THE EFFECTIVENESS OF TELENURSING TO IMPROVE MEDICATION ADHERENCE ON PSYCHIATRIC PATIENTS

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Abstract

Non adherence often occurs on psychiatric patients. Telenursing intervention was proven to be used as alternative to improve medication adherence on patients with chronic dissease. This research aimed to examine the effectiveness of telenursing by short messages services (SMS) as the counceling media toward psychiatric patients adherence. This research was a *quasi experiment*. The sampling technique was by consecutive random sampling. Medication Adherence Rating Scale (MARS) was the instrument to measure adherence and quistionnaire was used to value frequent of families forget to give medication to patients. The data was analized with Wilcoxon Test and Mann Withney Test.

The result of Wilcoxon test to find out the effect of telenursing intervention toward psychiatric patients' in medication adherence with p-value 0,001 and frequent of families forget to give medication to patients with p-value 0,0001. Mann Withney test resulted with p-value 0,0001 in medication adherence and frequent of families forget to give medication to patients with p-value 0,0001. Statically telenursing intervention was more effective to improve the medication adherence and decrease frequent of family forget to give medicine to patients compared to the control group.

Telenursing intervention by SMS could be used as an alternative to increase medication adherence on psychiatric patients.

Keywords: telenursing, psychiatric patients, medication adherence

I. INTRODUCTION

Mental disorder was a change in the function of the soul that happened in the process of thinking, willingness and action that caused disruption in social roles. According to WHO (2003), the prevalence of mental health problems is quite high, 25% of the world population have suffered mental problems, 1% of them is heavy mental disorder.

Medication of patients with mental disorder should be done continuously to prevent from relapsing and restore the social function to be productive and ultimately can improve the quality of patients life. However, in fact disobedience on medication antipsycotics was common in patients. Literature review reported a very different level of disobedience, ranging from 20% to 89% (Barkhof, Meijer, Sonneville, DH Linszen and de Haan, 2013).

Based on such conditions, nurse intervention was needed to improve the patients pursuance in their medication. There should be a simple action but suitable with the condition of the patients and the patients' family to raise the patients pursuance in taking the medicine. *Telenursing* has been proven can be used for professional nursing services, for increasing the independence, patient satisfaction as well as the active participation of families and the patient care setting who had chronic illnesses and diseases that caused dependence (American Nurses Association, 1996).

One of the forms in telenursing applications was the use of existing technology in the mobile phone, that was *short message service* (SMS). The use of SMS as an educational media which is dealing with treatment had started to develop in patients with chronic diseases who require regular treatment such as asthma, hypertension, diabetes mellitus and HIV/AIDS (WHO, 2003).

Delivery of SMS from nurses about antipsycotic medication program had a potential to remind the patients or patient's family toward the treatment program (Valimaki, Hatonen, and Adams, 2012). However, the intervention of SMS use as a media for information about mental disorder medication program had not been much done. The purpose of this research was to know the effectiveness of *telenursing* with SMS as a media for information toward the pursuance of mental disorder in their medication and the rate of family forgetfullness in giving the medicine to patients.

II. METHODOLOGY

The type of this research was quantitative research used *quasi-experimental* approach. In this design, there were two groups that were used for research, the first group was called as intervention group (given treatment in the form of SMS delivery), and the second group was called as control group (not given treatment). The sample in this study was selected using a *non-probability* sampling technique with *consecutive sampling*. The number of samples that will be used in the study was 17 people of each group.

The inclusion criteria of this research was the willingness of sample to be the subject of research by signing the *informed consent*, taking care of family members of patients suffered from mental disorder, patients who did not comply with treatment (medication/ outpatient control), families of patients were able to read and write, live one house with a psychiatric patient, had a cell phone and were able to operate it. While the exclusion criteria in this research was patients experiencing delusions suspicious of medicine, negative view about medication, patients' family/ patients did not agree to be

subject of the research, patients' family residence area was beyond of mobile phone signal reach.

The instrument used in this research was in the form of questionnaire. There were two questionnaire, the questionnaire A and questionnaire B. Questionnaire A was given to the family of the patients as a subject of research to find out the data characteristics of the research sample (gender, age, type of work, and the level of education) as well as the amount of time not in giving medicine to the patients in the last two weeks. While questionnaire B was given to the patients in the form of *Medication Adhere Rating Scale* (MARS).

This research started from the selection of respondents according to predetermined inclusion criteria through interview. When the respondents agreed to be the subject of research, then the respondents were asked to sign the *informed consent* of research. The subjects of the research were divided into two groups, intervention group and control group. Before the intervention given, the respondents were assessed their level of pursuance with research instrument provided, that is two questionnaire (questionnaire A filled out by family/ caregiver and questionnaire B filled by the patients). Both groups were given the same guidance material regarding the treatment of mental disorder patients by using media leaflets.

In the Intervention group, the next day the researcher began giving the intervention in the form of sending SMS to a mobile phone number of the patients' family once a day in the morning during a week. The SMS contained the motivation from nurses dealing with how important the medication is and remind the patients' family about checking medication schedule in that day. Whereas, in the control group was not done SMS sending. After passing one week, researcher re-assessed patients treatment pursuance used the same research instrument (questionnaire A and questionnaire B).

III. RESULT AND ANALYSIS

A. The Characteristics of Respondents

1. The Characteristics Of Respondents Age.
   Characteristic of the respondents' age can be seen in the following table:
   Table 4.1. The analysis of respondents age in the control group and intervention group in Mental health services (Yankeswa Installation) Banyumas district hospital 2013 (N:34)

Groups	Age (years)					
	n	Mean	Median	SD	Minimum Age	Maximum Age
Intervention	17	44.88	45,00	7.85	32	57
Control	17	39.94	40,00	5.06	30	48
Sum	34	42,41	42,00	6,97	30	57

The mean age of the respondents in the intervention group was 44, 8 years while in the control group was 39, 9 years. The result of this research correspond to Darwin, Hadisukamto and Elvira's research (2012) in Islamic Jakarta Klender RSJ, who stated that the majority age of nurse/ *caregiver* patient of psychiatric was 41-60 years 57 (58, 3%).

2. The Characteristics Of Respondents' Education.

Educational characteristic of respondents was the last education owned by respondents. Educational characteristic can be seen in the following table:

Table 4.2. The analysis of Respondents' educational characteristics of Control and Intervention groups in services (Yankeswa Installation) Banyumas district hospital 2013 (N:34)

Education Variable	**Intervention Group (n:17)**		**Control Group (n:17)**		**SUM (n:34)**	
	Σ	%	Σ	%	Σ	%
Primary School	11	64.7	3	17.6	14	41,1
Junior High School	1	5.9	3	17.6	4	11,8
Senior High School/ equal	5	29.4	11	64.7	16	47,1
SUM	17	100	17	100	34	100

The education level of respondents in the intervention group was dominated by the respondents of primary school graduate as much 11 people (64, 7%). While in the control group was dominated by High School Graduate as much 11 people (64, 7%). Education gave certain values for human, especially to open mind and accept new things.

A person's education level would help that person to grasp and understand the information easier. However, the education did not become the core indicator in a person level of knowledge. It is appropriate with Notoatmodjo (2010), which stated that education is one of factors that influences a person's level of knowledge but there are other factors that can affect a person's knowledge such as experience, information, and personality of person.

3. The Characteristic Of Respondent And Patient's Relation.

Characteristic of relation between respondent and patient was the status of kinship such as father, mother, husband or child. The data of relation obtained through interviews with people who picked up patients when returned home from hospitalized in Yankeswa Installation Banyumas. Those characteristics can be seen in the following table:

Table 4.3. The characteristics analysis of Respondent's relation with patient in Control and intervention groups services (Yankeswa Installation) Banyumas district hospital in 2013 (N:34)

Relation with Patients	Intervention group (n:17)		Control Group (n:17)		Sum	
	Σ	**%**	**Σ**	**%**	**Σ**	**%**
Father	6	35.3	6	35,3	12	35,3
Mother	2	11.8	5	29,4	7	20,6
Child	2	11.8	3	17.6	5	14,7
Aunt	1	5.9	-	-	1	2,9
Sibling	5	29.4	3	17.6	8	23,5

Husband	1	5.9	-	-	1	2,9
Sum	17	100	17	100	34	100

Respondents' relation with the patients as the father was the most, 6 person (35, 3%) in each group. This result was different from the result of research that was conducted by Darwin, Hadisukanto, and Elvira (2012) in Islamic Jakarta Klender RSJ, which stated that the kinship nurse */caregiver* with the patient as the mother was the most, 47 person (39,8%) then patients' father was 28 (23, 7%).

This difference occurred because the respondents interviewed in this research were those who picked up a patient home from hospitalized in Yankeswa Instalation Banyumas, therefore the most respondents were patients' father because father's role in Indonesian culture was dominant in decision-making about the health of family members, whereas in fact, mother had more maternal role in managing household, including caring for a sick family member.

4. The Characteristics Value Of Treatment Compliance Before Intervention.

In this research, patients compliance value was measured using instrument MARS. The result value of MARS in both groups was on a score between 4 to 6 that can be interpreted in compliance value low medium. The intervention group was 5, 11 with a standard deviation 0.781.

Table. 4.4 Analysis of Characteristics value *Medication Adherence Rating Scale* (MARS) Respondent before intervention was done in services (Yankeswa Installation) Banyumas district hospital in 2013 (N:34)

Groups	Initial Value MARS				
	n	Mean	SD	Minimum Score	Maximum Score
Intervention	17	5.05	0.658	4	6
Control	17	5.11	0.781	4	6

That fact was appropriate with research from Chia Ming, et.al (2012) which stated that the rate of antipsychotic medication pursuance were relatively poor (*poor adherence*) among people who experienced psychosis in first episode. One third of patient with schizophrenia have been estimated did not obey to the medication within six months of their first psychotic.

5. The Characteristics Of Family Forget Giving Medicine To Patient.

Mean value of family forgetfullness in giving medicine a day for the last a week was 2, 11 times in the intervention group and 2.00 times in the control group. On both groups, patients schedule to take medicine was 3 times a day.

Table 4.5 The analysis of characteristics of family forgot in giving medicine in Control group and intervention group in services (Yankeswa Installation) Banyumas district hospital in 2013 (N: 34).

Groups	**Numeral events family forgot in giving medicine**

	n	Mean	SD	Minimum Score	Maximum Score
Intervention	17	2.11	0.857	1	3
Control	17	2.00	0.707	1	3

From those data, it looked that most families of patients gave medicine once a day from the time of taking medicine three times should be. According to *Mental Health Illness Policy* (2011) as many as 55% patients with mental disorder did not take their medicine because they feel no pain (*anogosia*).

6. The Test Normality Of Data
Based on *Shapiro Wilk* test, the existing data was not normal distribution, therefore bivariate test used non-parametric test.

Table 4.6 The result of Data Normality Test of Research Effectiveness of Telenursing with Short Message Service (SMS) as a Media for Treatment Pursuance Counseling toward patient with mental disorder in services (Yankeswa Installation) Banyumas district hospital in 2013 (N:34)

	Shapiro Wilk Test		
	Statistic	***dF***	***Sig.***
Score of MARS before intervention	0.805	34	0.00
Score of MARS after intervention	0.797	34	0.00
Forgotten genesis giving medication	0.808	34	0.00

B. Analysis of Bivariate

1. The Effect Of Telenursing Intervention By SMS Toward Treatment Pursuance And The Rate Of Family Forgetfullness In Giving Medicine.

The effect of *telenursing* intervention by SMS can be identified by measuring the difference in treatment compliance patients of mental disorder and the rate of family incident forgot in giving medicine to intervention group before and after intervention was given. After knowing the result of the assessment, then it was done statistical test with *non-parametric test 2 related samples* (*Wilcoxom* test).

Table 4.8 The analysis of the effect *Telenursing* intervention using SMS toward treatment pursuance of patient with mental disorder on Intervention group services (Yankeswa Installation) Banyumas district hospital in 2013 (n: 17)

	n	**Mean Rank**	**Sum of Rank**	**Z**	**Asymp. Sig. (2 Tailed)**
Negative Rank	0	0.00	0.00		
Positive Rank	14	7.50	105.00	| - 3.391|	0.001
Ties	3				

Table 4.10 The analysis of the effect *telenursing* intervention by SMS toward the rate of family incidents forgot in giving medicine to the patients on intervention group services (Yankeswa Installation) Banyumas district hospital in 2013 (n:17)

	n	Mean Rank	Sum of Rank	Z	Asymp. Sig. (2 Tailed)
Negative Rank	17	9.0	153.00	|- 3.682|	0.000
Positive Rank	0	0.00	0.00		
Ties	0				

The result of the statistical calculation above showed that p *value* 0,001 and 0, 0001 was smaller than the value of α 5% (0, 05) which means that Ho was rejected and Ha was accepted. These result indicated that there was significant influence statically in giving *telenursing* intervention by SMS to medication pursuance rate of mental disorder and the incidence family forgot in giving medication.

That fact agreed with research conducted by Bohnenkamp, et al (2004), which stated that patients who receive treatment-using *telenursing* can improve patients' knowledge and they feel more comfortable with message delivered by nurse.

2. The Effectiveness Of Telenursing By SMS Toward Pursuance Of Treatment And The Rate Of Family Forgetfullness In Giving Medicine.

To find out the effectiveness of *telenursing* by SMS toward the pursuance of treatment of patients with mental disorder and the rate of family forgetfullness in giving medicine, therefore, the difference value of MARS and the rate of family forgetfullness in giving medicine before and after intervention was given on intervention group and control group was measured first.

Table 4.12 The analysis of effectiveness *telenursing* intervention by SMS toward pursuance treatment patients of mental disorder in services (Yankeswa Installation) Banyumas district hospital in 2013 (N:34)

Groups	n	Mean Rank	Sum of Rank	Mann Withney U	Z	Asymp. Sig (2 tailed)
Control	17	11.12	189.00			
Intervention	17	23.88	406.00	36.00	|- 4.045|	0.000

Table 4. 14 The effectiveness of intervention *telenursing* by SMS to reduce the rate of family forgetfullness in giving medicine to patients services (Yankeswa Installation) Banyumas district hospital in 2013 (N:34)

Groups	n	Mean Rank	Sum of Rank	Mann Withney U	Z	Asymp. Sig (2 tailed)
Control	17	11.06	188.00			
Intervention	17	23.94	407.00	35.00	|- 3.945|	0.000

From the result, it can be concluded that there was a statically significant effect of the intervention *telenursing* by SMS to improve pursuance treatment of mental disorder and decrease the rate of family forgetfullness in giving medicine to patients with mental disorder.

The International *Council of Nurses* (ICN) (2009) stated that through *telenursing*, nurses could do monitoring, health education, *follow up*, assessment and data collection, do intervention, provide a support to the patients or the patient's family. Research by Lewis and Kershaw, (2011) mentioned that SMS as a tool for behavior change in disease prevention management. SMS also succeed to promote short-term behavioral change such as motivating a group a teenager to stop smoking, intervention on diet and other physical activity. Huang,et.al (2013) stated that patient who received the *telenursing* intervention by SMS had 3,2 times greater to experience numeral decrease the incidents of wrong dose of medication.

IV. DISCUSSION AND RECOMMENDATION

Based on the research that has been done, it can be concluded that the *telenursing* intervention by *short message service* (SMS) had effect on improvement toward the pursuance of mental disorder patients (*p*: 0,001) and a decrease in the rate of family forgetfullness in giving medicine to mental disorder patients (*p*:0,0001). The comparison of the effectiveness between the intervention group *telenursing* (SMS) with the control group can be concluded that the distribution of *telenursing* intervension by *short message service* (SMS) significantly influence toward the improvement of patient treatment pursuance with mental disorder (*p*:0.0001) and a decrease in the rate of family forgetfullness in giving medicine to patient with mental disorder (*p*:0,0001).

The result of this research can be used as a scientific reference source *telenursing* influence with SMS as a media of mental disorder treatment counseling. In addition, this research can be developed by increasing the number of sample, a longer intervention period and analyze the acceptance or satisfaction of the respondents toward the intervention.

The next researcher can also compare the effectiveness of *telenursing* (SMS) with other intervention to improve medication pursuance of patient with mental disorder. The use of assessment instrument toward the treatment pursuance of mental disorder needs to be developed to be simpler by doing the *test validity* and *reliability* further. The nurse can use the SMS as a media of communication and consultation between nurse and patient's family about how to care patient with mental disorder at home.

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