan Kepatuhan Berobat Penderita Tb Paru Di Wilayah Kabupaten Lamongan Pada Januari 2016 – Desember 2018. *Medica Arteriana (Med-Art)*, 2(2), 80. https://doi.org/10.26714/medart.2.2.2020.80-87

Alhamda. (2015). *Buku Ajar Sosiologi kesehatan.* DEEPUBLISH.

Alwi, N. P., Fitri, A., & Ambarita, R. (2021). Hubungan Motivasi dengan Kepatuhan Minum Obat Anti Tuberkulosis (OAT) pada Pasien Tuberkulosis. *Jurnal Keperawatan Abdurrab,* 5(1), 63–66. https://doi.org/10.36341/jka.v5i1.1891

Angraini, S. S., & Nofia, V. R. (2022). Hubungan Motivasi dengan Kepatuhan Minum Obat Pasien TB Paru di Wilayah Kerja Puskesmas Talu Kecamatan Talamau Kabupaten Pasaman Barat. *Jurnal Kesehatan Medika Saintika,* 13(1), 126–133.

Anita, Y., Candrawati, E., & W, R. C. A. (2018). Hubungan pengetahuan pasien tuberculosis tentang penyakit tuberculosis dengan

kepatuhan berobat di unit rawat jalan Rumah Sakit Panti Waluya Sawahan Malang. *Nursing News*, 3(3), 729–735.

Arzit, H., Asmiyati, & Erianti, S. (2021). Hubungan Self Efficacy dengan Kepatuhan Minum Obat pada Pasien TB Paru. *Jurnal Medika Hutama,* 2(2), 429–438.

Astuti, V. W., Nursasi, A. Y., & Sukihananto, S. (2019). Edukasi Kesehatan Terstruktur Dan Stigma Masyarakat Pada Klien Tb Paru. *JPP (Jurnal Kesehatan Poltekkes Palembang),* 14(2), 85–90. https://doi.org/10.36086/jpp.v14i2.416

Atu, R. L., Yudiernawati, A., & Nurmaningsari, T. (2017). Hubungan Pengetahuan dengan Motivasi Ibu dalam Meningkatkan Status Gizi Pada Balita Dengan Status Gizi Kurang Di Wilayah Kerja Puskesmas Bareng. *Nursing News,* 2(1), 318-323.

BPS Kota Yogyakarta. (2022). *Kota Yogyakarta Dalam Angka Yogyakarta Municipality in Figures (BPS Kota Yogyakarta (ed.))*. BPS Kota Yogyakarta.

Budianto, A., & Inggri, R. H. (2015). Usia Dan Pendidikan Berhubungan Dengan Perilaku Kepatuhan Minum Obat Pada Penderita Tb Paru. *Jurnal Ilmiah Kesehatan*, 4(8). https://doi.org/10.35952/jik.v4i8.19

Dinkes DIY. (2020). *Profil Kesehatan Daerah Istimewa Yogyakarta Tahun 2019.* Dinas Kesehatan DIY.

Dinkes Kota Yogyakarta. (2021). *Profil Kesehatan Kota Yogyakarta Tahun 2021. In Dinkes Kota Yogyakarta.* Dinkes Kota Yogyakarta.

Febriyanto. (2016). Hubungan Motivas Kesembuhan dengan Kepatuhan Minum Obat Pada Pasien Tuberkulosis Paru Dewasa di RS Khusus Paru Respira Yogyakarta. *Jurnal Kesehatan,* 4(1), 27–33.

Fitriani, N. E., Sinaga, T., & Syahran, A. (2019). Hubungan Antara Pengetahuan, Motivasi Pasien dan Dukungan Keluarga Terhadap Kepatuhan Minum Obat Anti Tuberkulosis (OAT) Pada Penderita Penyakit TB Paru BTA (+) di Puskesmas Pasundan Kota Samarinda. KESMAS UWIGAMA: *Jurnal Kesehatan Masyarakat,* 5(2), 124–134. https://doi.org/10.24903/kujkm.v5i2.838

Gendhis. (2011). Hubungan Antara Pengetahuan, Sikap Pasien Dan Dukungan Keluarga Dengan Kepatuhan Minum Obat Pada Pasien. *Journal of Chemical Information and Modeling,* 53(9), 1689–1699.

Gunawan, A. R. S., Simbolon, R. L., & Fauzia, D. (2017). Faaktor-faktor Yang Mempengaruhi Tingkat Kepatuhan Pasien Terhadap Pengobatan Tuberkulosis Paru di Lima Puskesmas Se-Kota Pekanbaru. Jom FK, 4(2).

Gurning, M., & Manoppo, I. A. (2019). Hubungan Pengetahuan dan Motivasi Dengan Kepatuhan Minum Obat pada Pasien TBC Paru Di Poli TB RSUD Scholoo Keyen. *Wellness and Healthy Magazine,* 1(1), 41–47.

Herawati, C., Abdurakhman, R. N., & Rundamintasih, N. (2020). Peran Dukungan Keluarga , Petugas Kesehatan dan Perceived Stigma dalam Meningkatkan Kepatuhan Minum Obat pada Penderita Tuberkulosis Paru. *Kesehatan Masyarakat Indonesia,* 15(1), 19–23.

Holmes, E. A. F., Hughes, D. A., & Morrison, V. L. (2014). Predicting adherence to medications using health psychology theories: A systematic review of 20 years of empirical research. *Value in Health*, 17(8), 863–876. https://doi.org/10.1016/j.jval.2014.08.2671

Kemenkes RI. (2014). *Pedoman Nasional Pengendalian Tuberkulosis. In National Guidelines for Tuberculosis Control. Kementerian Kesehatan RI.*

Kemenkes RI. (2018). Tuberkulosis (TB). *Tuberkulosis*, 1(april), 2018.

Kemenkes RI. (2020). *Profil Kesehatan Indonesia Tahun 2019*. Kemenkes RI.

Khairani, I. (2020). Hubungan Antara Dukungan Keluarga Dan Peran Petugas Kesehatan Dengan Tingkat Kepatuhan Minum Obat Pasien Tuberkulosis Paru (Tb Paru) Di Kabupaten Sleman Tahun 2020. *In Skripsi.*

Lasutri, D. G., Noviadi, P., & Gustina, E. (2021). Faktor Determinan Kepatuhan Berobat PenderitaTuberkulosis Paru Di Wilayah Kerja Puskesmas Balai Agung Kabupaten Musi Banyuasin Tahun 2021. *Jurnal Mutiara Kesehatan Masyarakat*, 6(2), 69–82.

Listyarini, A. D., & Heristiana, D. M. (2021). Hubungan Pengetahuan dan Sikap Penderita TB Paru Terhadap Kepatuhan Minum Obat Antituberkulosis di Poliklinik RSI NU Demak. *Jurnal Profesi Keperawatan*, 8(1), 11–23.

Marini, M., Margarethy, I., & Suryaningtyas, N. H. (2021). Hubungan Pengetahuan, Sikap Dan Perilaku Pengawas Minum Obat (Pmo) Terhadap Kejadian Tuberkulosis (Tbc) Berulang Di Kabupaten Muara Enim. *Spirakel,* 13(2), 51–61. https://doi.org/10.22435/spirakel.v13i2.5125

Mientarini, E. I., Sudarmanto, Y., & Hasan, M. (2018). Hubungan Pengetahuan Dan Sikap Terhadap Kepatuhan Minum Obat Pasien Tuberkulosis Paru Fase Lanjutan Di Kecamatan Umbulsari

Jember. *Ikesma*, 14(1), 11–18. https://doi.org/10.19184/ikesma.v14i1.10401

Muhardiani, Mardjan, & A. (2017). Hubungan Antara Dukungan Keluarga, Motivasi Dan Stigma Lingkungandengan Proses Kepatuhan Berobat Terhadap Penderita Paru-Paru Dengan Proses Kepatuhan Berobat Terhadap Penderita Tb Di Wilayah Kerja Puskesmas Gang Sehat. *Jurnal Mahasiswa Dan Peneliti Kesehatan*, 17–26.

Muna, L., & Soleha, U. (2014). Motivasi dan Dukungan Sosial Keluarga Mempengaruhi Kepatuhan Berobat pada Pasien TB Paru di Poli Paru Bp4 Pamekasan. *Jurnal Ilmiah Kesehatan,* 7(2), 172–179. https://doi.org/10.33086/jhs.v7i2.506

Netty, Kasman, K., & Ayu, S. D. (2018). Hubungan Peran Petugas Kesehatan Dan Dukungan Keluarga Dengan Tingkat Kepatuhan Minum Obat Pada Penderita Tuberkulosis (Tb) Paru Bta Positif Di Wilayah Kerja Upt. Puskesmas Martapura 1. *An-Nadaa: Jurnal Kesehatan Masyarakat,* 5(1), 45–50. https://doi.org/10.31602/ann.v5i1.1728

Noorratri, E. D., Margawati, A., & Dwidiyanti, M. (2016). Improving Self-Efficacy and Physical Self-Reliance of Patients with Pulmonary Tuberculosis through Mindfulness. *Nurse Media Journal of Nursing,* 6(2), 81–90.

Notoadmodjo, S. (2012). Promosi Kesehatan & Prilaku Kesehatan. In Jakarta: EGC.

Novitasari, R. (2017). Hubungan Efikasi Diri dengan Kepatuhan Minum Obat pada Pasien TB Paru di Puskesmas Patrang Kabupaten Jember. *Skripsi.*

Pameswari, P., Halim, A., & Yustika, L. (2016). Tingkat Kepatuhan Penggunaan Obat pada Pasien Tuberkulosis di Rumah Sakit Mayjen H. A Thalib Kabupaten Kerinci. *Jurnal Sains Farmasi & Klinis,* 2(2), 116. https://doi.org/10.29208/jsfk.2016.2.2.60

Pribadi, T., Trismiyana, E., & Maria, N. (2017). Community Knowledge with Stigmatization of Pulmonary Tuberculosis Patients in the Work Area of the Karang Anyar Community Health Center, South Lampung Regency 2017. *Holistic Health Journal*, 11(4), 265–270.

Putra, G. J. (2019). *Dukungan Pada Pasien Luka Kaki Diabetik.* Oksana Publishing.

Rahmiyanti, Jaya, H. N., & Muhasidah, H. (2019). Hubungan Pengetahuan, Motivasi, dan Sikap dengan Kepatuhan Diet pada Penderita DM Tipe 2 di Wilayah Kerja Puskesmas Sudiang Raya Kota Makassar. *Jurnal Media Keperawatan: Politeknik Kesehatan Makassar,* 10(2), 62–70.

Rizqiya, R. N. (2021). Hubungan Stigma Masyarakat Dengan Kepatuhan Minum Obat Pasien Tb Paru Di Puskesmas Puhjarak Kecamatan Plemahan …. *Jurnal Ilmiah Kesehatan …*, 17(1), 66–76. https://doi.org/10.26753/jikk.v17i1.511

Sari, I. D., Mubasyiroh, R., & Supardi, S. (2017). Hubungan Pengetahuan dan Sikap dengan Kepatuhan Berobat pada Pasien TB Paru yang Rawat Jalan di Jakarta Tahun 2014. *Media Penelitian Dan Pengembangan Kesehatan*, 26(4), 243–248. https://doi.org/10.22435/mpk.v26i4.4619.243-248

Sari, Y. (2018). Gambaran Stigma Diri Klien Tuberkulosis Paru (Tb Paru) Yang Menjalani Pengobatan Di Puskesmas *Malingping. Media Ilmu Kesehatan,* 7(1), 43–50. https://doi.org/10.30989/mik.v7i1.266

Sirait, H., Sirait, A., & Saragih, F. L. (2020). Hubungan Pengetahuan Dan Sikap Dengan Kepatuhan Minum Obat Anti Tuberkulosis Pada Pasien Tb Paru Di Puskesmas Teladan Medan. *Jurnal Riset Hesti Medan Akper Kesdam I/BB Medan*, 5(1), 9–15. https://doi.org/10.34008/jurhesti.v5i1.131

Sugiono. (2017). Faktor-Faktor yang Berhubungan dengan Tingkat Kepatuhan Mengonsumsi Obat pada Penderita Tuberkulosis Paru. *Wawasan Kesehatan*, 3(2).

Suryani, N. F., Ismonah, & R, F. R. (2021). Hubungan Pengetahuan dan Efikasi Diri Terhadap Kepatuhan Minum Obat Anti Tuberkulosis (OAT) Tahap Lanjutan pada Penderita TB Paru. *Prosiding Seminar Nasional UNIMUS,* 4, 1388–1399.

Sutarto, S., Fauzi, Y. S., Indriyani, R., Sumekar, D. W., & Wibowo, A. (2019). Efikasi Diri pada Kepatuhan Minum Obat Anti Tuberkulosis (OAT). *Jurnal Kesehatan,* 10(3), 405–412. https://doi.org/10.26630/jk.v10i3.1479

Tukayo, I. J. H., Hardyanti, S., & Madeso, M. S. (2020). Faktor Yang Mempengaruhi Kepatuhan Minum Obat Anti Tuberkulosis Pada Pasien Tuberkulosis Paru Di Puskesmas Waena. *Jurnal Keperawatan Tropis Papua,* 3(1), 145–150. https://doi.org/10.47539/jktp.v3i1.104

Ulfah, U., Windiyaningsih, C., Abidin, Z., & Murtiani, F. (2018). Faktor-Faktor yang Berhubungan dengan Kepatuhan Berobat Pada Penderita Tuberkulosis Paru. *The Indonesian Journal of Infectious Diseases,* 4(1). https://doi.org/10.32667/ijid.v4i1.44

Utisman, L. A. R. I. (2021). *Hubungan Pengetahuan Tentang Tuberculosis (Tbc) Dengan Kepatuhan Minum Obat Pada Pasien Tbc*

Di Program Studi S1 Farmasi Fakultas Kesehatan.

WHO. (2020). *Global Tuberculosis Report* (Vol. 148). World Health Organization.

Widiastutik, G. K., Makhfudli, M., & Wahyuni, S. D. (2020). Hubungan Dukungan Keluarga, Kader dan Petugas Kesehatan dengan Kepatuhan Berobat Penderita TB Paru. *Indonesian Journal of Community Health Nursing*, 5(1), 41–47. https://doi.org/10.20473/ijchn.v5i1.18654

Yulisetyaningrum, Hidayah, N., & Yuliarti, R. (2019). Hubungan Jarak Rumah Dengan Kepatuhan Minum Obat Pada Pasien TBC Di RSI Sunan Kudus. *Jurnal Ilmu Keperawatan Dan Kebidanan,* 10(1), 248–255. https://doi.org/10.26751/jikk.v10i1.676

Yusuf, S., & Nurihsan, J. (2011). *Teori Kepribadian.* Remaja Rosdakarya.