Relationship between Pulmonary TB Patient Behavior and Family Support with Treatment Adherence at the RSU Pulmonary Polyclinic, Indonesia

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ABSTRACT
Estimates place the number of new cases of tuberculosis (TB) at 10.4 million per year. Based on an initial survey of 10 TB patients, it was found that 6 patients were not compliant with treatment, while 4 other patients were compliant with treatment. The aim of this research was to determine the behavioral factors of pulmonary TB patients with patient treatment compliance at the RSU Pulmonary Polyclinic. Mother Thamrin Medan. The research design used in this research is an analytical survey with a cross sectional approach. The population in this study was all 58 patients and the samples were taken by a total sampling method of 58 people. Data collection methods are primary data, secondary and tertiary data. The data analysis used is the binary logistic regression test. The results showed that age had a sig-p value of 0.646> 0.05, education sig-p 0.032< 0.05, employment sig-p 1.0> 0.05, knowledge sig-p 0.012< 0.05, attitude sig-p 0.036 < 0.05, sig-p action 0.003< 0.05 and family support sig-p 0.048< 0.05. The conclusion in this study is that there is an influence of education, knowledge, attitudes, actions and family support on patient treatment compliance, while age and employment have no influence on patient treatment compliance at the RSU Pulmonary Polyclinic. Bunda Thamrin Medan. By monitoring patients, educating them to detect frequent complaints and symptoms of TB disease, and encouraging patients to report their condition to medical professionals right away, it is intended that the findings of this research can be used as informational material for research sites.

Keywords: Behavior, Pulmonary TB, Treatment Compliance

INTRODUCTION

Tuberculosis is one of many infectious and deadly diseases and is still a concern of the global community (1). Pulmonary tuberculosis is an infectious disease caused by the rod-shaped Mycobacterium tuberculosis (Bacillus) bacteria which is transmitted through saliva/sputum containing tuberculosis bacilli which spreads in the air when the patient suffers. pulmonary tuberculosis cough (2).

Pulmonary tuberculosis suffered by an individual will have a huge impact on their life, both physically, mentally and socially. Physically, pulmonary tuberculosis, if not treated properly, will cause various complications for other organs, such as the spread of infection to other organs, dietary issues, frequent bloody hiccups, treatment resistance, and other issues. Pulmonary tuberculosis is a condition that takes a long time to treat and necessitates taking a lot of medicine (3).

Based on data from the North Sumatra Health Service in 2018, the number of tuberculosis
cases was 26,418, an increase compared to all tuberculosis cases found in 2017, namely 15,715. The highest number of cases reported in 2018 were in districts/cities with large populations, namely Medan City, namely 7,384 cases and Deli Serdang Regency, namely 3,393 cases. In 2018 the Cross Notification Rate/CNR (new cases) of pulmonary TB BTA (+) in North Sumatra reached 183/100,000 population, there was an increase compared to 2017 which reached 104/100,000, in 2016 it reached 105/100,000 population and in 2015 it reached 123/100,000 population (7).

Low patient recovery rates, high death rates, and increased recurrence are all consequences of pulmonary tuberculosis patients’ non-compliance with treatment. Even more fatal is the emergence of germ resistance to multiple anti-tuberculosis drugs or multi-drug resistance, making pulmonary tuberculosis very difficult to treat (10). Pulmonary TB disease can occur when the body’s immune system decreases. From an epidemiological perspective which views disease incidence as the result of interactions between the three components of host, agent and environment, risk factors can be studied from these nodes. On the host side, a person’s immune system at the moment has a significant impact on their susceptibility to Mycobacterium TB infection. HIV/AIDS sufferers or people with poor nutritional status are more likely to become infected and contract TB (6).

Because there are still opportunities for pulmonary TB disease to be transmitted to family members and the local population, the poor recovery rate coverage has a detrimental effect on public health and the success of program achievements. In addition, it's conceivable for pulmonary TB germs to develop a resistance to anti-tuberculosis medications (OAT), which would increase the spread of the disease and the morbidity and death from pulmonary TB. Each patient must follow their treatment plan consistently in order to recuperate. A plan to assure the patient’s recovery combines short-term OAT with the function of the Drug Swallowing Supervisor (PMO). Despite a solid medicine combination being utilized, results will suffer if the patient does not consistently seek treatment will generally be disappointing (8).

Health behavior is a person’s response and action to illness and disease, the health service system, food and the environment (9). According to Lawrence Green's theory (1980) in Notoatmodjo, a number of factors, including predisposing factors (factors within the individual including knowledge, attitudes, beliefs, and values and norms adhered to), supporting factors (health facilities, affordable health facilities, health regulations, and health-related skills), and driving factors (family, teachers, peers, health workers, community leaders/influential people, and decision-making. These three factors simultaneously influence behavior, where adherence to outpatient treatment is included in health behavior (11).

Based on the results of research by the Health Research and Development Agency of the Republic of Indonesia, one of the factors causing the low recovery rate is non-compliance with treatment for pulmonary TB sufferers (12). Based on the results of Tirtana's research in 2011, namely various factors causing non-compliance with medication for pulmonary TB sufferers, it can be concluded that human factors (both sufferers and PMO) are the main cause. Human factors refer to an individual’s behavior, including personal traits, information, and an evaluation of health service attitudes (13).

Based on an initial survey conducted by researchers on 10 TB patients, it was found that 6 patients were not compliant with treatment, while 4 other patients were compliant with treatment. The low compliance with outpatient treatment in pulmonary TB patients is because young sufferers feel embarrassed about their TB disease so they do not want to always seek outpatient treatment. On the other hand, older patients are more disciplined and obedient to treatment than young patients. Furthermore, low patient education also results in low insight or knowledge about TB treatment. Someone who has low education and knowledge tends not to understand TB prevention, TB control, how to treat TB and the benefits of regular treatment as recommended, so they do not comply with treatment.

RSU Bunda Thamrin Medan is a hospital that has pulmonary TB patients whose incidence
increases from year to year. According to data in 2018, there were 147 pulmonary TB patients, in 2019 there were 169 patients and in 2020 there were 187 patients. The number of pulmonary TB patients who recovered in 2018 was 68 people, in 2019 there were 73 people and in 2020 there were 89 people. Pulmonary TB patients who were lost to follow up also increased from 2018 to 2020, namely 6 people in 2018, 11 people in 2019 and 21 people in 2020. The patient recovery rate is still low and the incidence of TB cases and the loss to follow up rate are still increasing. at RSU Bunda Thamrin attracted the attention of researchers].

METHODS

The research design uses the Analytical Survey method, namely examining how and why phenomena occur and then analyzing the relationship between these phenomena so that it can be seen to what extent risk factors influence an event. This research uses a cross-sectional approach, namely studying the relationship between risk factors and events using observation methods or data collection at the same time.

This study was carried out at the RSU Bunda Thamrin Medan, Jalan Sei Batang Hari No. 28–32, Babura Sunggal, Medan Sunggal District, Medan City, North Sumatra. From August 2020 until the study’s conclusion, the research was conducted. All 58 TB patients at RSU Bunda Thamrin from May to July 2021 comprised the study’s population. The sampling technique in this research is Total Sampling, namely sampling taken from the entire population, namely 58 people.

Univariate Analysis

To define the features of each independent variable and dependent variable, univariate data analysis was used. The gathered information is displayed as a frequency distribution table.

Bivariate Analysis

At the statistical significance threshold of the $p$ value (0.05), Chi-square analysis was used to demonstrate that there was no significant association between the independent variable and the dependent variable. The two variables are deemed to have a statistically significant association when the computation results produce a $p$ value $<$ $p$ value (0.05), which indicates that $H_0$ is rejected and $H_a$ is accepted.

Multivariate Analysis

Utilizing a binary logistic regression test, multivariate data analysis was conducted in order to ascertain the impact of independent variables on the dependent variable $Exp$ value ($\beta$), indicates how much the independent variable has an impact on the dependent variable. The value of $\beta$ indicates whether the independent variable has a positive or negative impact on the dependent variable; a positive value indicates a positive impact, and a negative value indicates a negative impact.

RESULTS & DISCUSSION

Description of Respondent Characteristics

Table 1. Frequency distribution based on Knowledge at the RSU Pulmonary Polyclinic. Mother Thamrin Medan

<table>
<thead>
<tr>
<th>Variable</th>
<th>f</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Knowledge</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Good</td>
<td>6</td>
<td>10.3</td>
</tr>
<tr>
<td>Enough</td>
<td>22</td>
<td>37.9</td>
</tr>
<tr>
<td>Not enough</td>
<td>30</td>
<td>51.7</td>
</tr>
<tr>
<td>Amount</td>
<td>58</td>
<td>100</td>
</tr>
<tr>
<td>Attitude</td>
<td></td>
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</tbody>
</table>
Table 1 shows that out of the 58 research participants, 30 participants (51.7% of the total) have a positive attitude, while 28 participants (48.3%) have a negative attitude. Of the 58 participants, 6 participants (10.3%) had good knowledge, 22 participants (37.9%) had sufficient knowledge, and 30 participants (51.7%), insufficient knowledge. The actions of 24 respondents (41.1%) had good actions and a further 34 respondents (58.6%) had bad actions. Family Support: 26 respondents (44.8%) had family support and a further 32 respondents (55.2%) did not have family support. Treatment compliance: 22 respondents (37.9%) adhered to treatment and then 36 respondents (62.1%) did not comply with treatment.

The Relationship between Age and Patient Treatment Compliance at the RSU Pulmonary Polyclinic. Mother Thamrin Medan

The researchers made the assumption that patient treatment compliance is unaffected by a patient's age. This is due to the fact that it appears that there are other factors besides age that can affect someone's non-compliance with treatment, one of which is access to healthcare services, which can be challenging for people with pulmonary TB in this age group who live in challenging or remote geographic conditions. the elderly and elderly, most of whom are physically unable to come to health services compared to the adult age group who are still physically strong. However, it does not rule out the possibility that the adult age group will not comply with treatment because adulthood is a productive age for carrying out daily activities to meet their needs so there is no time to check their health at the available health facilities.

The Relationship between Education and Patient Treatment Compliance at the RSU Pulmonary Polyclinic. Mother Thamrin Medan

According to researchers' assumptions, education has an influence on patient treatment compliance. This is because the lower the level of education, the more disobedient the patient is in seeking treatment because a person's low education greatly influences a person's absorption capacity in receiving information so that it can influence the level of understanding about pulmonary TB disease, treatment methods, and the dangers of irregular treatment. The higher a person's level of education, the higher their awareness of health. Both for himself and others and family. Educational background influences a person's thinking and acting, that through education a person can increase their intellectual maturity so they can make better decisions in their actions. In this case, higher education will motivate TB sufferers to comply with regular treatment.

Relationship of Employment to Patient Treatment Compliance at the RSU Pulmonary Polyclinic. Mother Thamrin Medan

According to researchers' assumptions, employment has an influence on patient treatment compliance. This is because the lower the level of employment, the more disobedient the patient is in seeking treatment because a person's low employment greatly influences a person's absorption capacity in receiving information so that it can influence the level of understanding about pulmonary TB disease, treatment methods, and the dangers of irregular treatment. The higher a person's level of employment, the higher their awareness of health. Both for himself and others and family. Employment background influences a person's thinking and acting, that through employment a person can increase their intellectual maturity so they can make better decisions in their actions. In this case, higher employment will motivate TB sufferers to comply with regular treatment.
According to the researchers' assumptions, work has no influence on patient treatment compliance. This is because the patient's job is not one of the factors that makes the patient disobedient to treatment. The patient stated that even though he was working, the patient was still obedient to treatment, likewise, there were also patients who did not work who were obedient to treatment. The patient added that sometimes non-compliance with treatment was due to the lack of information the patient received about the schedule for treatment. Apart from that, patients also feel lazy about seeking treatment because the place of treatment is far from where the patient lives.

**Relationship between knowledge and medication compliance among patients at the RSU Pulmonary Polyclinic. Mother Thamrin Medan**

According to the researchers' assumptions, knowledge is one of the factors that has an influence on patient treatment compliance. Good knowledge will influence pulmonary TB sufferers to be able to do things regularly so that it can influence their behavior. The better the knowledge about compliance with regular treatment, the greater the patient's regularity in treatment and in the end, they will tend to behave obediently to treatment in order to cure their illness. Good knowledge will give rise to an attitude to react to objects by accepting, responding, appreciating and discussing them with other people and inviting to influence or encourage other people to respond to what they believe. People with pulmonary TB disease prefer to behave obediently and seek therapy to address their sickness if they have solid knowledge and a high level of education, which helps them fully realize the risks associated with the disease. Knowledge about TB disease and beliefs about the efficacy of treatment will influence whether or not sufferers choose to complete treatment.

Patient compliance is the extent to which patient behavior complies with the provisions given or informed by health workers. In treatment, a person is said to be disobedient if the person neglects his or her obligations to seek treatment, which can result in obstruction of healing. Patient knowledge is one of the factors that influences patient compliance, because patient non-compliance will increase the risk of developing health problems or worsening the disease they are suffering from. Especially in pulmonary tuberculosis, patient compliance with treatment is a determining factor in the success of curing the disease. This is because pulmonary tuberculosis requires a long period of time to cure.

**The Relationship between Attitudes and Compliance with Patient Treatment at the RSU Pulmonary Polyclinic. Mother Thamrin Medan**

According to researchers’ assumptions, attitude is a factor that has an influence on patient treatment compliance. The respondent's attitude of being willing to accept doing something that is considered right will influence his behavior. The more a patient agrees to seek treatment regularly, the more regularity the patient will seek treatment. Referring to Green's theory which states that attitude is a predisposing factor for a person's behavior to occur, a negative attitude or lack of agreement towards a treatment will encourage the sufferer to behave non-compliantly in treatment, both in terms of repeated treatment and regular treatment.

Attitude is a predisposing factor for a person's behavior, so a negative attitude or lack of agreement towards a treatment will encourage the sufferer to behave disobediently in treatment, whether in re-treatment, with good knowledge about pulmonary TB, the sufferer will have a good attitude regarding pulmonary TB treatment, thus will be motivated to comply with regular treatment. The attitude of pulmonary tuberculosis sufferers regarding compliance with treatment is the attitude of respondents who are willing to accept doing something that is considered right, which will influence their behavior.

**Relationship of Actions to Patient Treatment Compliance at the RSU Pulmonary Polyclinic. Mother Thamrin Medan**
According to the researchers' assumptions, it shows that actions have an influence on treatment compliance. Bad actions will result in someone's bad behavior. As is the case with the results of this study, where the majority of patients do not seek treatment on time, do not behave healthily in daily life, still throw phlegm carelessly, have dropped out of treatment and stopped treatment because of the distance from home. Some of these problems are still a problem of patient non-compliance with treatment.

**Relationship between family support and patient treatment compliance at the RSU Pulmonary Polyclinic. Mother Thamrin Medan**

Sufferers who receive good support show that the family realizes that the sufferer really needs family. The family is the closest person to the sufferer who is always ready to provide support in the form of information, appreciation, instrumental and emotional for the sufferer. Support from family makes sufferers not feel burdened by their illness. This is because there is attention from their family, so that sufferers do not feel alone. Family support really supports the successful treatment of pulmonary tuberculosis patients by always reminding patients to seek treatment according to recommendations and encouraging them to continue receiving treatment regularly. The family support needed to encourage pulmonary tuberculosis sufferers by showing concern and sympathy and being willing to care for patients by involving emotionally, helping and motivating, will make tuberculosis patients not lonely in facing crisis situations due to the disease they suffer from.

**Research Implications**

Implication is a consequence or consequence of the findings. The results of this research have implications for hospitals, especially hospital leaders and patients, regarding the importance of complying with regular treatment. This is also a reference for health workers to be more knowledgeable and aware of the delivery of information and provide education to patients about the schedule and benefits of regular treatment, so that problems do not occur that could cause patients to drop out of treatment. The purpose of research implications is to compare the results of previously existing research with the results of the latest or newly conducted research using a method.

**CONCLUSION**

Based on the research results, there is no influence of the age of pulmonary TB patients on compliance with treatment at the RSU Pulmonary Polyclinic. Mother Thamrin Medan. There is an influence of pulmonary TB patient education on compliance with treatment at the RSU Pulmonary Polyclinic. Mother Thamrin Medan. There is no influence of the occupation of pulmonary TB patients on compliance with treatment at the RSU Pulmonary Polyclinic. Mother Thamrin Medan. There is an influence of knowledge of pulmonary TB patients on compliance with treatment at the RSU Pulmonary Polyclinic. Mother Thamrin Medan. There is an influence on the attitude of pulmonary TB patients on compliance with treatment at the RSU Pulmonary Polyclinic. Mother Thamrin Medan. There is an influence of pulmonary TB patient actions on patient treatment compliance at the RSU Pulmonary Polyclinic. Mother Thamrin Medan. There is an influence of family support of pulmonary TB patients on patient treatment compliance at the RSU Pulmonary Polyclinic. Mother Thamrin Medan. In this study, family support was the most influential factor compared to the patient's education, knowledge, attitudes and actions.

**For Patients**

This research is an input in increasing compliance with treatment, especially regarding understanding and awareness of how important it is to seek treatment regularly so that healing can be achieved. The patient's understanding and awareness of always living a healthy life, taking regular medication and maintaining control according to the specified schedule will help the
patient recover. If the patient already understands/knows, the patient can be aware and willing to adopt attitudes and behavior that are compliant with treatment, age and employment are not obstacles to remaining compliant with treatment.

**By complying with treatment, patients can achieve healing.**

For research sites, it is hoped that the results of this research can be used as information material in monitoring and teaching patients to recognize common complaints and symptoms of TB disease and encourage them to immediately report their condition to health workers. Health workers are expected to always carry out examinations and actively ask about patient complaints when they come to health facilities for treatment. A health worker must provide motivation for pulmonary tuberculosis sufferers to regularly seek treatment.

It is hoped that this research can be a reference for families to provide assistance in daily routines, financial assistance, emotional and moral support as well as motivation to encourage patients to comply with regular treatment. The family accompanies the patient to the hospital and reminds the patient's treatment schedule. This research is also a source of how big the role of the family is in the recovery of pulmonary TB patients, so that families of pulmonary TB patients can support their families who suffer from pulmonary TB, one of which is by becoming a PMO (Drug Swallowing Supervisor) so that patients adhere to treatment and achieve recovery.

For advanced researchers, it is hoped that this research can be used as input for other researchers so that they can perfect research on factors that influence patient treatment compliance outside of the factors that have been studied.

**REFERENCES**

Contains

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