The Relationship Between Family Support, Drug Side Effects, Patient Attitudes and Tuberculosis Treatment Compliance at Dr. R. Soeprapto Cepu Hospital

Soffia Narulita Safitri [1], Noor Alis Setiyadi [2]

[1,2]Public Health Study Program, Faculty of Health Sciences, University of Muhammadiyah

Surakarta.

ARTICLE INFO	ABSTRACT
	This study aims to determine the relationship between family support, drug side effects, knowledge, and patient attitudes with tuberculosis treatment compliance at Dr. R. Soeprapto Cepu Hospital. The research employs a descriptive quantitative design using a cross-sectional method. A total of 165 respondents were selected through purposive sampling based on specific inclusion criteria. Data collection was carried out using structured questionnaires, and the results were analyzed using the Chi-Square statistical test. The findings demonstrated a substantial correlation between family support (p = 0.003), drug side effects (p = 0.015), patient attitude (p = 0.001) and treatment adherence. However, knowledge did not show a significant relationship with adherence (p = 0.433). These results indicate that although knowledge is an essential factor in health behavior, it may not directly influence a patient's commitment to completing tuberculosis treatment. In conclusion, family support, medication side effects, and patient attitudes play a crucial role in improving tuberculosis treatment compliance. Healthcare providers should focus on strengthening family involvement, managing side effects effectively, and fostering positive attitudes in patients to enhance adherence rates. Further research is recommended to explore other potential factors affecting compliance, such as socioeconomic status, healthcare accessibility, and psychological aspects.

1. INTRODUCTION

Tuberculosis (TB) is a highly contagious infectious disease that primarily affects the respiratory system, particularly the lungs. The causative agent of TB is *Mycobacterium tuberculosis*. The infection spreads through the inhalation of airborne droplets expelled by an individual with active TB (Ministry of Health of the Republic of Indonesia. 2023). In 2023, approximately 410,000 cases of pulmonary tuberculosis were reported, marking an increase from 7.5 million cases in 2022. Although the mortality rate from pulmonary tuberculosis slightly declined from 1.32 million in 2022 to 1.25 million in 2023, the number of new cases is projected to rise to 10.8 million (WHO, 2023). In Indonesia, the Ministry of Health recorded a significant increase in TB cases. The number of new TB cases projected in 2023 will reach 1,060,000, with an associated annual death toll of 134,000. However, the number of TB patients diagnosed actually increased to 820,789, exceeding previous projections (Ministry of Health of the Republic of Indonesia, 2023). According to 2023 health profile of Central Java, the highest rate of tuberculosis in Central Java is in Tegal Regency with 2,416 cases in 2023.

The increase in Tuberculosis (TB) cases has made Indonesia ranked second in the world with the world's greatest number of TB cases. Central Java is one of the provinces with the largest cases, recording Tegal Regency as the area with the highest number of cases. Along with the increase in cases, there is a significant spike in patients who are absent from treatment or called Loss to Follow Up (LTFU). Key contributing factors include adverse drug effects and economic constraints causes patient absenteeism, most of whom are the backbone of the family and feel that their activities are disrupted due to the effects of drugs.

According to the 2023 health profile of Central Java Province, the treatment compliance rate among TB patients varies by district. The overall compliance rate for Central Java stands at 87%, whereas Blora District has a lower compliance rate of 76%. Treatment adherence rates below 90% can negatively impact recovery outcomes and delay the timely reporting of cases by healthcare providers. In 2023, Central Java's Case Notification Rate (CNR), rose by 55.99 per 100,000 people compared to the previous year, reaching 115.17. (Nurjannah,2021).

In Blora District, the CNR was recorded at 765.1 per 100,000 people (Central Java Provincial Health Office, 2023). The proportion of TB patients testing positive for acid-fast bacilli (BTA) in Blora Regency remained consistent from 2019 to 2023, with 63% of TB cases in 2023 being BTA-positive. This indicates that out of every 100 reported TB cases, 63 were confirmed as BTA-positive (Blora Regency Health Office, 2023). A previous study conducted at Dr. R. Soeprapto Hospital found that, on average, 5 to 7 individuals visit TB clinics daily for testing, counseling, or medication. Additionally, approximately 50 TB-positive patients seek treatment at these clinics each month (Fridayani, 2016).

In a prior study, the association between family support and the degree of compliance of TB patients in Indonesia at Malang City's Jati Health Center (Nursalim, 2020). According to the analysis's findings, 65.7% of patients had supportive families, and 91.4% of patients were said to be compliant with medication. However, the statistical test showed a p value of 0.972 (p > 0.05) (Herawati, C,2020), which means that there was no significant relationship between family support and medication adherence, this was inversely proportional to the research conducted at the Prosecutor's Hospital in Cirebon which indicated a strong positive correlation between family support and adherence to TB treatment (p-value = 0.007)". In

contrast, a study by Wulandari (2020) and Rikatsih (2021) revealed no significant impact of family support on TB treatment adherence. However, (Tasyakurillah, 2023) in its systematic review reported that family support is a crucial factor influencing treatment adherence, with a p value of 0.001 < 0.05, which shows a substantial positive impact. In contrast, neither knowledge nor attitude showed a significant correlation with adherence to treatment (p = 0.059 and 0.213, respectively). The study examined the relationship between medication side effects and adherence, finding more than 30% of patients experienced bothersome side effects and 20% of them stopped treatment early (Kumar & Kahwa, 2018)

The variations observed across these studies motivated the authors to investigate the relationship between family support, drug side effects, knowledge, and attitudes in relation to tuberculosis treatment adherence at Dr. R. Soeprapto Cepu Hospital.

2. METHODS

2.1 Research desig

This study is a descriptive quantitative research with a Cros-sectional research design.

2.2 Setting and Sample/Participants

This research was conducted at the Pulmonary outpatient clinic of Dr. R. Soeprapto Hospital from October 1st to 21st, 2024. Dr. R. Soeprapto Hospital provides treatment for tuberculosis (TB) patients who have been undergoing treatment for less than six months. The study population consisted of 317 TB patients receiving treatment at the hospital. A purposive sampling method was employed, and the sample size was determined using the Lemeshow formula, resulting in 165 respondents. The inclusion criteria for this study required that participants be TB patients who had been on treatment for at least one month, had agreed to participate, and were willing to complete all questionnaires. Exclusion criteria included patients whose health condition deteriorated during the study, preventing them from completing the questionnaire.The research instrument used in this study was a questionnaire, which contained statements representing the variables under investigation. The questionnaire included ten questions for each of the following variables: family support, drug side effects, knowledge, and attitude. Data analysis was conducted using SPSS software, employing two distinct methodologies. First, univariate analysis was performed to assess the characteristics of each variable. Subsequently, bivariate analysis was conducted to evaluate the relationships between variable pairs.

2.3 Measurement and Data Collection

The instruments used in this study were family support, drug side effects, attitude, and knowledge questionnaires. The questionnaires were derived from the research of Puspaningrum (2021) consisting of 10 questions regarding family support for pulmonary TB patients, then the drug side effect questionnaire was adapted from the Kiki (2020) consisting of 10 questions about the side effects of Anti-Tuberculosis Drugs, and finally the attitude and knowledge questionnaire was adapted from the research of Agnes (2019) which contained 10 questions each about the attitude of pulmonary tuberculosis patients in facing the disease and knowledge about tuberculosis. The validity and reliability of the family support tool were examined by the researcher, side effects, attitudes, and knowledge to 30 respondents outside the research sample all items were declared valid with ten questions each

of Cronbach's Alpha score for the family support questionnaire (0.792), drug side effects (0.687), knowledge (0.703), and attitude (0.824), this showed that the questionnaire exceeded the threshold of 0.60 which confirmed reliability. Data collection for this study started with approval from Dr. R. Soeprapto Cepu Hospital and other relevant parties. The Lamesshow formula of 165 respondents and a description of the goals, advantages, and methods of the study, along with the respondents' rights, were used to choose the sample. The Dr. R. Soeprapto Cepu Hospital research coordination team has granted ethical clearance for this study. To provide reliable research findings, the acquired data is subsequently recorded, processed, examined, and gathered.

2.4 Data analysis

The Chi-Square statistical test with a significance level <0.05 was used to examine the association between the variables. IBM SPSS statistic 20 was used to analyze the data gathered for this investigation in two different ways. First, each variable's features were evaluated using univariate analysis. Furthermore, bivariate analysis is performed to evaluate the relationship between variable pairs.

2.7 Ethical considerations

This study adheres to research ethics by obtaining informed consent, protecting respondent identity (anonymity), and protecting respondent data and information (confidentiality). This research has received ethical approval from the Research Ethics Committee of dr. R. Soeprapto Cepu Hospital No: 400.7.22.1/877/X/2024.

3. RESULTS

The respondents in this study were patients of the pulmonary outpatient clinic of dr. R. Soeprapto Cepu Hospital which has characteristics including gender, age, education, occupation, duration of symptoms and the number of families as presented in the Table 1:

Table 1. Frequency Distribution of Respondent Characteristics

Characteristics of Respondents	n	%
Gender		
Man	72	43,6
Woman	93	56,4
Age		
Adult	54	32,7
Pre-Elderly	56	33,9
Elderly	55	33,3
Educational history		
No School	14	8,5
Elementary school	40	24,2
Junior high school	31	18,8
Senior high School/Vocational School	59	35,8
Bachelor	21	12,7

Work

Not Working	11	6,7
Farmer	48	29,1
Housewives	63	38,2
Private Employees	11	6,7
Self employed	9	5,5
Civil servants	18	10,9
Pensioner	5	3,0
Duration of Initial Symptoms in TB Treatment		
2-4 Weeks	21	12,7
1-2 Months	11	6,7
2-3 Months	31	18,8
3-6 Months	72	43,6
6-12 Months	23	13,9
Number of Families		
1-2 People	65	39,4
4-5 People	68	41,2
>6 people	32	19,4
Sum	**165**	**100,0**

Considering the frequency distribution in Table 1 about participant's gender, age, education, occupation, length of symptoms, and number of family members are among the respondent characteristics. According to the study's findings, 93 women (56.4%) made up the largest percentage of respondents, the majority of respondents were pre-elderly age groups as many as 56 (33.9%). The majority of responders have finished the senior /vocational high school as much as 59 (35.8%). Based on occupation, the most dominating are housewives with 63 people (38.2%). The Duration of Initial Symptoms in TB Treatment was the most in 3-6 months as many as 72 respondents (43.6%), and the greatest number of families in one household was around 4-5 people with 68 respondents (41.2%).

Table 2. Frequency Distribution Based on Research Variables

Variable	Compliance with Taking Anti-Tuberculosis Medication				Sum		p-value
	Obedient		Non-Compliance				
	f	%	f	%	f	%	
Family Support							
Support	143	95,3	7	4,7	150	100	0,003
Not Supported	3	20,0	12	80,0	15	100	
Side Effects							
Light	53	93,0	4	7,0	57	100	
Keep	71	93,4	5	6,6	76	100	0,015
Heavy	22	28,3	10	3,7	32	100	
Knowledge							

Good	83	96,5	3	3,5	86	100	0,433
Lacking	63	79,7	16	20,3	79	100	
Attitude							
Positive	131	95,6	6	4,4	137	100	0,001
Negative	15	53,6	14	46,4	28	100	

Considering to the Table 2, between family support and anti-tuberculosis medication adherence showed a significant correlation within a p-value = 0.003 < 0.05. This result rejects the null hypothesis (Ho) and accepts the alternative hypothesis (Ha). The relationship between drug side effects and adherence showed a p-value = 0.015 < 0.05, indicating that there was no discernible correlation and that the null hypothesis was accepted. The Chi-square test for the relationship between knowledge and medication adherence produced a p value of 0.433 > 0.05, which means that there was no significant relationship between knowledge and compliance. Meanwhile, to the variable of attitude, a significant p value of 0.001 < 0.05 founded, which means that there was a relationship between attitude and adherence to taking Anti-Tuberculosis Drugs.

4. DISCUSSION

Relationship between Family Support and Pulmonary TB Treatment Compliance

The results of statistical test showed a p-valued of 0.003 < 0.05 which mean family support and adherence to pulmonary tuberculosis therapy at Dr. R. Soeprapto Cepu Hospital were statistically related. This is consistent with a study by Nursalam et al (2021) which claimed that the connection between family assistance and medication adherence was statistically significant (p-value < 0.05). In this context, family support, both emotional, informational, and instrumental, has been proven to have a positive influence on the success of tuberculosis therapy (Mertens, 2020). This is also relevant to the Directly Observed Treatment Short-course (DOTS) program, where support from a medication supervisor, often from the patient's family, is one of the key components in the success of tuberculosis treatment.

Family support not only affects compliance, but can also have a positive psychological impact on patients, such as reducing stress levels and increasing confidence in the face of long-term treatment. Therefore, family-based interventions, such as health education for family members and their involvement in the treatment process, are highly recommended to improve the effectiveness of tuberculosis therapy in the future.

Relationship between the side effect of Anti-Tuberculosis Drugs and Pulmonary TB Treatment Compliance

The results demonstrated a significant relationship between the two variables, with a p-value of 0.015 (< 0.05). This finding is consistent with previous research by Rahmawati et al. (2018), which also identified a significant correlation between the severity of side effects and treatment adherence, reporting a p-value of 0.012. Their study concluded that effective management of side effects through patient education and the administration of additional medications to alleviate symptoms is crucial in ensuring successful treatment adherence.

Relationship between Pulmonary TB Patient's Attitude and Treatment Compliance

The findings of the statistical chi-square test indicated a significant correlation between the attitude of pulmonary tuberculosis patients and their adherence to treatment at Dr. R. Soeprapto Cepu Hospital, with a p-value of 0.001 (< 0.05). This result aligns with the study by Wahyuni et al. (2020), which also found a significant association between patients' positive attitudes such as confidence in treatment success and commitment to recovery—and TB treatment adherence, reporting a p-value of 0.003. The study further highlights the crucial role of patients' internal motivation in ensuring adherence to the prescribed treatment regimen.

Relationship between TB Patient's Knowledge and Treatment Compliance

The results indicated a non-significant relationship, with a p-value of 0.433 (> 0.05), statistically demonstrating that knowledge and treatment adherence were not significantly correlated. This finding aligns with the previous study by Rahman et al. (2020), which reported similar results with a p-value of 0.450, suggesting that knowledge alone is insufficient to ensure patient adherence to tuberculosis treatment. Instead, social support factors and patient attitudes appear to be more influential.

These findings highlight that while knowledge is important, other factors such as attitudes, family support, and the management of drug side effects play a more critical role in promoting treatment adherence. This underscores the need for a multidimensional approach in tuberculosis treatment interventions.

5. **CONCLUSION**

According to the study's findings, the majority of respondents 56 (33.9%) were in the pre-elderly age category, and 93 (56.4%) of the respondents were female. The majority of responders have a high school diploma/vocational school as much as 59 (35.8%). Based on occupation, the most dominating are housewives with 63 people (38.2%). The duration of symptoms was the most in 3-6 months as many as 72 respondents (43.6%), and the most number of families in one household was around 4-5 people with 68 respondents (41.2%). A p value of less than 0.05 indicated that the Chi-Square test results were significant or that a relationship existed, namely the variables of Family Support (p value 0.003<0.05), Side Effects of Anti-Tuberculosis Drugs (p value 0.015<0.05), and the variable of Patient Attitude (p value 0.001<0.05). and in the knowledge variable, the results were not significant with (p value 0.433>0.05) It indicates that knowledge and adherence were unrelated to pulmonary tuberculosis treatment at dr. R. Soeprapto Cepu Hospital.

Based on the results of this study, it is recommended that the Regional General Hospital enhance family education through regular counseling so they can better understand their crucial role in supporting Tuberculosis treatment adherence. Additionally, healthcare workers should provide continuous motivation and education to foster a positive attitude in patients toward treatment. The hospital should also ensure clear information is available regarding the side effects of anti-tuberculosis drugs and strategies for managing them so that patients do not discontinue treatment without medical consultation.

Future research is recommended to use a case-control study design to obtain a clearer comparison between patients who adhere and do not adhere to Anti-Tuberculosis Drugs (ATDs) consumption. Additionally, it is suggested to include other variables, such as disease

severity, access to healthcare services, and psychosocial factors, to gain a more comprehensive understanding of the factors influencing Tuberculosis treatment adherence.

6. ACKNOWLEDGMENTS

7. REFERENCES

Dinas Kesehatan Kabupaten Blora. Profil kesehatan kabupaten Blora 2023 [Blora regency health profile 2023]. Blora. 2023. https:// www.depkes.go.id/ resources/download/profil/PROFIL_KAB_KOTA jateng Blora 2023.

Dinas Kesehatan Provinsi Jawa Tengah. Profil kesehatan Jawa Tengah 2023 [Central Java health profile 2023]. Semarang. 2016.. https://dinkesjatengprov.go.id/ v2018/profil-kesehatan-2/

Fridayani, A. (2016). Gambaran tingkat pengetahuan dan kecemasan pada penderita TB paru yang menjalani pengobatan di ruang pojok TB Rumah Sakit Dr. R. Soeprapto Cepu. Skripsi, Universitas Muhammadiyah Surakarta, Surakarta.

Herawati, C. (2020). Peran Dukungan Keluarga, Petugas Kesehatan, dan Perceived Stigma dalam Meningkatkan Kepatuhan Minum Obat pada Penderita Tuberculosis Paru. Jurnal Kesehatan Masyarakat Indonesia, 15(1), 19-23.

Kahwa, E. et al. (2017). The Effect of Drug Side Effects on Adherence to Tuberculosis Treatment in Nigeria. Journal of Global Health Reports.

Kemenkes R L. (2023). Profil kesehatan indonesia 2021. Depkes RI.

Kementerian Kesehatan Republik Indonesia. (2022). Statistik TB nasional dan strategi eliminasi. Diakses dari https://tbindonesia.or.id/statistik-tb-2022

Kementerian Kesehatan Republik Indonesia. (2023). Panduan nasional tatalaksana tuberkulosis. Diakses dari https://tbindonesia.or.id

Kumar, V., et al. (2018). Influence of Side Effects on Tuberculosis Treatment Adherence: A Case Study in India. Indian Journal of Medical Sciences.

Mertens, L., Teuwen, D., et al. (2020). "The Impact of Patient Adherence on Treatment Outcomes in Chronic Disease Management." Journal of Medical Compliance and Adherence, 15(2), 123-134.

Nindynar Rikatsih, A., Pratama, R. W., & Sari, F. (2021). Hubungan antara pengetahuan tentang tuberkulosis dengan kepatuhan pasien dalam menjalani pengobatan. Jurnal Ilmu Kesehatan Masyarakat, 10(3), 235–243.

Nurjannah, N., & Maria, I. (2021). Mapping TB Case Notification Rate (CNR) by Province in Indonesia. Epidemiology International Journal, 5(4), 000216. Diakses dari https://medwinpublishers.com.

Rian. samsu. "Pengaruh Efek Samping Obat Anti Tuberkulosis Terhadap Kejadian Default di Rumah Sakit Islam Pondok Kopi Jakarta Timur", Tesis FKM Universitas Indonesia (2010): h 11-19.

Sadipun, D. K., & Letmau, W. (2023). Hubungan Dukungan Keluarga dengan Kepatuhan Minum Obat pada Pasien Tuberculosis Paru. Jurnal Penelitian

Tasyakurillah, S. (2023). Systematic Review of Family Support in Adherence to Tuberculosis Treatment. International Journal of Health Sciences, 18(4), 127-132.

World Health Organization (WHO). (2023). Global Tuberculosis Report 2023. Geneva: World Health Organization. Diakses dari https://www.who.int/tb/publications/global_report.

Wulandari, D. et al. (2020). Pengaruh Dukungan Keluarga terhadap Kepatuhan Pengobatan Tuberkulosis di Indonesia. Jurnal Kesehatan Masyarakat, 14(3), 45-50.

Yunalia, N., Santoso, A., & Andriani, S. (2022). Peran dukungan keluarga dalam meningkatkan kepatuhan minum obat pada pasien tuberkulosis. Jurnal Keperawatan Klinik, 8(1), 59–67.

Nursalam, A., et al. (2021). "Pengaruh Dukungan Keluarga terhadap Kepatuhan Minum Obat pada Pasien TB Paru di Wilayah Perkotaan." Jurnal Keperawatan Indonesia, 24(1), 15-22.

Rahmawati, A., et al. (2018). "Hubungan Efek Samping Obat Anti Tuberkulosis dengan Kepatuhan Pengobatan Pasien di Puskesmas Wilayah Rural." Jurnal Penelitian dan Pengabdian Kesehatan, 9(2), 89-96.

Rahman, R., et al. (2020). "Faktor-Faktor yang Mempengaruhi Kepatuhan Pengobatan Tuberkulosis: Studi Kasus di Rumah Sakit Umum." Jurnal Penelitian Kesehatan, 18(4), 150-158.

Rajagukguk, A. H. M. (2024).Rajagukguk, A. H. M. (2024). (Tesis Magister, INSTITUT KESEHATAN HELVETIA MEDAN)

Wahyuni, S., et al. (2020). "Hubungan Sikap Pasien dengan Kepatuhan Pengobatan Tuberkulosis di Wilayah Perkotaan." Jurnal Kesehatan Masyarakat, 15(2), 120-128.