Education level and Economic Status in Increasing Adherence to Medication of Pulmonary Tuberculosis Patients

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ABSTRACT
Compliance with taking medication is one of the important things to increase the TB cure rate because non-adherence can lead to resistance and disease transmission. Factors that affect compliance include education level, socioeconomic, knowledge, motivation and family support. This study aims to determine the relationship between education level and economic status with TB patient compliance in the city of Semarang. This study used an analytic observational method with a cross sectional approach. The research was conducted in the districts of Genuk, Mijen, West Semarang, and Tugu Kota Semarang. The research data were obtained from the results of filling out the MMAS-8 questionnaire and direct interviews. Data were analyzed by using Rank Spearman correlation test. Univariate analysis showed that the majority of respondents had high medication adherence (56.7%). Bivariate study showed that there was a significant relationship between education level and medication adherence in pulmonary tuberculosis patients (p = 0.000), and there was a significant relationship between economic status and medication adherence in pulmonary tuberculosis patients (p = 0.000). The conclusion of this study is that higher level of education and economic status will lead to obedient behavior in taking medicine because it is related to the knowledge they have and the fulfillment of life's needs

Keywords: education, economy, medication adherence, tuberculosis

INTRODUCTION

Tuberculosis (TB) is an infectious disease caused by the Mycobacterium tuberculosis.[1] Indonesia is one of the developing countries with the highest number of TB sufferers in the world.[2] In 2019 there were 543,874 cases in Indonesia and Central Java is one of three provinces with the highest number of cases the most with 54,640 cases.[3] In 2018 the city of Semarang became one of the areas that contributed the most TB cases, with 3,415 cases.4 These data show that TB is still a health problem in Indonesia.

Treatment is one of the efforts to control TB. The success rate of treatment is an indicator used to evaluate treatment. In 2018 the success rate in Central Java was 77.1% while in Semarang it was 83.5%. This figure still has not reached the target of the Central Java Provincial Health Office of 90%.[4] One of the government's efforts in tackling TB in Indonesia is to include indicators of pulmonary TB patients receiving treatment according to standards in the Healthy Indonesia Program with Family Approach (PIS-PK.)[5,6] Healthy family indicator (IKS) data for 2019 shows that The coverage for this indicator is relatively low when compared to other indicators, both nationally (36.56%), Central Java Province (39.40%), and Semarang City (37.73%).[7,8] Several sub-districts in Semarang City which have low coverage are Kecamatan Genuk (28.88%), Mijen (24.29%), West Semarang (30.86%), and Tugu (36.14%).[9]

The cure rate for tuberculosis patients requires medication adherence. Non-compliance will lead to failure and relapse, resulting in resistance and disease transmission.[10,11,12] Compliance to taking medication is a part of health behavior. According to Lawrence Green's theory, education and economics are included in predisposing factors which are the basis and background for a person to behave.[13,14] The relationship between education level and economic status with medication adherence of pulmonary TB patients recorded on PIS-PK in Semarang City Region.

METHOD

This study uses an observational analytic method with a cross sectional approach. The study was conducted in the districts of Genuk, Mijen, West Semarang, and Tugu Semarang City. A total of 30 subjects who met the inclusion and exclusion criteria were included in this study.

The inclusion criteria in this study were pulmonary TB patients aged 18 years, registered at PIS-PK in the Districts of Genuk, Mijen, West Semarang, and Tugu Districts, undergoing treatment for at least 2 months, and willing to be respondents. Meanwhile, the exclusion criteria in this study were pulmonary TB patients who did not live permanently, were resistant to treatment, and had HIV co-morbidities.

The research data used primary data obtained from filling out the MMAS-8 questionnaire and direct interviews as well as secondary data obtained from the annual report of the puskesmas which contained PIS-PK data for pulmonary TB patients in the work area of the related puskesmas. The questionnaire data obtained were analyzed by Spearman Rank correlation test. This research was conducted after obtaining ethical approval with the issuance of the Ethical Eligibility Statement Number 006/EC/FK/2021.

RESULT

This study used 30 respondents aged between 18 years to 76 years, with a mean age of 47.07±13.894 respondents with female gender (56.7%) and working (86.7%). Respondents who have primary education level are 18 people (60.0%) and higher education are only 2 people (6.7%). Respondents with low economic status were 18 people (60%), while respondents with high economic status were 12 people (40%).

Table 1. Respondent Characteristics

No	Variable	N (%)
1	Gender	
	Male	13 (43.3%)
	Female	17 (56.7%)
2	Profession	
	Work	26 (86.7%)
	Not Work	4 (13.3%)
3	Education level	
	Low	18 (60%)
	Medium	10 (33.3%)
	High	2 (6.7%)
4	Economic Status	
	Low	18 (60%)
	High	12 (40%)
5	Compliance with taking medication	
	Low	1 (3.3%)
	Medium	12 (40%)
	High	17 (56.7%)

The results of the analysis of the relationship between education level and medication adherence, obtained a correlation coefficient of 0.693, which means a strong relationship and the distribution of data forms a positive pattern or direction (unidirectional), meaning that the higher the level of education, the higher the adherence to taking medication. The results of the Spearman Rank correlation test obtained p value = 0.000 (<0.05) meaning that there is a significant relationship between education level and medication adherence. These results were also found on economic status in influencing drug adherence. the results of the analysis of the relationship between economic status and medication adherence, obtained a correlation coefficient of 0.706 which means a strong relationship and the distribution of data forms a positive pattern or direction (unidirectional) meaning that the higher the economic status, the higher the adherence to taking medication. The results of the Spearman Rank correlation test obtained p value = 0.000 (<0.05) meaning that there is a significant

relationship between economic status and medication adherence.

Table 2. statistic analysis of education level and economic status

No	Variable	Correlation	p-value
1	Education level	0.693	0.000
2	Economic status	0.706	

DISCUSSION

In this study, average pulmonary TB patient recorded at PIS-PK in the Semarang City area was 47.07±13.894 who were in the productive age range and the majority worked. From the results of the 2015 study, it was found that the majority of pulmonary TB attacks the productive age group, this can happen because at that age a person will tend to have high activity and a dense work environment so that it will increase the risk of exposure to TB germs.

The research was conducted on 30 respondents, the majority were female. Research in 2013 showed that in the process of finding tuberculosis patients, women were higher than men.15 Based on the results of the study, it was found that the majority of respondents had basic education levels and low economic status. Education and the economy are related to knowledge, access to health services, and the fulfillment of good nutrition so that it will affect the incidence of pulmonary TB. [15,16]

The results of the study showed that the majority of TB patients had a high level of medication adherence. Based on filling out the MMAS-8 questionnaire and direct interviews with respondents, it is known that the high adherence to taking medication is because local health workers provide good education to pulmonary TB patients, besides that health workers can also motivate them. So that respondents have good knowledge about the disease as well as the correct way of treatment and have high motivation to recover, this leads to obedient behavior in taking medication. This also explains why the majority of respondents have a low level of education and economic status but the majority have high adherence to taking medication.

The results of data analysis showed that there was a strong positive relationship between the level of education and adherence to medication for pulmonary TB patients recorded on the PIS-PK in the Semarang City area. The results of this study are in line with research conducted in 2018, that the higher a person's level of education, the more they will understand the benefits of adherence in treatment.[17] Education is related to knowledge and is included in predisposing factors. According to L. Green's theory, predisposing factors will be behind the adherence to taking medication which is included in health behavior.[12,18]

However, not everyone with basic/low education will have low knowledge. Information obtained from counseling and the media can affect a person's knowledge without an educational background.[19] Provision of this information can involve health workers in the form of health promotion so that it will lead to medication adherence.[20]

The results of data analysis showed that there was a strong positive relationship between economic status and adherence to medication for pulmonary TB patients recorded on PIS-PK in the Semarang City area. The results of this study are in line with research that was carried out in 2015, that one of the factors triggering non-adherence to treatment is economic factors.21 Individuals with low economic status will concentrate more on fulfilling basic needs that support themselves and their families.[22] According

to L. Green's theory economic status includes predisposing factors that will provide rational thinking or motivation for a behavior.[12,23]

The economic status of a family is related to the fulfillment of primary, secondary, and tertiary needs. Someone with a low economic status will have an impact on their non-compliance in treatment. This happens because in addition to meeting their daily basic needs, they also have to pay for transportation to get treatment at the Puskesmas.[24,25]

CONCLUSION

Based on the results of the analysis and discussion, it can be concluded that a high level of education and economic status will lead to obedient behavior in taking medication in pulmonary TB patients recorded on PIS-PK in the Semarang City area. High education will have an effect on high knowledge, while high economic status will affect the fulfillment of life needs.

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