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THE EFFECT OF HEALTH EDUCATION ON PREVENTION OF TUBERCULOSITION MEDICINE RESISTANCE IN LUNG TB PATIENTS

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Abstract

Tuberculosis is a direct infectious disease caused by an acid-resistant aerobic bacterium. Indonesia is now ranked fifth in the world with the highest burden of pulmonary TB in the world. The estimated TB prevalence for all cases is 660,000 (WHO, 2010) and the estimated incidence is 430,000 new cases each year. While the MDR-TB rate is estimated at 2% of all TB cases, TB cases with re-treatment are estimated to be around 6,300 MDR-TB cases each year. One of promoting healthy behavior, the role of nurses through nursing interventions provides health education towards MDR-TB prevention behavior for the success of treatment in TB patients. The researcher formulated the research problem "is there an effect of health education on tuberculosis drug resistance prevention (MDR-TB) behavior with the DOTS strategy in pulmonary TB patients? The design of this study used Quasi-Experimental Design with the Pretest-Posttest Control Group Design approach. The sampling technique was by consecutive sampling. Bivariate statistical test uses independent t-test and dependent t-test. The number of samples of 63 respondents who will be divided into 3 intervention groups, namely groups with 1 intervention, groups with 2 interventions and groups with 3 interventions. The study was conducted at the Kramatjati Health Center in East Jakarta. The results of the study showed that the provision of health pen 3 times gave an increase in the value of knowledge and prevention with p-value of 0.005.

Keywords: *Tuberculosis; MDR-TB; Health education*

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1. Introduction

Tuberculosis is a direct infectious disease caused by TB bacteria (Mycobacterium tuberculosis), an acid-resistant aerobic bacterium (acid fast bacillus [AFB]). TB is an infection through the air and is generally obtained by inhalation of small particles (1-5 mm in diameter) that reach the alveoli, infected droplet nuclei can then be inhaled by susceptible people (M. Black, 2014).

According to the World Health Organization (Global TB Report, 2012) Tuberculosis is still a public health problem in the world and in Indonesia. The Southeast Asian region with five of the 22 countries with the highest TB burden in the world comes from Southeast Asia. The TB control program in the Southeast Asia region has made significant progress in case finding and treatment success rates that have reached a target of more than 85%, however there are challenges such as services that have not yet implemented a quality DOTS strategy. OAT resistance levels in Southeast Asia are still <3% but the number of TB sufferers in Asia is very high therefore preventing the increase in cases of drug resistant TB is an important priority (Strategi Nasional Pengendalian TB DI Indonesia, 2014).

Indonesia is now ranked fifth in the world with the highest burden of pulmonary TB in the world. The estimated TB prevalence for all cases is 660,000 (WHO, 2010) and the estimated incidence is 430,000 new cases each year. The number of deaths due to TB is estimated at 61,000 deaths annually. While the MDR-TB rate is estimated at 2% of all new TB cases (lower than the regional estimate of 4%), in 20% of TB cases with re-treatment it is estimated that there are around 6,300 MDR-TB cases each year (Strategi Nasional Pengendalian TB DI Indonesia, 2014).

It is estimated that the number of TB patients in Indonesia 5.7% of the number of TB patients in the world. This condition is exacerbated

by the increasing incidence and increasing number of cases of dual germ TB against OAT or MDR-TB. The estimated incidence of dual OAT resistant TB (MDR-TB) among new TB cases is 1.9%, while among re-treatment cases is 12%. This situation will trigger a difficult TB epidemic and continue to be a major public health problem. Regionally, the prevalence of positive TB in Indonesia is grouped into 3 regions, namely the Sumatra region as much as 160 out of 100,000 population, Java and Bali as much as 110 out of 100,000 population, eastern Indonesia as much as 210 out of 100,000 population. Especially for DIY and Bali the TB prevalence rate is 68 out of 100,000 population. Referring to the prevalence results, it is estimated that there will be a decrease in the incidence of smear positive TB nationally 3-4% annually (Strategi Nasional Pengendalian TB DI Indonesia, 2014).

The TB control program aims to reduce morbidity and mortality due to TB by breaking the chain of transmission, as well as preventing the occurrence of Multi Drug Resistant TB (MDR). MDG's target in 2015 is to reduce the prevalence rate and death due to TB by half in 2015 compared to 1990 and Indonesia is free of TB (elimination) to achieve MDG's in 2050. Indonesia has shown progress with achieving the main indicators in the MDG's of 70% reduction in TB cases of the estimated new BTA positive cases (Panduan Nasional Pelayanan Keperawatan Tuberkulosis, 2014).

Patient non-compliance in undergoing treatment is the biggest cause of drug resistance. The reason patients do not come for treatment (drop out) in the intensive phase is because of low motivation and lack of information about the disease (WHO, 2008). Drug resistance occurs because of the low knowledge, attitudes and behavior of patients with pulmonary TB, low levels of education, social, occupational levels and economic status have a relationship between morbidity and mortality due to tuberculosis.

According to Notoatmodjo (2010) it can be concluded that health education is essentially an effort to convey health messages to the community, families and individuals in order to obtain better health knowledge. Health education is basically a communication service and a behavior change process. In order for health education to achieve optimal results, the methods and media need to receive the most attention and must be adjusted to the goals, needs and goals.

The concept of health education proposed by Pender, known as the Health Promotion Model (HPM), promotes health promotion in terms of preventing disease (Tomey & Alligood, 2010). Health services are increasingly focused on promoting health, well-being and preventing disease (Perry & Potter, 2009). health education is a process that is planned to change unhealthy behavior into healthy behavior (Notoatmodjo, 2010).

Kramatjati Public Health Center is one of the first-level health facilities in the East Jakarta Sub-dept. Of Health. Data from East Jakarta Health Sub-Department for pulmonary TB patients is still recorded at 2,217. This case was detected in a case detection rate (CDR) sub-district for Kramatjati sub-district 54.54 percent and ranked third for the East Jakarta region. Kramatjati District Health Center implements TB control program services with DOTS strategies for ordinary TB patients and DOTS Plus to treat TB patients with anti-tuberculosis drug resistance. (Puskesmas Kramatjati,Suku Dinas Kesehatan Jakarta Timur, 2016)

Milawati Rina (2014) states that the effect of providing education to patients on the prevention of TB transmission in the Cengkareng sub-district health center in West Jakarta, that there has been proven influence on providing education to patients on TB prevention measures with p = 0.005 (p <0.05).

2. The Objective of the Study

General purpose

Able to identify the effect of health education on tuberculosis drug resistance prevention behavior with the DOTS strategy in pulmonary TB patients.

Special purpose

a. Able to identify respondent characteristics (based on age, sex and culture) in patients undergoing pulmonary TB treatment in the intervention and control groups.
b. Able to identify the provision of health education to increase respondents' knowledge about prevention of tuberculosis drug resistance (MDR-TB) with the DOTS strategy in pulmonary TB patients in the pre and post health education intervention group between health education intervention groups given in group A, group B, group C .
c. Able to identify the provision of health education to improve the attitudes of respondents towards the prevention of tuberculosis drug resistance (MDR-TB) with the DOTS strategy in pulmonary TB patients in the pre and post health education intervention group between health education intervention groups given in group A, group B, group C .
d. Being able to identify the provision of health education to improve respondent skills in preventing tuberculosis drug resistance (MDR-TB) with the DOTS strategy in pulmonary TB patients in the pre and post health education intervention group between health education intervention groups given in group A, group B, group C .

e. Being able to identify the effect of characteristics on the prevention of tuberculosis drug resistance behavior after being given health education in the intervention group and the control group

Research Benefits

The benefits obtained from this study are as follows:

a. Theoretical
   The results of the study are expected to increase MDR-TB prevention behavior and become a reference for improving health promotion service programs in TB control, especially the development of health education materials that can be easily understood by the public. If the client is exposed to this information, treatment compliance can be increased so that MDRTB can be minimized.
b. Nursing Practice Application
   As a reference that health education can be applied in the nursing process both in health services and in education.
c. Methodological
   Found an effective way to provide health education to pulmonary TB patients for the prevention of MDR TB by increasing healthy behavior.
d. For Health Policy
   The results of the study are expected to provide impetus to the government to implement comprehensive health education programs for pulmonary TB patients

3. Research Methods

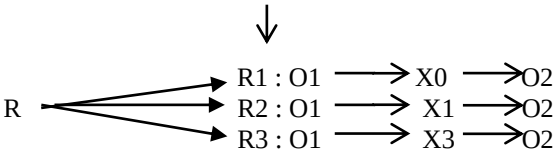
Research Design

This research uses Quasi-Experimental Design with Pretest-Posttest Control Group Design approach. In the design of this study the researchers conducted an MDR-TB prevention behavior assessment in the intervention and control groups before being given health education. In the intervention group treatment was given by providing health education MDR-TB prevention behavior then measured behavior (post test) while the control group was not treated but measured behavior (post test) comparison group was not given health education with the intervention group. No randomization was done to include subjects in the treatment or control group (Dharma, 2011).

The variables in question are as follows:

a. Dependent variable (dependent variable)
   The dependent variable in this study was the prevention behavior of tuberculosis drug resistance (MDR-TB) in pulmonary TB patients.
b. Independent Variable (independent variable)
   The independent variable in this study is health education
c. Confounding Variable (confonding variable)
   Confounding variables are age, gender, culture.

Research Design Scheme
Random Assessment is not carried out



Information :
R: Research Respondent
R1: Control Group
R2: Intervention Group
O1: Before the treatment in the control group and intervention
O2: After the treatment in the control group and intervention
X0: Control group without treatment
X1: Intervention group with treatment

Population and sample

Population

The population in this study were all patients with pulmonary TB and taking pulmonary medicine (OAT) in Kramatjati District and received standard medical therapy.

Sample

The sampling technique is done by consecutive sampling, researchers using the basis of a large sample formulation according to Sastroasmoro Soedigdo (2012) for continuous variables with the hypothesis test of the independent pair average difference, namely:

$$n = \frac{2\,ó2\,(Z1 - \alpha/2 + Z1 - \beta)\,2}{(\mu1 - \mu2)2}$$

Information :
n = minimum sample size
ó = standard deviation of the difference in 2 paired averages from previous studies
or initial research.
Z1 - α / 2 = standard normal distribution values (table Z) for a particular α
Z1 - β = standard normal distribution value (table Z) for a particular β
μ1 = mean pain value in the control group
μ2 = average pain value at intervention

Given the standard deviation of 1.105, the mean difference between the two groups was 1.0. To test the hypothesis, the researcher uses a significance level of 5% and a strength test of 80%, so the minimum sample size in this study:

$$n = \frac{2 \times (1.105)^2 \times (1.96 + 0.84)^2}{(57.70 - 56.71)}$$

To avoid respondents who resigned during the study, the researcher added 10% of the estimated sample size. So that the number of samples used is 21 respondents included in each intervention and control group, if elaborated then:

a. 21 respondents for the group with health education intervention 1 time
b. 21 respondents for the group with health education intervention 2 times
c. 21 respondents for the group with health education intervention 3 times

Thus, the total sample of 63 respondents.

Inclusion criteria in this study are:

a. Patients with pulmonary TB
b. Patients can read and write
c. Composite consciousness
d. Get standard OAT therapy.
e. Willing to become a respondent by signing an informed consent

While the exclusion criteria in this study are:

1) Patients with pulmonary TB with MDR-TB.
2) Lung TB patients with HIV (retro viral withdrawal)
3) Has a history of drug users.

Research Sites

This research was planned at Kramatjati Health Center in East Jakarta where it was conducted in 3 urban health centers, namely Kramat Jati Urban Health Center, Cililitan Urban Health Center, Kampung Dukuh Health Center

4. Results And Discussion

Health Education Influence On Respondent Knowledge

Table 1. Differences in knowledge before and after getting health education in the 3 x health education intervention group

Knowledge	Mean	SD	SE	P Value	N
Before	.57	.507	.111	.000	21
After	1.33	.577	.126		

From the tabe above it can be seen that there is a significant influence between health education carried out with the knowledge of respondents with a p value of 0,000. From the analysis of the results of the study it appears that the group that received an educational intervention. From these results it can be seen that there was a change in knowledge among respondents in all intervention groups. According to Notoatmodjo in 2010 health education is a process to improve the ability of society to achieve perfect health degrees. This community's ability is built through increased knowledge in advance. In learning methods knowledge change is the first and easiest change to do. When viewed in the cognitive domain, knowledge level is level 1 (C1).

Influence Of Health Education To Respondent Attitudes

Table 2. Differences in the attitudes of respondents before and after the penkes in the 1 x intervention group

Attitude	Mean	SD	SE	P Value	N
Before	.76	.436	.095	.162	21
After	.86	.359	.078		

From table 2 it can be seen that there is a difference in the mean of attitude in the group that received health education intervention 1 time, but if seen from the p value it can be stated that there is no significant effect between 1 time health education with the attitude value of the respondent. From the results of the study it can be seen that the group that received health education interventions as much as 1 times the health examination did not find any change in attitude with a p value of 0.162, while the group that received health education interventions as much as 2 times and 3 times there seemed to be a change in attitude with the same value that is p value of 0.002. From the foregoing it can be seen that to change the attitude of the respondent it is not enough to have a one-time health education but it takes several health education. According to Bloom in Notoatmodjo in 2010 it was explained that the level of attitude is attained at a higher level than the change in knowledge. So if knowledge can be changed in one meeting but not with attitude, to change attitude requires several meetings.

The Effect Of Health Education On The Skill Prevention Prevention

From table 3 it can be seen that in the group that received health education interventions about pulmonary TB 3 times it was seen that there was an increase in the mean value and if seen from the p value of 0.005 which was less than 0.05, it could be concluded that there was a significant effect between implementation 3 times health education with behavior (patient achievement). From the results of the study it was seen that for groups that received health education interventions there was no significant relationship between the treatment of health education with the change in respondent skills with a p value of 0.08. Whereas for groups that received health education 2 times and 3 times there were significant changes in skills each with a p value of 0.001 and 0.005.

Table 3. Differences in behavior (skills) of the respondents before and after the health departmentin groups 3 x health education interventions

Skills	Mean	SD	SE	P Value	N
Before	.57	.507	.111	.005	21
After	.90	.301	.066		

According to Notoatmodjo in 2010 said that health education is essentially an effort to convey health messages to the community so that people get behavioral changes towards a healthier. According to Bloom in 1908 in Notoatmodjo there were three domains in education according to their level, namely knowledge, attitudes and practices. To form a new domain of behavior always through the domain of knowledge, and attitude first. From the above explanation it can be explained that in order to form the behavior of the respondent in preventing the failure of the treatment of pulmonary TB (MDR-TB) it is necessary to have frequent and continuous exposure.

5. Conclusion

Based on the results of research and discussion that has been done, it can be concluded that:

1. The average respondent is male with majority age above 34 years and culture (ethnic origin) of Java island
2. Health education is very influential on increasing the knowledge of respondents in terms of prevention and treatment of pulmonary TB disease in order not to occur MDR-TB with a significance value for the whole group 0,000
3. Health education (penkes) if done only once in patients with pulmonary TB has no effect in changing the attitude of respondents this is evidenced by the p value of 0.162. But health education carried out more than once 2 or 3 times is very significant in changing the attitudes of respondents.
4. Health education carried out only 1 time does not affect the change (improvement) of respondents' skills in preventing MDR-TB, but if health education is carried out more than once it has a significant effect in changing the respondent's skills
5. Characteristics of respondents have no effect on increasing MDR-TB prevention efforts on respondents

6. Acknowledgement

1. Optimizing the provision of health education to patients with pulmonary TB regarding the treatment that must be undertaken to prevent the occurrence of MDR-TB.
2. Arrange a schedule of compulsory health education for TB sufferers that can be coupled with the patient's time in taking OAT at the puskesmas.
3. Increasing the role of cadres in providing health education services to patients with pulmonary TB and their families.
4. Give rewards to nurses who are active in providing health education services to the community.

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