

Increase Medicine Adherence TB Patient with Ners-Short Message Service Intervention (N-SMSI)

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Abstract: The high rates of pulmonary TB incidence worldwide are common due to poor patient adherence. Drug adherence is one of the important indicators in the successful treatment of a disease. The purpose of this study was to determine the effect of Ners-Short Message Service Intervention (N-SMSI) on the adherence of taking medication to patients with pulmonary tuberculosis. This research design is Quasi experiment pre-post test design with control group. Samples are taken by Consecutive Sampling. The results of this study found that there was a difference between control and intervention groups before and after Ners-Short Message Service Intervention (N-SMSI), ie in the control group as much as 47.2% obedient and the intervention group as much as 80.6% obedient. N-SMSI (Ners-Short Message Service Intervention) can improve medication adherence of pulmonary tuberculosis patients. The action is so important that it is not just adherence to taking medication, but to the behavior of patients or TB patients' habits. So increase the cure rate and reduce the rate of transmission and ultimately improve the quality of life.

1 INTRODUCTION

Pulmonary tuberculosis is caused by Mycobacterium tuberculosis. It has infected as many as one-third of the world's population. Tuberculosis cases are increasing and many are not successfully be cured, especially in countries grouped in 22 countries with major tuberculosis problems (Badan Litbangkes Kemenkes RI, 2011)

Pulmonary TB patients are estimated to be only 10 to 20 cases among the 100,000 population, whereas the mortality rate ranges from 1 to 5 deaths per 100,000 population in development countries. Africa is estimated to reach 165 new cases among 100,000 populations, and in Asia 110 among 100,000 populations. Asian populations are more than Africa, the number of pulmonary patient in Asian 3,7 times more than Africa

Data on World Lung TB patients by 2015 according to the World Health Organization (WHO) reached 10.4 million people, up from just 9.6 million. Indonesia is ranked second largest among patients with pulmonary TB after India with a total of 2.8 million cases, followed by Indonesia with 1.02 million cases and China with 918 thousand cases (WHO, 2015)

The discovery of new cases of Pulmonary Tuberculosis in Indonesia based on data from the Ministry of Health 2011-2015, the number of new cases of BTA positive Tuberculosis found in 2011 were 197,797 new cases, 202,301 in 2012, 2013 of 196,310 new cases, 2014 of 176,667 new cases and 2015 as many as 330,910 new cases (Ministry of Health, 2015).

TB drop out rates are many factors that affect the recovery of TB patients. Many factors that succeed in TB programs such as pmo and cadres. The training model for the development of participatory training can improve the cadre's competence on TB (Ariga & Zahara) .

The high rates of pulmonary TB incidence worldwide are common due to poor patient adherence (45%) (Viney, et al, 2011). Drug adherence is one of the important indicators in the successful treatment of a disease. The average patient's adherence to long-term treatment of chronic diseases varies greatly. In developed countries the percentage of patient adherence to taking medication is 50% while for developing countries the percentage is only about 24% (WHO, 2015). Low patient compliance in taking medication is a serious health problem and this often occurs when patients

are confronted with long-term treatment of chronic illness such as pulmonary TB disease (WHO, 2015).

Low medication adherence in patients with pulmonary TB will slow the healing process of the disease, increase the risk of morbidity, mortality, and drug resistance to either one type of OAT (mono-resistant), or more than one type of OAT (poly resistant, multidrug resistant, extensively drug resistant, or totally drug resistant) (Departement of Health Indonesiam 2005). Low patient compliance with OAT also causes patients to be a source of transmission of resistant bacteria in the community, which in turn will complicate the eradication of pulmonary TB disease in Indonesia and exacerbate the burden of the government (WHO, 2015).

Drug adherence is influenced by several factors such as knowledge and attitude (Departement of Health Indonesiam 2005). According to research Tachfouti et al (2011) there is a real relationship between knowledge and attitude with adherence to taking anti-tuberculosis drugs in Morocco, Africa (BPOM RI, 2006). According to research Avianty (2005) knowledge and attitudes become factors that affect the level of adherence of a person in taking medicine (Widjanarko, Gompelman, Dijkers & Werf). According to research Luluk at Health Center Gatak Surakarta (2012) it is said that there is a significant relationship between the knowledge of adherence to taking medication of patients with pulmonary tuberculosis (CAN, 2013).

Based on the above it can be assumed that there are several factors that influence the level of patient compliance in the treatment of pulmonary tuberculosis such as knowledge and attitude of the patient. Active care management of lung TB patients at home can be done through telenursing. Telenursing is defined as a process of providing management and coordination of care and delivery of health services through information technology and telecommunications (Sholikhah, 2012) According to Wulandari (2012), that the use of telenursing can improve patient behavior in prevention of transmission of pulmonary tuberculosis. However, this method of telenursing is quite expensive. Therefore, researchers are trying to develop new, cheaper models through N-SMSI (Ners-Short Message Services) (Wulandari, 2012).

N-SMSI is one form of community nursing intervention, where community nurses send SMS to Pulmonary TB patients. SMS contains reminder messages of medication and nutrition, sent daily, with frequency adjusted to the timing schedule for taking TB lung medication. Website-built SMS, hosted on an email provider, so this method does not cost a lot. To overcome this problem, researchers apply communication technology through telenursing known as N-SMSI (Ners-Short Message

Service Intervention) by sending short messages to patients in accordance with the time of taking the drug. This study aims to increase the rate of healing of pulmonary TB patients and reduce mortality by increasing knowledge, making decisions and improving patient compliance to take medication independently. This study has the outcomes of producing appropriate methods in improving the adherence of taking pulmonary TB patients with N-SMSI (Ners-Short Message Service Intervention).

2 METHOD

Ners-Short Message Service Intervention (N-SMSI) study on improving medication adherence of pulmonary TB patients in Medan using Quasi Experiment method with pretest-posttest design with control group, population of 72 people. 36 controls and 36 intervention groups. Sampling technique used in this research is non probability sampling technique with total sampling approach that is sampling technique by taking the whole sample amount of research. The inclusion criteria in this study were the new intensive phase intensive TB patients expressed by the Johor Field Health Center and the Medan Amplas Community Health Center, the patients with tuberculosis aged 21-60 years, the patients had mobile phones, were willing to be respondents. Exclusion criteria include Pulmonary TB patients with accompanying diseases, such as HIV, cancer, and DM, Pulmonary TB patients who refuse to be respondents.

This research was conducted for 2 months. Starting from April to June 2018. The reason for the study was to select the working area of Medan Johor Health Center and Puskesmas Medan Amplas as a research site because this location is a densely populated location with TB patients and Puskesmas have TB program. Instrument used in this research is questionnaire of medication patient compliance level of Lung TB patient with CVI value. Instruments have been derived with crobaalfa value. The process of collecting data is done by 1) the researcher fill out the format of assessment of respondent characteristics that include age, sex, occupation, and education level, and patient's cellular contact number; 2) The researcher evaluates the patient's compliance rate before taking N-SMSI (pre-test) on the first day; 3) Researchers conducted N-SMSI implementation in coordination with patient and family for 2 months by sending a short message containing reminder of taking medicine 15 minutes before taking medicine. SMS is given in the morning at 07.00 WIB but pasa when the fasting month is done 03.00 WIB. Researchers previously gave the

news at the time to make changes sms at the time of fasting. SMS contains information on reminders for taking medication as well as information on tuberculosis, such as prevention of TB transmission, drug side effects, cough etiquette and sneezing, the importance of medication adherence 4) researchers reevaluate the level of adherence of taking medication to patients with lung TB (post test) using questionnaires level of medication adherence of lung tuberculosis patients. Analysis of this research data is processed by using SPSS program.

3 RESULT

The result showed that demographic data, the majority of age <40 years old were 43,1% (31), 66,7% (48) male majority, 54,2% (39) private employees, the majority of private sector employees occupy 54.2% (39), the majority of private employment is 54.2% (39), the majority of private employment is 54.2% (39), the majority live with households with the wife as much as 48.6% (35), the majority of home high humidity home conditions are 38.9% (28), the majority of high school education as much as 62.5% (45), the majority of respondents had contact with patients in contact with previous patients as much as 54.2% (39). Description can be seen in the table below.

Tabel 1. Characteristic Of Patient Demographic

Karakteristik Demografi	F	%
Age		
<40 year	31	43.1
40-60 year	33	45.8
>60 year	8	11.1
Sex		
Female	24	33.3
Male	48	66.7
Profession		
Labor	7	9.7
Farmer	1	1.4
Civil Servant	6	8.3
employe	39	54.2
Dealer	19	26.4
Families live at home		
Main Family (father, mother, chidren)	13	18.1
Extended Family (father, mother, children, the other family)	10	13.9
House condition		
In front of hightway	17	23.6
No window	27	37.5
Stuffy house	28	38.9

Education		
Elementary school	2	
Junior High School	8	
Senior High School	45	
Diploma	10	
Bachelor	7	
History of contact with tuberculosis patients		
Yes	33	
No	39	
Culture		
Batak	38	
Jawa	26	
Minang	8	
Get TB Information		
Ya	66	
Tidak	6	
Total	72	
TB Resource		
Television	41	
News paper/ magazine	4	
Flip Chart	22	
Total	57	

The result of the study showed the characteristics of medication adherence of TB patients before and after intervention, ie before the action in the control group of the majority of the disobedient patients 58.3% and the intervention group the majority of the patients did not obey 55.6%. After an action on the control group the majority of patients did not adhere 52.8% and the intervention group the majority of patients obedient 80.6%. Description can be seen on the graph below.

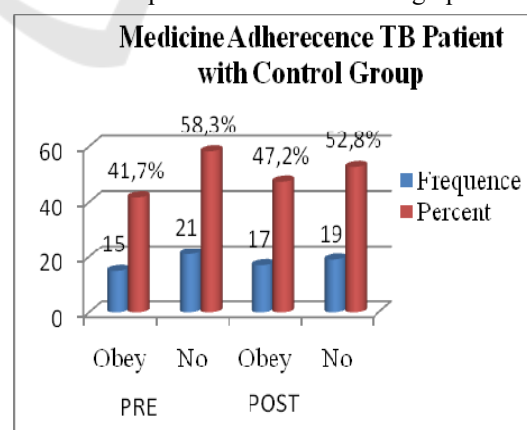


Figure 1. Patient medication adherence of Pre-Post TB patients to Control Group

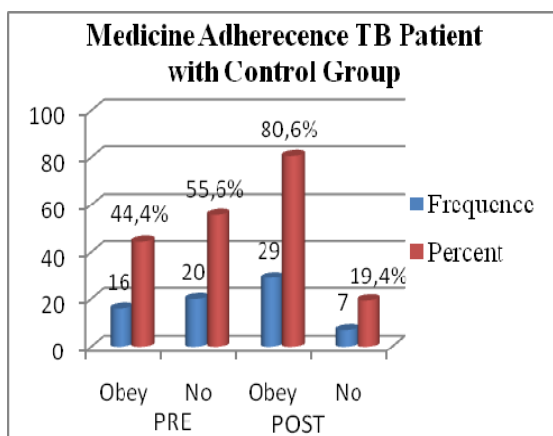


Figure 2. Patient medication adherence of Pre-Post TB patients to Intervention Group

The results showed that test results using Man Whitney that there is influence of N-SMSI on patient compliance in taking medicine $p = 0,000$

Tabel 2. Different of Patient Obediance Among Control and Intervention Group

Group	Mean	Median	Min	Max	P
Control	20,31	0	0	2	0,00 0
Invention	52,69	2	1	6	0,00 0

4 DISCUSSION

4.1 Characteristic of Patient

Based on Table 1. The results showed the demographic data, the majority of age group <40 Years as much as 43.1% who suffer from TB compared with other age groups. This is supported by Mahpudin and Mahkota (2007) that the age group 49 years and under has a higher proportion of 63.2% compared with age group 50 years and over (Mahpudin & Mahkota, 2007). The age group is a productive age group. The majority of sexes of patients with TB are men as much as 66.7%. The research conducted by Zerbini, Greco, Cisneros, Colombo, Beltrame, Boncompain and Genero (2017) that the majority of sex of adult TB patients in Argentina are men by 65% and men 1.7 times more at risk suffer from pulmonary tuberculosis compared to women. Women are usually more docile than men. This is because majority women are more concerned with their health than men (Zerbini, Grec, Estrada, Cisneros, Colombo Beltrame, Boncompain & Genero, 2017)

The majority of patients' occupations are private employment of 54.2%. This is because the location of the patient's residence is an industrial area such as a factory. Occupational and occupational factors can also lead to the incidence of TB known as Work-Dose Disease. The workplace is an environment with a concentrated population at the same place and time, so it is one of the potential environments in TB transmission (Ministry of Health, 2015).

The majority live with households with wives as much as 48.6%. this is in line with research conducted by Rukmini and Chatarina (2011) that as much as 54.4% is the head of the household. The head of the household can not provide for the child and his wife, infectious diseases to other family members, the patient can feel HDR (Low Self-Esteem) because they can not produce and provide for their children. Gender is one of the risk factors of TB. The majority of house high humidity house condition is 38.9%. The condition of the room is related to the incidence of pulmonary tuberculosis where people with unqualified room conditions have a chance of 1.18 times for contracting pulmonary TB compared to a house with a qualified room condition. Condition of the room is eligible if ventilation is available > 10% floor area, windows are opened every day, lighting is good enough in the bedroom, kitchen or living room. Houses with good lighting and ventilation will complicate the growth of germs, because ultraviolet light can kill germs and good ventilation causes air exchange thus reducing the concentration of germs (Rukmini, 2011)

In fact, people spend more time indoors than outdoors. The concentration of pollutants in buildings / rooms can be higher than outdoors, especially in big cities. This is further exacerbated by the lack of ventilation in the house building. The largest sources of air pollution in the room are cigarette smoke, combustion products (fuel energy), radon gas (derived from floor cement dust, walls, etc.), chemical products (hair spray, room cleaners, paint, and others) and biological pollutants (fungi, bacteria, animal dander, etc.) (Ministry of Health, 2014). The majority of respondents had contact with patient contact with previous patient as much as 54.2% (39). The results of Agustina and Wahyuni's (2017) study that the patient's actions in preventing the TB exclusion of the members at home-level family members were 56% (Nurjanah, 2015).

4.2 Obedience before NSMS

Based on the results of the study of TB drug treatment adherence prior to Ners-Short Message Service Intervention (N-SMSI) in the control group it was found that 58.3% were not adherent and in the intervention group it was found that did not comply

as much as 55.6%. The patient's compliance can be affected by several factors, one of which is patient education. This is because the majority of TB patients education is high school as much as 62.5%. Nurjana (2015) study on the risk factors of pulmonary tuberculosis in productive age in Indonesia that the most influential factor is education. This is because education will affect one's perception and knowledge about pulmonary TB. With good knowledge, there will be prevention and treatment efforts if the pulmonary TB. Information received, role needs to be improved. Role as a family nurse. Nurse improvement needs to be done through training. The role of families needs to be improved through family empowerment of drug control. With a skilled family, the patient is obedient in the tuning. The condition of education is one indicator that is often reviewed in measuring the level of human development of a country (Nurjanah, 2015). Research Pasek et al (2013), found that in TB patients with positive perceptions have the possibility of adherence in the treatment of 21.41 times greater than those having a negative perception. So it can be concluded that TB patient compliance is related to behavioral role of illness in which the role describes behavior that should be shown by the patient to get healing (Pasek, Suryani dan Murdani, 2013). Through knowledge, education contributes to health behavior. Knowledge that is influenced by the level of education is one of the predisposing factors that play a role in influencing one's decision to behave healthy (Departement of Health Indonesia, 2009)

4.3 Obedience after NSMS

Based on the results of the study of TB patients' drug adherence before Ners-Short Message Service Intervention (N-SMSI) in the intervention group found that obedient as much as 80.6% and in the control group obedient as much as 47.2%. In this study there were some non-adherent patients as much as 19.4% in the intervention group. This is because the patient does not visit the health center regularly to take medicine. Patients do not visit the clinic regularly to take drugs because patients are busy with rutinasnya, such as patients are more concerned with their work, the symptoms felt the patient has been reduced so that the patient felt he had recovered and ignored taking medicine according to the rules. This is in line with research conducted by Munro et al (2007) that patients prioritize work and take medicine is a choice between work and adherence, so patients feel compelled to choose (Munro, Lewis, Smith, Freitment dan Volmink, 2007). The government through the program is very good.

Permasalahannya sekarang lies in puskesmas staff, do or not the program launched by the government.

4.4 Effect NSMS for Obedience Patient

Man Whitney test results obtained values p value = 0.000. These results indicate that the p value <0.05 indicates that there is a difference between the control group and NSMS intervention for TB drug treatment adherence. A person's compliance is the result of the person's decision-making process, and will affect people's perceptions and beliefs about health. In addition, beliefs and cultures also determine the behavior of compliance. The value of a person has a belief that health advice is considered correct then respondents will be obedient to taking medicine. Patients who received health counseling from health workers were 4.19 times more likely to be regular or obedient than those who did not receive health education. N-SMSI is one form of community nursing intervention, in which community nurses send short messages via cell phone (SMS) to Pulmonary TB patients. SMS contains reminder messages for medicine and nutrition, sent daily, with frequency adjusted to the timing schedule for taking lung tuberculosis patients and also to provide TB pulmonary information about prevention of TB transmission, drug side effects, cough and sneeze ethics, the importance of medication adherence. The information is given twice a week every Monday and Wednesday

4 CONCLUSIONS

NSMS (Ners-Short Message Service Intervention) is a Nerser-Short Message Service Intervention (NSMS) model of care to improve medication adherence of Pulmonary TB patients. provide benefits for patients will be obedient to take medicine. The action is so important that it is not just adherence to taking medication, but to the behavior of patients or TB patients' habits. Compliance of TB patients in taking medication is very important. This is because if the patient is not obedient in taking medicine or medication, then the patient will repeat the treatment again. If this bears repeated it will cause the bacteria to become resistant to the drug. Resistant is a condition where bacteria can not die with the drug hence intensive treatment is required to be left higher health services by referring to the hospital.

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