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Article

Analysis of Patient Characteristics Towards Compliance With Pulmonary TB Treatment at PKU Muhammadiyah Bantul Hospital in 2023

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ABSTRACT

Tuberculosis (TB) is an infectious disease caused by the bacteria Mycobacterium tuberculosis. Several things that influence a person's compliance in undergoing pulmonary TB treatment are many factors. However, in Indonesia, the number of successful TB treatment cases has not yet reached the national target, especially in Yogyakarta city. This study aimed to determine the characteristics of patients that influence compliance with pulmonary TB treatment at PKU Muhammadiyah Bantul Hospital. This study is a qualitative study with a cross-sectional design. The sampling technique was carried out using a purposive sampling technique. The number of samples in the study was 41 respondents of pulmonary tuberculosis patients at PKU Muhammadiyah Bantul Hospital in 2023. Data analysis used the Kruskal Wallis analysis test. The results of the Kruskal Wallis test showed that there were 18 respondents (43.9%) with low levels of treatment compliance, 6 respondents (14.6%) had moderate levels of compliance, and 17 respondents (41.5%) had high levels of treatment compliance. The results of the bivariate test showed that there was a relationship between gender, employment status, family support, and education level on compliance with pulmonary TB treatment at PKU Muhammadiyah Bantul Hospital with a p-value <0.05. Age and distance from home didn't have a significant relationship with compliance pulmonary TB treatment at PKU Muhammadiyah Bantul Hospital with a p value> 0.05. This study concluded that there was a relationship between gender, employment status, family support, and education level on compliance with pulmonary TB treatment at PKU Muhammadiyah Bantul Hospital.

Keywords Pulmonary Tuberculosis, Compliance, Characteristics, Mycobacterium

INTRODUCTION

Tuberculosis is an infectious disease caused by the bacteria Mycobacterium tuberculosis (M.Tb) which is in the form of a bacillus and is a type of acid-fast bacteria (AFB). This bacteria can infect the lungs and organs outside the lungs such as the pleura, lymph nodes, bones, and other extrapulmonary organs. M.Tb can be transmitted to other individuals through droplet nuclei released by a person when coughing, sneezing, or talking[1,2].

TB cases are the second-highest infectious disease with the highest mortality rate in the world, after the coronavirus disease (COVID-19). More than 10 million people in the world suffer

from TB every year, with 90% of the total number of TB sufferers being adults. In 2022, Southeast Asia will have the highest TB cases, namely 46%, followed by Africa with 23% of cases and the Western Pacific with 18%. This is a challenge for countries in Southeast Asia to overcome TB. Based on data from the World Health Organization (WHO), 1.5 million people died from TB. One of the countries in Southeast Asia with the highest TB cases is India, which is ranked second in the world after India and followed by China in third place with the number of deaths in Indonesia reaching almost 90 thousand per year. In 2023, new TB cases will increase to 1,060,000 new cases per year, followed by an increase in the death rate reaching 134 thousand per year in Indonesia[3,4].

According to data from the Yogyakarta Health Office, TB in the city of Yogyakarta is still a health problem that needs attention. Based on the 2022 Tuberculosis Information System (SITB) report, there was an increase of 194.6 incidences of TB transmission in the city of Yogyakarta, calculated from 805 new cases found. According to information from the DIY health service, PKU Muhammadiyah Bantul Hospital is a private hospital with the 3rd highest TB cases in Yogyakarta in 2022. Based on the profile of PKU Muhammadiyah Bantul Hospital, there were 344 TB patients in 2023, which is an increase in TB cases of up to 74% of cases from 2022[5] .

Treatment success is an important aspect that must be achieved for patients with pulmonary TB, one of which is influenced by whether or not the patient is compliant in undergoing treatment. Patients who are not compliant in undergoing treatment will be resistant to anti-tuberculosis drugs (OAT) which can even increase the morbidity and mortality of pulmonary TB. Several things that influence a person's compliance in undergoing pulmonary TB treatment are factors from themselves, the environment, and health service providers. However, in Indonesia, the number of successful TB treatment cases has still not reached the national target of 90%, especially in the city of Yogyakarta where the treatment success rate has been below the national target since 2010 until now, which is 88%. Things that influence the success rate of TB treatment include patient death, discontinuation of treatment, treatment failure, and changing treatments. Based on these data, researchers will conduct research to identify patient characteristics that play a role in compliance with pulmonary TB treatment at the PKU Muhammadiyah Bantul Hospital in 2023[5,6] .

METHODS

This study is a qualitative study with a cross-sectional design. The sampling technique was carried out using a purposive sampling technique. The number of samples in the study was 41 respondents of pulmonary tuberculosis patients at PKU Muhammadiyah Bantul Hospital in 2023.

Univariate analysis in this study was used to determine the characteristics of pulmonary TB patients including age, gender, distance from the patient's home to health facilities, employment status, family support, and level of compliance with pulmonary TB patient treatment. Bivariate analysis in this study was used to see the relationship between independent variables and dependent variables, namely patient characteristics with treatment compliance in pulmonary TB patients. Data normality testing was carried out using the Kolmogorov-Smirnov test. Then the bivariate test was carried out using the Kruskal Wallis analysis test because the data distribution was not normal. After the analysis test was carried out, the results obtained showed that there was a significant relationship between the independent variables and the dependent variables if the ρ value <0.05 was obtained.

RESULTS

Respondent demographic data describes the demographic characteristics of pulmonary TB patients related to age, gender, employment status, family support, distance from home, and level of compliance with pulmonary TB patient treatment.

Based on Table 1. related to the characteristics of respondents of pulmonary TB patients at PKU Muhammadiyah Hospital Bantul, with a total of 41 respondents, data was obtained that there was a distribution of respondent ages of 60.9% were aged ≥19 years and 39.1% were aged ≥60 years. Based on other data, the distribution of respondent gender was 51.2% with male gender and 48.8% with female gender. Based on the employment status obtained, there were 43.9% of respondents working, and 56.1% of respondents not working. Of there respondents who had good family support as much as 61% and 39% had poor family support. Based on the distance from home to health facilities, there were 48.8% of respondents <10km and 51.2% of respondents had a distance of ≥10km. Based on education level, there were 58.5% of respondents with low education and 41.5% of respondents with high education. In addition to the above data, based on the level of compliance, there is a distribution of respondents with a low level of compliance of 43.9%, 14.6% with a moderate level of compliance, and 41.5% with a high level of compliance.

Based on Table 2. it can be seen that there is a relationship between gender and compliance with treatment at PKU Muhammadiyah Bantul Hospital. Based on the number of male TB patient respondents, 4 respondents had a low level of compliance, 3 were moderate and 14 respondents had a high level of compliance. In female respondents, the results showed that there were 14 respondents with a low level of compliance, 3 respondents with a moderate level of compliance, and 3 respondents with a high level of compliance. The results of statistical analysis

using the Kruskal Wallis test showed a p value = 0.002, which indicates that there is a relationship between gender and compliance with pulmonary TB treatment.

***Table 1**. Characteristics of Respondents of Pulmonary TB Patients at PKU Muhammadiyah Hospital, Bantul.*

Variable	***Description (n = 41 (%))***
Age	
Adult	25 (60.9%)
Eldery	16 (39.1%)
Gender	
Male	21 (51.2%)
Female	20 (48.8%)
Employment status	
Work	18 (43.9%)
Doesn't work	23 (56.1%)
Family support	
Good	25 (61%)
Not Good	16 (39%)
Distance from home	
< 10 Km	20 (48.8%)
≥ 10 Km	21 (51.2%)
Level of education	
Low	24 (58.5%)
high	17 (41.5%)
Compliance level	
Low	18 (43.9%)
Medium	6 (14.6%)
High	17 (41.5%)

Employment status also affects compliance with pulmonary TB treatment, where respondents who work tend to have a high level of compliance compared to respondents who do not work and who tend to have a low level of compliance. The results of the Kruskal Wallis test showed a p-value = 0.000, so it can be concluded that there is a relationship between employment status and compliance with pulmonary TB treatment.

Family support is related to the level of compliance with pulmonary TB treatment at PKU Muhammadiyah Bantul Hospital. The results showed that there was a significant difference in family support towards the level of adherence to pulmonary TB treatment, where there was high adherence to treatment in respondents with good family support as many as 16 respondents, 6 respondents with moderate adherence, and 3 with low adherence. Respondents with less family support tended to have low adherence levels as many as 15 respondents and only 1 respondent with high adherence. Based on the Kruskal Wallis statistical test, a p-value of 0.000 was obtained, which showed a relationship between family support and the level of adherence to pulmonary TB treatment.

***Table 2**. Bivariate Test Results*

Variable	*Compliance level (n = 41)*			*p value*
	Low (n = 18(43.9%))	*Medium (n = 6(14.6%))*	*High (n = 17(41.5%))*	
Age				0.821
Adult	11	3	11	
Eldery	7	3	6	
Gender				0.002*
Male	4	3	14	
Female	14	3	3	
Employment status				0.000*
Work	1	4	13	
Doesn't work	17	2	4	
Family support				0.000*
Good	3	6	16	
Not Good	15	0	1	
Distance from home				0.067
< 10 Km	6	2	12	
≥ 10 Km				
Level of education	12	4	5	
Low				
high				
Compliance level				0.016
Low	15	3	6	
Medium	3	3	11	

Note: * significant results

Education level is related to the level of adherence to pulmonary TB treatment at PKU Muhammadiyah Bantul Hospital. The results showed that there was a significant difference in education level towards the level of adherence to pulmonary TB treatment, where there was high adherence to treatment in respondents with low education levels of as many as 15 respondents, 3 respondents with moderate adherence, and 6 respondents with low adherence. Respondents with high education levels tended to have low adherence levels as many as 3 respondents, 3 respondents with moderate adherence, and 11 respondents with high adherence. The results of statistical analysis using the Kruskal Wallis test showed a p-value of 0.016, indicating that there is a relationship between education level and adherence to pulmonary TB treatment.

Age does not have a significant relationship with adherence to pulmonary TB treatment. Based on statistical analysis, there is no significant difference in respondents based on age regarding adherence to TB treatment with the results of the Kruskal Wallis test showing a p-value of 0.821, meaning there is no relationship between age and adherence to pulmonary TB treatment. Distance from home is not related to adherence to pulmonary TB treatment because the results of the statistical analysis did not find a significant difference between respondents with a home distance of <10km and ≥10km regarding adherence to pulmonary TB treatment. The results of the

Kruskal Wallis test showed a p-value of 0.067, meaning there is no relationship between distance from home and adherence to pulmonary TB treatment.

DISCUSSION

Relationship between Age and Compliance with Pulmonary TB Treatment

Based on the Kruskal Wallis analysis test, there was no significant difference between age and compliance with pulmonary TB treatment at PKU Muhammadiyah Bantul Hospital with a p-value of 0.821. This is in line with Upik Rahmi's (2020) study entitled "Analysis of Compliance Factors for Pulmonary TB Treatment in Bandung" with a p-value of 0.469, stating that age does not have a significant relationship with the fulfillment of pulmonary TB treatment[7]. This study is similar to the one conducted by Ulfah (2018) with a p-value of 0.535, which stated that age is not related to compliance with pulmonary TB treatment in patients. These results may differ from several other studies that show a significant relationship between age and compliance with pulmonary TB treatment. Several previous studies have stated that age can affect the level of treatment compliance, either due to factors such as differences in health literacy, ability to remember treatment schedules or different psychosocial factors between different age groups[8]. Research stating that age has a significant relationship with adherence to pulmonary TB treatment is research by Nailius I (2022) with a p-value of 0.029. Young patients tend to be more compliant with treatment because of higher motivation and supervision from parents to be more compliant in undergoing treatment[9]. In addition, a study conducted by Lasutri (2021) obtained results with a p-value of 0.042 which stated that there was a significant correlation between age and the availability of pulmonary TB treatment[10]. In this study, 41 respondents with elderly age were more compliant with pulmonary TB treatment, and 18 respondents with productive age were less compliant with pulmonary TB treatment. This is because the productive age has a high level of mobility so they prioritize activity over healing the disease. Differences in demographic characteristics such as gender, socioeconomic status, and education level can affect the fulfillment of pulmonary TB treatment. For example, older patients may have better access to health services than younger patients. In addition, patients may often have other health conditions that can affect adherence, such as dementia or heart disease, which may interfere with their ability to follow the treatment regimen [9,10].

Relationship between Gender and Compliance with Pulmonary TB Treatment

Based on the Kruskal Wallis analysis test, there was a significant difference between gender and the availability of pulmonary TB treatment with a p-value of 0.002. From the research

conducted by Versita (2021) with a p-value of 0.01, stating that men are more compliant in treatment because women are more active than men, so they tend to forget to take their medication more often[11]. In another study conducted by Lucky Amelia (2024) entitled "Evaluation of Pulmonary TB Patient Compliance with the Use of OAT" the results obtained a p-value of 0.453, indicating that there is no significant relationship between gender and the guarantee of pulmonary TB treatment[12]. Based on research conducted by Ullya Fitri (2024), it was also found that there was no correlation between gender and maintenance of pulmonary TB treatment with a p-value of 0.143. The study found that male respondents with a compliant status in treatment were 5.5% and female respondents were 4.4%[13]. No relationship was found between gender and compliance in pulmonary TB treatment because all patients, both men and women, wanted to recover from the disease and prevent transmission to their families. Therefore, they are equally compliant in undergoing treatment according to the doctor's guidance through a process that takes a long time[14].

Relationship between Employment Status and Compliance with Pulmonary TB Treatment

Based on the Kruskal Wallis analysis test, there is a significant difference between employment status and compliance with pulmonary TB treatment with a p-value of 0.000. Previous study demonstrated that unemployed patients were significantly more likely to be non-adherent to treatment[15]. Another study conducted by Kusmiyani (2024) showed that there was no relationship between employment and compliance with taking anti-pulmonary TB drugs at the Samudra Kotawaringin Timur Health Center with a p-value of 0.698. In the study stated that someone too busy with work tends to often forget to take medicine according to the doctor's instructions. In addition, individuals with jobs or activities that tend to take up time plus relatively low income, individuals will prefer to prioritize other things rather than following treatment to completion. In addition, several things are possible causes of differences in the results of this study with other studies, namely a work environment that provides support such as dead time for treatment, can increase compliance, while a strict work environment may be the opposite. More physically demanding work can also affect general health and an individual's ability to follow pulmonary TB treatment[16].

Relationship between Family Support and Compliance with Pulmonary TB Treatment

Based on the Kruskal Wallis analysis test, there is a significant difference between family support and compliance with pulmonary TB treatment. The results of this study are relevant with the research conducted by Nasution (2021) entitled "The Relationship between Family Support and Compliance in Taking Pulmonary Tuberculosis (TB) Medication in Outpatients at the Batu

Horpak Health Center, Tano Tombangan Angkola District" with a p-value of 0.000, so it can be stated that there is a relationship between family support and compliance with pulmonary TB treatment[17]. Based on research conducted by Warjiman (2022) also stated that there is a significant correlation between family support and fulfillment of pulmonary TB treatment at the Sungai Bilu Health Center with a p-value of 0.000. This shows that family support can motivate patients to take medication regularly according to doctor's recommendations. Family support plays a positive role so that patients do not feel lonely and still feel supported in dealing with the disease, thereby increasing their enthusiasm for undergoing treatment[18]. Research conducted by Suharno (2022) entitled "Family Support with Medication Compliance in TB Patients" shows that there is no relationship between family support and compliance with pulmonary TB treatment with a p-value of 0.670. One of the factors that influence treatment compliance is related to the TB patient's perception of compliance with Tuberculosis treatment. If the patient's motivation to recover decreases, the patient's perception of TB treatment will have a negative impact, thereby reducing the level of compliance of TB patients in completing their treatment. In addition, the level of family understanding of TB and the importance of treatment can also affect the patient's motivation to comply with the treatment regimen[19].

Relationship between Home Distance and Compliance with Pulmonary TB Treatment

Based on the Kruskal Wallis analysis test, there was no significant difference between home distance and compliance with pulmonary TB treatment. This study is not relevant with the study conducted by Dadang (2023) which stated that there is a relationship between home distance and compliance with pulmonary TB treatment. Patients who have a home distance of less than 10 km from a health facility tend to be more compliant in undergoing treatment because they do not need to spend money, time, and energy, so they wish to recover promptly[20]. Based on research conducted by Yulisetyaningrum (2019), it was concluded that there is a relationship between home distance to health facilities and compliance with taking medication for TB patients at the Sunan Kudus Islamic Hospital with a p-value of 0.000. Environmental factors such as bad weather or difficult road conditions can affect the ease of access to health services, especially for patients who live far away. The difference in the results of this study with other studies is influenced by one of the causes of the difference in the results of this study with other studies, one of which is the difference in patient groups with new cases and patients with a history of previous treatment, which affects patient perception. Patients with a history of previous treatment tend to feel bored because the treatment time is so long, then patients sometimes feel healthy after receiving treatment for a while and then stop their treatment[21].

Relationship between Education Level and Compliance with Pulmonary TB Treatment

Based on the Kruskal Wallis analysis test, there is a significant difference between education level and compliance with pulmonary TB treatment. This is by the p-value = 0.016, indicating that there is a significant relationship between education level and compliance with pulmonary TB treatment. The results of this study are by research conducted by Absor (2020) which states that there is a relationship between education level and compliance with pulmonary TB treatment. The study stated that low levels of education have an impact on low knowledge including clean and healthy living behavior (PHBS)[22]. A study conducted by Hakim (2015) entitled "The Influence of Patient Educational Background on Regularity of Pulmonary TB Treatment at Wangon I Banyumas Health Center" showed that there was no relationship between education level and patient compliance in taking pulmonary TB medication with a p-value of 0.569[23]. Many factors can influence patients to be able to comply with treatment. One of these factors is the patient's confidence in themselves and the doctor treating their illness to be able to achieve recovery so that patients are willing to follow the doctor's rules until treatment is complete. There is a similar study that shows that there is no relationship between education and the success of pulmonary TB treatment at Dinoyo Health Center (2017) with a p-value of 0.645. The majority of respondents consider pulmonary TB to be a dangerous and frightening disease, so both respondents who attended elementary school and those who graduated from high school or college felt encouraged to check themselves at a healthcare facility and undergo complete treatment. Therefore, there are differences in the results of this study with other studies because there are other factors and a person's level of education does not directly affect the success of pulmonary TB treatment[24].

CONCLUSION

There is a relationship between gender, employment status, family support, and education level with the fulfillment of pulmonary TB treatment at PKU Muhammadiyah Bantul Hospital. Age and distance from home do not have a significant relationship with the fulfillment of pulmonary TB treatment at PKU Muhammadiyah Bantul Hospital.

ETHICAL APPROVAL

The study obtained ethical approval with approval number 035/EC.KEPK/C/07.24 from PKU Muhammadiyah Bantul Hospital.

CONFLICT OF INTEREST

The authors have no conflicts of interest to declare.

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REFERENCES

1. Burhan Erlina, Soeroto Arto Yuwono, Isbaniyah Fathiyah. *Pedoman Nasional Pelayanan Kedokteran Tatalaksana Tuberkulosis*. Kementrian Kesehatan Republik Indonesia; 2020.
2. Dewi Kristini T, Hamidah R, Kesehatan Masyarakat F, Muhammadiyah Semarang U, Kesehatan Provinsi Jawa Tengah D. Potensi Penularan Tuberculosis Paru pada Anggota Keluarga Penderita. *Jurnal Kesehatan Masyarakat Indonesia*. 2020;15(1):24-28. https://jurnal.unimus.ac.id/index.php/jkmi,
3. World Health Organization. *Global Tuberculosis Report 2023*. World Health Organization; 2023.
4. Lele GC, Telew A, Supit A. Analisis Epidemiologi Penyakit Tuberculosis Paru di PUSKESMAS Koya Tahun 2021-2023. *Jurnal Ilmiah Kesehatan Manado*. 2024;3(2). https://jik.yscs.co.id
5. Dinas Kesehatan Kota Yogyakarta. *PROFIL KESEHATAN TAHUN 2022 KOTA YOGYAKARTA DINAS KESEHATAN*.; 2022. Accessed August 2, 2025. https://kesehatan.jogjakota.go.id/uploads/dokumen/profil_dinkes_2022_data_2021_fix.pdf
6. Yudiana R, Zulmansyah, Garna H. Hubungan Jarak Rumah ke Puskesmas dengan Kepatuhan Pengobatan Pasien Tuberkulosis Paru di Puskesmas Patokbeusi Subang. In: *Bandung Conference Series Medical Science*. ; 2022.
7. Rahmi U. Analisis Faktor Kepatuhan Berobat Penderita Tuberculosis Paru Di Bandung. *Wiraraja Medika: Jurnal Kesehatan*. 2020;10:23-28.
8. Ulfah U, Windiyaningsih C, Abidin Z, Murtiani F. Faktor-Faktor yang Berhubungan dengan Kepatuhan Berobat Pada Penderita Tuberkulosis Paru Factors Related to Medication Adherence in Pulmonary Tuberculosis Patients. *The Indonesian Journal of Infectious Diseases*. 2018;4.
9. Nailius IS, Anshari D. Hubungan Karakteristik Sosial Demografi dan Literasi Kesehatan Dengan Kepatuhan Minum Obat Pada Penderita Tuberkulosis di Kota Kupang. *Perilaku dan Promosi Kesehatan: Indonesian Journal of Health Promotion and Behavior*. 2022;4(2):43. doi:10.47034/ppk.v4i2.6332
10. Lasutri DG, Noviadi P, Gustina E. Faktor Determinan Kepatuhan Berobat Penderita Tuberkulosis Paru di Wilayah Kerja PUSKESMAS Balai Agung Kabupaten Musi Banyuasin Tahun 2021. *JURNAL MUTIARA KESEHATAN MASYARAKAT*. 2021;6(2):69-82. doi:10.51544/jmkm.v6i2.2245

11. Versita R, Yustisia N, Rahmawati suci, Ningsih CF. Hubungan Karakteristik Demografi Terhadap Menjalani Pengobatan Kepatuhan Pasien Tuberculosis (Tbc) Di Puskesmas Bintuhan Kabupaten Kaur Provinsi Bengkulu. *ANJANI Journal: Health Research Study*. 2021;1.

12. saad LA, Nasruddin H, Pramono SD, Wiryansyah EP, Rahmawati R. Evaluasi Kepatuhan Pasien Tuberkulosis Paru terhadap Penggunaan OAT. *Fakumi Medical Journal*. 2024;4.

13. Samsuri UF, Setiawan Y, Idrus M, Fajri R, Aprina F, Murniati H. HUBUNGAN KARAKTERISTIK PASIEN DAN RIWAYAT PENGOBATAN TERHADAP KEPATUHAN PENGOBATAN TUBERKULOSIS KOTA PALEMBANG. *PREPOTIF*. 2024;8(1).

14. Rosadi D. Faktor-Faktor yang Berhubungan dengan Kepatuhan Pasien Tuberkulosis Paru Terhadap Obat Anti Tuberkulosis. *Jurnal Berkala Kesehatan*. 2020;6(2):80. doi:10.20527/jbk.v6i2.9452

15. Adhanty S, Syarif S. Kepatuhan Pengobatan pada Pasien Tuberkulosis dan Faktor-Faktor yang Mempengaruhinya: Tinjauan Sistematis. *Jurnal Epidemiologi Kesehatan Indonesia*. 2023;7(1). doi:10.7454/epidkes.v7i1.6571

16. Kusmiyani OT, Hermanto H, Rosela K. Analisis Faktor yang Berhubungan dengan Kepatuhan Minum Obat Anti Tuberkulosis pada Pasien TB Paru di Puskesmas Samuda dan Bapinang Kotawaringin Timur. *Jurnal Surya Medika*. 2024;10.

17. Nasution MS. Hubungan Dukungan Keluarga dengan Kepatuhan Minum Obat Tuberkulosis Paru (TB PARU) pada Pasien Rawat Jalan di PUSKESMAS Batu Horpak Kecamatan Tano Tombangan Angkola Tahun 2021 . 2021. Accessed August 4, 2025. repository.unar.ac.id

18. Warjiman. Hubungan Dukungan Keluarga Terhadap Kepatuhan Minum Obat Pasien Tuberkulosis Paru Di Puskesmas Sungai Bilu. 2022. Accessed August 4, 2024. https://repository.stikessuakainsan.ac.id/200/

19. Suharno suharno, Retnaningsih D, Kustriyani M. DUKUNGAN KELUARGA DENGAN KEPATUHAN MINUM OBAT PADA PENDERITA TBC DIMASA PANDEMIK COVID-19. *Jurnal Ners Widya Husada*. 2022;9.

20. Dadang AM, Febriani E, Mamlukah M. FAKTOR-FAKTOR YANG BERHUBUNGAN DENGAN KEPATUHAN MELAKUKAN PENGOBATAN SECARA TERATUR PADA ANAK PENDERITA TUBERKULOSIS DI KOTA TASIKMALAYA TAHUN 2022. *Journal of Health Research Science*. 2023;3(1):1-12. doi:10.34305/jhrs.v2i02.565

21. Yulisetyaningrum Y, Hidayah N, Yuliarti R. HUBUNGAN JARAK RUMAH DENGAN KEPATUHAN MINUM OBAT PADA PASIEN TBC DI RSI SUNAN KUDUS. *Jurnal Ilmu Keperawatan dan Kebidanan*. 2019;10(1):248. doi:10.26751/jikk.v10i1.676

22. Absor S, Nurida A, Levani Y, Nerly WS. HUBUNGAN TINGKAT PENDIDIKAN DENGAN KEPATUHAN BEROBAT PENDERITA TB PARU DI WILAYAH KABUPATEN LAMONGAN PADA JANUARI 2016 – DESEMBER 2018. *Medica Arteriana (Med-Art)*. 2020;2(2):80. doi:10.26714/medart.2.2.2020.80-87

23. Hakim A, Putri PM. Pengaruh Latar Belakang Pendidikan Pasien Terhadap Keteraturan Pengobatan TB Paru di PUSKESMAS Wangon I Banyumas. *Psycho Idea*. 2015;13.

24. Nur Y, Endang M, Redjeki S, Fanani E. FAKTOR YANG MEMPENGARUHI KEBERHASILAN PENGOBATAN TUBERKULOSIS (TB) PARU PADA PASIEN PASCA PENGOBATAN DI PUSKESMAS DINOYO KOTA MALANG. *Preventia*. 2017;2.