LAPORAN PENELITIAN

Educational Intervention in Improving Tuberculosis Patient's Adherence Based on the Theory of Planned Behavior

Disusun oleh:

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LEMBAGA PENERBITAN, PENELITIAN, DAN PENGABDIAN KEPADA MASYARAKAT

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PAITON PROBOLINGGO

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HALAMAN PENGESAHAN LAPORAN PENELITIAN

Judul Penelitian	:	Educational Intervention in Improving Tuberculosis Patient's Adherence Based on the Theory of Planned Behavior
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Total Biaya Pengabdian	:	Rp 10.000.000,00
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Di Probolinggo

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SURAT PERJANJIAN / KONTRAK PENELITIAN

Nomor : NJ-T06/19/A-7/017/10.2020

Nama Pekerjaan : Penyusunan Laporan Penelitian Kolaborasi Dosen dan Mahasiswa Universitas Nurul Jadid Tahun 2021
Nama Program : Program Penelitian Universitas Nurul Jadid
Sumber Dana : Internal Universitas Nurul Jadid

Pada hari ini Senin tanggal 12 (dua belas) bulan Oktober tahun 2021 (dua ribu dua puluh) di Paiton Probolinggo, yang bertanda tangan dibawah ini:

1. **ACHMAD FAWAID, M.A., M.A**., Kepala Lembaga Penerbitan, Penelitian dan Pengabdian kepada Masyarakat (LP3M) Universitas Nurul Jadid Paiton Probolinggo, berkedudukan di Probolinggo, bertindak untuk dan atas nama Universitas Nurul Jadid Probolinggo beralamat di Pondok Pesantren Nurul Jadid Karanganyar Paiton Probolinggo, selanjutnya dalam Perjanjian Kerjasama ini disebut PIHAK KESATU.
2. **Ahmad Kholid Fauzi, M.Kep,** dosen pelaksana Penelitian Universitas Nurul Jadid Tahun 2020 selanjutnya dalam Perjanjian Kerjasama ini disebut PIHAK KEDUA.

Selanjutnya **PIHAK KESATU** dan **PIHAK KEDUA** secara bersama-sama disebut **PARA PIHAK**:

Berdasarkan Rencana Strategis Universitas Nurul Jadid Probolinggo, PARA PIHAK telah sepakat untuk mengadakan suatu Perjanjian Kerjasama/Kontrak, yang mengikat PARA PIHAK dengan cara kontrak Lumpsum untuk melaksanakan penelitian berjudul **Educational Intervention in Improving Tuberculosis Patient's Adherence Based on the Theory of Planned Behavior**, dengan ketentuan seperti dimaksud dalam pasal-pasal tersebut di bawah ini.

PASAL 1
TUGAS KERJA

(1) PIHAK KESATU dalam kedudukannya seperti tersebut di atas, memberi tugas tersebut kepada PIHAK KEDUA, dan selanjutnya PIHAK KEDUA menerima tugas tersebut untuk melaksanakan pekerjaan Penelitian sesuai dengan Pedoman Penelitian dan Pengabdian kepada Masyarakat Universitas Nurul Jadid maupun petunjuk-petunjuk lainnya;
(2) Luaran dari penelitian sebagaimana dimaksud pada ayat diatas, yaitu Laporan Penelitian;
(3) Perjanjian Kerjasama / Kontrak ini mengikat PARA PIHAK dan dilakukan dengan cara kontrak Lumpsum yaitu bahwa penyelesaian seluruh pekerjaan ini dilakukan dalam batas waktu tertentu dengan jumlah harga yang pasti dan tetap;

(4) Kegiatan penelitian dilaksanakan sesuai dengan Rencana Strategis (Renstra) Program Studi homebase PIHAK KEDUA di tempat dan lokasi yang ditentukan bersama mahasiswa;
(5) PIHAK KESATU menyediakan sarana prasarana dalam bentuk Sistem Informasi Manajemen (SIM), pelatihan dan pendampingan penulisan artikel jurnal, buku ajar, dan paper prosiding, Sentra Hak Kekayaan Intelektual, jurnal penelitian, serta Penerbit Pustaka Nurja (Anggoa IKAPI)*;*
(6) Biaya akomodasi dan transportasi dalam pelaksanaan penelitian ditanggung oleh PIHAK KEDUA;

PASAL 2
DASAR PELAKSANAAN PEKERJAAN

Pekerjaan-pekerjaan tersebut dalam Pasal 1 harus dilaksanakan oleh PIHAK KEDUA berdasarkan:
a. Renstra penelitian dan pengabdian Universitas Nurul Jadid;
b. Pedoman penelitian dan pengabdian Universitas Nurul Jadid;
c. Rencana Pembelajaran Semester matakuliah Universitas Nurul Jadid.

PASAL 3
BIAYA PELAKSANAAN PEKERJAAN

(1) PARA PIHAK telah sepakat dan setuju bahwa biaya penyusunan Laporan penelitian beserta dengan luarannya tahun 2020 adalah sebesar Rp 10.000.000,00 (sepuluh juta rupiah).
(2) Biaya pelaksanaan pekerjaan seperti tersebut pada ayat (1) belum termasuk biaya publikasi yang timbul dari PARA PIHAK.

Pasal 4
HASIL PEKERJAAN

a. Proposal penelitian
b. Laporan kemajuan penelitian
c. Laporan akhir penelitian

PASAL 5
ATURAN PEMBAYARAN

Pembayaran oleh PIHAK KESATU kepada PIHAK KEDUA dilakukan dalam dua tahap:
a. Tahap 1 sebesar Rp 5.000.000,00 jika seluruh laporan kemajuan selesai dan disetujui oleh Fakultas dan LP3M;
b. Tahap 2 sebesar Rp 5.00.000,00 jika laporan akhir penelitian selesai dan disetujui oleh Fakultas dan LP3M;

PASAL 6
JANGKA WAKTU PELAKSANAAN

(1) Pelaksanaan penelitian sudah dimulai setelah ditandatanganinya kontrak ini.
(2) Pekerjaan tersebut harus sudah selesai dilaksanakan dan dilakukan serah terima pekerjaan oleh PIHAK KEDUA kepada PIHAK KESATU sesuai dengan ketentuan sebagai berikut:
    a. Batas akhir pengumpulan proposal adalah 30 November 2020
    b. Batas akhir pengumpulan laporan kemajuan adalah 30 Maret 2021

c. Batas akhir pengumpulan laporan akhir adalah 30 April 2021

(3) Batas waktu tersebut pada ayat (2) dapat diperpanjang dengan persetujuan tertulis dari PIHAK KESATU berdasarkan usulan pertimbangan secara tertulis dengan mengemukakan alasan-alasan yang cukup kuat, di luar kewenangan dan kekuasaan PIHAK KEDUA antara lain seperti terjadi keterlambatan dalam publikasi luaran, terjadi pekerjaan tambahan, dan terjadi *force majeure*.

(4) PIHAK KEDUA dapat melakukan penyempurnaan dan konsultasi dalam penuntasan luaran penelitian dengan persetujuan dari PIHAK KESATU.

PASAL 7
SANKSI-SANKSI

(1) Apabila PIHAK KEDUA tidak megumpulkan proposal penelitian sampai pada 30 November 2020, maka PIHAK KESATU berhak membatalkan seluruh haknya dalam penelitian;

(2) Apabila PIHAK KEDUA tidak mengumpulkan laporan kemajuan penelitian sampai pada 30 Maret 2021, maka PIHAK KEDUA tidak berhak menerima insentif.;

(3) Apabila PIHAK KEDUA tidak mengumpulkan laporan akhir penelitian sampai pada 30 April 2021, maka PIHAK KEDUA tidak akan mendapatkan hibah penelitian di Tahun selanjutnya.

PASAL 8
FORCE MAJOURE

(1) PIHAK KEDUA dibebaskan dari sanksi-sanksi apabila keterlambatan penyelesaian pekerjaan disebabkan oleh terjadinya peristiwa-peristiwa di luar kekuasaan atau kemampuan PIHAK KEDUA yang dianggap *force majeure* yang disetujui PIHAK KESATU, misalnya:
   a. Bencana alam, dan atau peperangan;
   b. Kejadian-kejadian akibat kebijaksanaan Pemerintah dalam bidang penelitian dan yang telah ditetapkan oleh Pemerintah bahwa akibat kebijaksanaan tersebut dapat digolongkan sebagai *force majoure*.

(2) Apabila terjadi peristiwa tersebut di atas, PIHAK KEDUA harus memberitahukan secara tertulis kepada PIHAK KESATU, dalam waktu paling lambat 7 (tujuh) hari setelah terjadi force majoure.

(3) Atas Persetujuan PIHAK KESATU, dibuatkan Berita Acara dan selanjutnya batas waktu penyelesaian pekerjaan sebagaimana tercantum dalam Pasal 7 (tujuh) dapat diperpanjang yang dituangkan dalam Addendum Surat Perjanjian Kerjasama /Kontrak ini.

PASAL 9
PELAKSANAAN PEKERJAAN OLEH PIHAK LAIN

(1) Pekerjaan tersebut, baik sebagian maupun seluruhnya dilarang diserahkan oleh PIHAK KEDUA kepada pihak lain tanpa persetujuan dari PIHAK KESATU.

(2) Jika ternyata PIHAK KEDUA menyerahkan sebagian pekerjaan atau seluruhnya kepada pihak lain, dan peringatan-peringatan tertulis dari PIHAK KESATU tidak diindahkan oleh PIHAK KEDUA, maka setelah mengadakan perhitungan,

PIHAK KESATU berhak mernbatalkan Surat Perjanjian Kerjasama ini secara sepihak.

PASAL 10
PERSELISIHAN

(1) Apabila terjadi perselisihan antara PIHAK KESATU dan PIHAK KEDUA, maka hal tersebut akan diselesaikan secara musyawarah untuk mufakat.
(2) Jika tidak mendapatkan penyelesaian yang layak dan memuaskan kedua belah pihak, maka penyelesaian akan melibatkan Wakil Rektor terkait.

PASAL 11
PENUTUP

Surat Perjanjian Pelaksanaan Pekerjaan / Kontrak ini dibuat dan ditandatangani oleh kedua belah pihak dalam rangkap 2 (dua).

PIHAK KESATU	PIHAK KEDUA
Kepala Lembaga Penerbitan, Penelitian, dan Pengabdian kepada Masyarakat (LP3M) Universitas Nurul Jadid Probolinggo selaku Pembuat Komitmen	Dosen Pelaksana Penelitian Universitas Nurul Jadid
ACHMAD FAWAID, M.A., M.A.	**Ahmad Kholid Fauzi, M.Kep**
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SURAT PERNYATAAN TANGGUNG JAWAB MUTLAK
KEGIATAN PENELITIAN

Yang bertanda tangan di bawah ini:

Nama	: Ahmad Kholid Fauzi, M.Kep
Tempat Tanggal Lahir	: Probolinggo, 04 April 1990
NIDN	: 0704049008
Fakultas	: Kesehatan

Dengan ini menyatakan sanggup dan bertanggungjawab mutlak atas pelaksanaan penelitian sebagaimana yang telah kami usulkan. Apabila terjadi pelanggaran terhadap aturan-aturan yang telah disepakati dalam Kontrak, maka menjadi tanggungjawab kami.

Paiton, 12 Oktober 2020
Pelaksana,

(Ahmad Kholid Fauzi, M.Kep)

ABSTRACT

Background: Adherence behavior of tuberculosis patients become the most crucial factor in achieving success treatment, including adherence to compliance with medication, prevention of transmission, and nutritional compliance. This study aims to determine the effect of educational intervention based on the Theory of Planned Behavior (TPB) in improving adherence to TB patients.
Methods: Quasi-experimental study was conducted on 100 patients with pulmonary tuberculosis in Puskesmas Bubakan Pacitan with a purposive sampling technique. This study was conducted to provide TPB-based educational interventions in the treatment groups for 2 months. The statistical test used was the independent t-test, paired t-test, and chi-square. **Results:** There were significant differences in mean values between treatment and control groups on attitude toward behavioral variables (ATB), subjective norm (SN), perceived behavior control (PBC), intention, medical adherence, prevention of transmission, and nutrition compliance.
Conclusion: Based on educational interventions Theory of Planned Behavior proven to affect improving the ATB, SN, PBC, intention, medical adherence, prevention of transmission, and nutrition compliance of TB patients.

Keywords: Education, patient's adherence, theory of planned behavior, tuberculosis

DAFTAR ISI

TABLE LIST

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CHAPTER I
BACKGROUND

Tuberculosis (TB) is an infectious disease that becomes a major health concern (Browne et al., 2018). Tuberculosis control with the DOTS strategy has been implemented in many countries since 1995 but remains a global problem that is difficult to be solved (Adiutama, 2019).

Indonesia is one of the world largest tuberculosis contributors, ranks second after India which is 10% of all patients in the world (WHO, 2015). This becomes a very serious problem because of its long treatment period and requires high adherence to the patients. Drug resistance is one result of poor medication adherence, either due to dose problems or failure in completing the treatment program (Guix-Comellas et al., 2017). The average patient adherence in a long-term treatment program in developed countries is only 50%, while lower numbers are found in developing countries (WHO, 2015). Adherence to treatment program has an important role to prevent transmission, death from TB, recurrence, and drug resistance (Addisu et al., 2014).

Indonesia Health Profile 2015 puts TB disease as the first in priority disease control, possibly due to TB disease have a broad impact on quality of life, economy, and also high TB cases resulting in death. One factor that is very influential in the effort to suppress or control the incidence of TB is medication adherence (Kemenkes RI, 2018). The measurement of adherence is important to achieve the success of treatment (Browne et al., 2018). TB patients are required to have high adherence to treatment program as an effort to reduce the burden of TB. Therefore, this study is intended to measure TB treatment adherence and identify factors that may affect adherence itself. This study has used the Theory of Planned Behavior (TPB) as the conceptual framework. The main factors of TBP are shown to have a close relationship with the intention (Miller et al., 2015). The constructs of TBP can predict a person's intentions until behavior is formed (Peleg et al., 2017).

Based on this, the authors offer an intervention by combining interactive nursing reminder based on SMS and face to face nursing education to maintain the stability of the intentions of TB patients with Theory of Planned Behavior (TPB approach), The submissive behavior includes medication adherence, prevention of transmission, and nutritional compliance. In this study, we explore the effect of educational intervention based on the Theory of Planned Behavior (TPB) in improving adherence to TB patients.

CHAPTER II
METHODS

1. Respondent and Procedure

Quasi-experiment pre-post-test with control group studies were conducted in patients of

pulmonary tuberculosis with positive AFB (Acid-Fast Bacilli) test at a primary health care in Pacitan District (N = 108). Respondent recruitment was used total sampling method. Data collection was conducted from 1st June to 1st August 2020. This study was conducted by educational interventions based on TPB in the treatment groups for 2 months. There is a combination of interactive nursing reminder to send reminder messages via SMS (Short Message System) 2 days for 2 months, and face to face nursing education carried out for 4 times. Patients were recruited respondents are patients who have a phone cell and be able to operate, using the Indonesian communication, in the intensive phase of treatment, and patients with primary education status. Patients with impaired musculoskeletal, hearing, mental health, acute complications, and patients who switch phone numbers at the time of the study will be excluded from this study. This study protocol has been approved by the Indonesian Commission of Health Research Ethics.

2. Instrument

The questionnaire was used in the data collection process. The medication adherencewas measured using MMAS-8 (Morisky Medication Adherence Scale-8), prevention of transmission and nutritional compliance was measured using a questionnaire from Sukartini et al. (2015), while ATB, SN, PBC, and Intention were measured using instruments developed from standard instruments of TPB.

a. Medication adherence

Medication adherence was measured using MMAS-8 (Morisky et al., 2008). The instrument was written in Bahasa Indonesia, and there were 8 items of questions with a range of scores for each question (0-1). The score were summed, and the higher score showed a higher adherence level. This questionnaire has been tested for its validity and reliability. The validity test used Pearson product-moment with 5% significance level, and the result showed that all items of the questionnaire are valid. The reliability test used alpha Cronbach with 5% significance level, and the result showed reliability.

b. Prevention of transmission

Prevention of transmission Questionnaire was developed by Sukartini et al. (2015).This questionnaire consists of 10 item statements using a Likert 1-4 scale. The disputed score is 10-40. The statement consists of 8 positive statements and 2 negative statements (No. 3, and 9).

c. Nutritional compliance

Nutritional compliance was developed by Sukartini et al. (2015). This questionnaire consists of 10 items of statement using a Likert 1-4 scale, which contains a statement on nutritional compliance in carrying out TB treatment which includes diet, 4 healthy food, 5 perfect and dietary restrictions when experiencing cough symptoms. The disputed score is 10-40. The statement consists of 8 positive statements and 2 negative statements (No 7 and 9).

d. Attitude toward behavioral

The measurement of this variable was used as the instrument which consists of 10 questions, and it is divided into 2 paired sections. The first section was the questions about outcome evaluation as many as 5 items of questions, and the second section was about strength beliefs as many as 5 items of questions. Range of scores for each question (1-7) (Semantic Differential).

e. Subjective norm

The measurement of this variable was used as the instrument which consists of 10 questions, and it is divided into 2 paired sections. The first section was the questions about motivation to comply as many as 5 items of questions, and the second section was about normative beliefs as many as 5 items of questions. Range of scores for each question (1-7) (Semantic Differential).

f. Perceived behavior control

The measurement of this variable was used as the instrument which consists of 10 questions, and it is divided into 2 paired sections. The first section was the questions about beliefs control as many as 5 items of questions, and the second section was about power beliefs as many as 5 items of questions. Range of scores for each question (1-7) (Semantic Differential).

g. Intention

The Intention questionnaires which modified from TPB Quissionariewas used as the measurement of intention. Modifications were made to the question form as well as the content of the questions to match the theme of the study, so the researchers tested the validity and reliability of the questionnaire, and the results

showed that the questionnaire was valid and reliable. each question (1-7) (Sisctematic Differential). The score was summed, and the higher the score showed the higher the intention level.

3. Statistical Analysis

An independent t-test was used to analyze the difference of ATB, SN, PBC, Intention, Medication, prevention, and nutritional between the two groups after the education intervention based theory of planned behavior. The specified significance level was $p < 0.05$.

CHAPTER III
RESULTS AND DISCUSSION

Socio-demographic characteristics in table 1 showed a total of 108 respondents in this study gave a response of 100%. Based on the chi-square test results illustrate that there is no difference in the characteristics of the respondent in gender, age, and marital status with the value $p > 0.05$, meaning that both groups are equal.

The difference in delta values across dependent variables is tested using the independent t-test. Different test results of delta value of attitude toward behavioral, subjective norm, perceived behavior control, intention, drug-taking compliance, transmission prevention compliance, and nutritional compliance in both groups can be seen in the table 2. Independent t-test results indicate there is a significant difference in inter-group delta values in attitude toward behavioral variables, subjective norm, perceived behavior control, intention, drug-taking compliance, prevention compliance, and nutritional compliance of tuberculosis patients, with significance values ($p < 0.05$).

Table 1. Demographic Characteristics (n = 108).

	Group				**P-value**
	Treatment (n = 54)		**Control (n = 54)**		
	n	**%**	**n**	**%**	
Gender					
Male	32	65,6	28	53,1	0,309
Female	22	34,4	26	46,9	
Age					
15 – 45 years old	29	56,3	30	59,4	0,801
45 – 60 years old	25	43,7	24	40,6	
Occupation					
Working	27	81,3	29	56,3	0,061
Not working	21	18,7	25	43,7	
Marital status					
Married	18	56,3	17	53,1	0,802
Unmaried	14	42,7	15	46,7	

Table 2. The Test Results of Different Delta Values Throughout the Dependent Variables Between the Two Groups in Tuberculosis Patients.

Variable	Group				P-value
	Treatment		Control		
	Mean	SD	Mean	SD	
Attitude toward behavioral	18	19,16	0,19	6,83	0,041
Subjective norm	13,5	17,89	0,13	2,24	0,033
Perceived behavior control	15,8	18,85	0,28	8,37	0,024
Intention	2,84	2,85	0,03	1,09	0,011
Medication adherence	1,38	1,07	0,19	0,592	0,028
Prevention of transmission	2,22	2,41	0,19	0,693	0,026
Nutritional compliance	3,25	2,907	0,34	1,31	0,019

1. Attitude Toward Behavior

The results showed the influence of the Theory of Planned Behavioral-based educational intervention on the attitude toward behavioral of TB patients in the treatment group. After gaining educational intervention based Theory of Planned Behavior the value of attitude toward behavioral TB patients increased. The increase can be achieved by establishing a positive attitude towards the treatment of tuberculosis using a belief approach, with a regular 2-month intervention in which researchers and patients interact face to face 4 times and send a reminder message (reminder) intensively every 2 days, the patient gained the confidence that he could and was able to undergo difficult tuberculosis therapy.

The results of this study in line with research on education in promoting belief-based tuberculosis compliance, a study conducted on 68 TB patients in Barcelona revealed that belief-based education is very effective in establishing attitudes that support the behavior of treatment compliance (Guix-Comellas et al., 2017). A meta-analysis of the treatment intervention of chronic diseases concluded that the intervention based on belief more positively impacts the attitude and behavior of the compliance itself (Rich et al., 2015). Another study of counseling during the treatment of tuberculosis in Rio de Janeiro gives the picture that the attitude based on the belief is more lasting than the attitude formed from the recommendation (Costa et al., 2017).

2. Subjective Norm

Statistically, education intervention Theory of Planned Behavior is shown to affect the subjective norm (subjective norm) of tuberculosis patients. Before the intervention, the value of subjective norms in the control group and the intervention group were not much different, but after the 2-month intervention was seen the difference in value. The intervention group tends to further increase the value of significant subjective

norms, the Theory of Planned Behavior-based educational intervention proves to pose a positive perception of social pressure or several people who are considered important in advocating for treatment, while in the control group even if they are increasing but the increase is not statistically. The increase in the intervention group can be achieved by regular interaction through face-to-face education 4 times with the patient family, and the delivery of a 2-day reminder message for 2 months.

Other research results on education in promoting tuberculosis compliance in 68 TB patients in Barcelona asserted that belief-based education was effective in establishing subjective norms supporting the treatment of tuberculosis patients (Guix-Comellas et al., 2017). An almost identical study of compliance with tuberculosis treatment concluded that social and psychological interventions should be optimized to improve treatment compliance with TB patients (Yan et al., 2018). Compliance with good treatment can be achieved by utilizing social influence through the education of family members on how to support the compliance of treatment in their sick relatives (Kopelowicz et al., 2015). A meta-analysis of the intervention of treatment compliance in chronic diseases also reveals that interventions that use belief approaches will give a longer effect (Rich et al., 2015). Another study of the adherence of tuberculosis patients in South Africa confirmed that good social support proved to improve adherence to TB patients (Akeju et al., 2017).

3. Perceived Behavior Control

The results showed that the educational intervention based on the Theory of Planned Behavior has a significant influence in improving the perceived Behavior of tuberculosis patient control, education intervention to help TB patients in raising positive perceptions about the easy or not to comply with the treatment process. The increase was seen in the intervention group after the face to face education 4 times and the interactive remainder as much as 2 days for 2 months, while in the control group was not found increased the value of perceived behavior control.

This research is supported by studies on education in promoting the adherence of tuberculosis sufferers that belief-based education is effective in enhancing the perceived behavior control of tuberculosis patients in completing the treatment (Vervloet et al., 2012). Perceived behavior control In this study is about the perception of an individual regarding the easy or absence of an individual to conduct behavior and is a reflection of previous experience and obstacles that can be anticipated. The more supporting factors and a few inhibiting factors that individuals feel to be able to do a behavior, the greater the control they feel for such behavior and vice versa. The

conception is determined by the belief of a person, also known as control belief to control the factors that inhibit or encourage the emergence of a behavior (Mcdermott et al., 2015).

4. Intention

Statistically, the educational intervention Theory of Planned Behavior is shown to influence the intention of tuberculosis patients to comply with the treatment. Before the intervention of the intention value in the control group and the intervention group was not much different, but after the intervention for 2 months was seen the difference in value. The intervention group tends to further increase its significant intention value, while in the control group although it is also improved but the increase is not statistically. A significant increase in the intervention group can be achieved by regular interaction through face-to- face education 4 times with the patient family, and the delivery of a 2-day reminder message for 2 months.

The results of the study were almost identical to the study conducted at the University of Pennsylvania Hospital which reported that the reminder message proved effective in maintaining the intention to take the dose (Reese et al., 2016). Another similar study states that chronic disease patients who use reminders demonstrate compliance, the reminder system is useful for enhancing compliance intent, compliance attitudes, compliance behavior, and self-management. Patients who use the reminder system in his treatment will receive direct support and benefits (Foster et al., 2017).

An earlier study of the intention in the Theory of Planned Behavior explains that intention and Behavior in the context of the Theory of Planned Behavior can explain the intention and behavior of one's adherent to treatment. Compliance in the treatment also depends on the personal orientation of the individual itself. The cognitive education Model moderated with the TPB construction proved effective in the care of the intentions and behaviors of one's health (Peleg et al., 2017). The results of the above studies are also supported by a study stating that health education using SMS reminders has proven to increase the intent and behavior of patient's compliance in the treatment process, and SMS reminders can also be received well by the patient (Akhu-zaheya & Shiyab, 2017).

5. Medication Adherence

The results showed that education intervention based on the Theory of Planned Behavior had a significant influence on improving the adherence to patients with tuberculosis. After gaining an educational intervention based on the Theory of Planned Behavior, in the intervention group, it is seen experiencing significant increases in drug-taking compliance. The effect on adherence to taking medication is obtained by regular intervention for 2 months in which researchers, patients, and families interact face to face

4 times, as well as by sending a reminder message (interactive nursing reminder) intensively 2 days for 2 months, so that the adherence to the subject that has formed can be realized or raised as consistent behavior. This compliance increased perhaps because the respondent was satisfied with the caring behavior of nurses who were always reminded every single day. Caring is the main thing used by health services to achieve patient satisfaction (Ellina et al., 2019).

Similar research results show that a method of reminder can be used as an alternative method to help patients achieve compliance in undergoing prolonged and saturating treatment (Reese et al., 2016). Randomized control trials reveal the idea that the method of reminder (especially interactive) is effective in improving the compliance of treatment (Dai et al., 2017). Short Message System (SMS) is very effective in improving patient's compliance with drugs (Akhu-zaheya & Shiyab, 2017). The opinion is also supported by a study stating that health education using SMS reminders has proven to improve patient's compliance in the treatment process and SMS reminders can also be received well by patients (Vervloet et al., 2012).

6. Prevention of Transmission

The results showed the influence of the Theory of Planned Behavior-based educational intervention in improving prevention compliance in tuberculosis patients. In this study in the control group also increased but statistically, the rating is not meaningful, this could be due to the control group also informed about the prevention of transmission through health promotion in local health services. Increased prevention of infection in the intervention group is obtained through face-to-face education on the prevention of transmission and explanation of the environment that supports the prevention of transmission, it is supported by interactive nursing reminder that intensively remind the importance of preventing transmission. In this intervention, the subject was given an understanding of how to cough and sneeze correctly, how to dispose of phlegm, the use of eating and drinking equipment, and the home environment to avoid the transmission of the Theory of Planned Behavior has a basic approach to belief that establishes intent (intention) and encourages individuals to display or perform certain behaviors.

Educational intervention based on the Theory of Planned Behavior leads patients to interact with the environment to know how to prevent the transmission of infection so as not to insure other people around it, patients are also taught how healthy the environment so as not to occur. Along with the formation of intent and understanding of the prevention of transmission, the reminder message is sent intensively so that the intention and understanding can be converted into a consistent behavior, so that the

patient can apply the prevention of transmission both in the presence of officers in the hospital, at home and when interacting with the social environment (Adiutama et al., 2018).

7. Nutritional Compliance

Statistically, the education intervention based on the Theory of Planned Behavior has a significant influence on improving the nutritional compliance of tuberculosis patients. This increase is gained by face to face learning about how nutrients are recommended and cultivating the subject's belief that good nutrients can have a positive impact on the treatment process. The learning is supported by the interactive nursing reminder that contains 3 meals per day, an appetite to avoid fast food and food that triggers cough, such as artificial sweetener, and oily foods. Increased nutritional compliance is also found in the control group, but the enhancements found are not statistically meaningful, this can be due

to the education of health officers and the many food posters that are recommended at the research site.

Other similar research results suggest that chronic disease patients who use reminders demonstrate compliance, a reminder system useful for improving compliance attitudes, compliance behavior, and self-management (Malek et al., 2017). Patients who use the reminder system in his treatment will receive direct support and benefits (Foster et al., 2017). Another supportive study of nutritional or dietary compliance in chronic diseases shows that the Short Message System (SMS) is very effective in enhancing patient adherence to diet and medicine (Akhu-zaheya & Shiyab, 2017).

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