ประสิทธิผลของการบริบาลทางเภสัชกรรมในผู้ป่วยจิตเภท ณ โรงพยาบาลจิตเวช

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บทคัดย่อ

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ว. เภสัชศาสตร์อีสาน, มีนาคม 2558; 11(ฉบับพิเศษ) : 159-167

บทนำ: ความร่วมมือในการใช้ยาในผู้ป่วยจิตเภทมีความสำคัญยิ่งในการควบคุมอาการของโรคจิตเภทป้องกันอาการกำเริบและการเข้ารับการรักษาในโรงพยาบาล การให้การบริบาลทางเภสัชกรรมเป็นปัจจัยสำคัญที่ช่วยเพิ่มความร่วมมือในการใช้ยาให้กับผู้ป่วย **วิธีการดำเนินวิจัย:** การศึกษานี้เป็นการวิจัยเชิงทดลองแบบสุ่มและมีกลุ่มควบคุมโดยกลุ่มตัวอย่าง คือผู้ป่วยนอกจิตเภทที่มารับบริการที่โรงพยาบาลจิตเวชนครราชสีมาราชนครินทร์ ดำเนินการระหว่างวันที่ 1 กุมภาพันธ์ ถึงวันที่ 31 กรกฎาคม พ.ศ. 2557 โดยมีวัตถุประสงค์ เพื่อประเมินผลของการบริบาลทางเภสัชกรรมตามแนวทาง mhGAP for Schizophrenia โดยเปรียบเทียบความร่วมมือในการใช้ยา อัตราการกลับมาเป็นซ้ำ และคุณภาพชีวิตของผู้ป่วยจิตเภทระหว่างกลุ่มที่ได้รับการบริบาลทางเภสัชกรรมและกลุ่มที่ได้รับบริการแบบทั่วไป โดยกลุ่มตัวอย่าง คือผู้ป่วยนอกจิตเภท จำนวน 100 ราย แบ่งเป็น กลุ่มทดลองได้รับการบริบาลทางเภสัชกรรม จำนวน 50 ราย และกลุ่มควบคุมได้รับบริการแบบทั่วไป จำนวน 50 ราย เมื่อสิ้นสุดการศึกษาพบว่ามีผู้ป่วยกลุ่มทดลองและกลุ่มควบคุมจำนวน 44 และ45 รายตามลำดับ **ผลการวิจัย:** ผู้ป่วยในกลุ่มทดลองมีความร่วมมือในการใช้ยารักษาโรคจิต มากกว่ากลุ่มควบคุมอย่างมีนัยสำคัญทางสถิติ (ร้อยละ80.95 และร้อยละ 38.23; p<0.001) และคะแนนเฉลี่ยความรุนแรงทางจิตตามแบบประเมิน Brief Psychiatric Rating Scale (BPRS) ในกลุ่มทดลองน้อยกว่ากลุ่มควบคุมอย่างมีนัยสำคัญทางสถิติ (24.00±10.25 และ 28.00±11.00; p=0.012) อัตราการกลับมาเป็นซ้ำของอาการทางจิต ในกลุ่มทดลองน้อยกว่ากลุ่มควบคุมอย่างมีนัยสำคัญทางสถิติ (4.36% และ 13.62%; p<0.001) คะแนนเฉลี่ยคุณภาพชีวิตตามแบบประเมิน WHOQOL- BREF-THAI 26 กลุ่มทดลองมากกว่ากลุ่มควบคุมอย่างมีนัยสำคัญทางสถิติ (74.50± 13.53 และ 65.29±11.53; p=0.002) จำนวนปัญหาที่เกี่ยวข้องกับการใช้ยาพบว่า ในกลุ่มทดลองลดลงร้อยละ 27.97 และกลุ่มควบคุม เพิ่มขึ้นร้อยละ 15.08 จากเดิมตามลำดับ **สรุปผลการวิจัย:** การให้บริบาลทางเภสัชกรรมตามแนวทางโครงการลดช่องว่างการบริการผู้ป่วยโรคจิตเภทช่วยเพิ่มความร่วมมือในการใช้ยา ลดความรุนแรงของโรค และลดปัญหาที่เกี่ยวข้องกับการใช้ยา การศึกษานี้ไม่ได้ศึกษาผลของการดำเนินงาน mhGAP for Schizophrenia ทั้งหมดทำให้คุณภาพชีวิตของผู้ป่วยจิตเภทไม่เพิ่มขึ้น

คำสำคัญ: ความร่วมมือในการใช้ยา การบริบาลทางเภสัชกรรม ผู้ป่วยจิตเภท mhGAP อัตราการกลับมาเป็นซ้ำ คุณภาพชีวิต

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Abstract

Effectiveness of Pharmaceutical Care at Schizophrenia Clinic in Psychiatric Hospital

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Introduction: In schizophrenia, medication adherence is importance to control and prevent relapse rate. Pharmaceutical care is a service that improve medication adherence. **Method:** A Single-blinded, randomized, controlled clinical trial was performed in schizophrenia outpatient clinic at Nakhon Ratchasima Rajanagarindra psychiatric hospital. This study was conducted during 1 February – 31 July 2014. The objective of this study was to examine the outcomes of

pharmaceutical care in patients with schizophrenia by Mental Health Gap Action Programme for Schizophrenia (mhGAP) by compare medication adherence, relapse rate and quality of life between study group and control group. The samples were divided into 2 groups, 50 patients each in the study and control group. At the end of the study 44 patients in the study group and 45 patients in the control group were remained for analysis. **Result:** The medication adherent patients in the study group were more than the control group (80.95% and 38.23%; p<0.001). The mean score of psychotic symptom by Brief Psychiatric Rating Scale (BPRS) in the study group was less than the control group (24.00±10.25 and 28.00±11.00; p=0.012). The relapse rate of psychotic symptom in the study group was statistical significant lower than the control group (4.36% and 13.62%; p<0.001).The mean score of quality of life by WHOQOL- BREF-THAI 26 in the study group was statistical significant higher than the control group (74.50± 13.53 and 65.29±11.53; p=0.002). Drug related problems (DRPs) in study group decreased 27.97%, but increased 15.08% in the control group. **Conclusion:** Pharmaceutical care by mhGAP program in patients with schizophrenia increased medication adherence decreased DRPs and psychotic severity. The quality of life could not be determined in this study since we did not do full program of mhGAP.

Keywords: medication adherence, pharmaceutical care, schizophrenia, mhGAP, Relapse rate, Quality of Life

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Introduction

Schizophrenia is one of the most complex psychiatric disorders. The worldwide prevalence of schizophrenia is approximately 1.10%. Only sixty percent of schizophrenic patient were treated and eighty percent of schizophrenic patient in the teenager who has risk factors will be increased in the future [NIMH, 2013]. Ninety percent of schizophrenic patients in developing country did not get treatment and they need acceptance from social, community, and family. [WHO,2013]. In Thailand, the incidence is 0.40% of population and 0.60% found in Nakhon Ratchasima [MPHPH, 2011]. Schizophrenia is the first rank of diseases found in Nakhon Ratchasima Rajanagarindra Psychiatric Hospital. There were found 28.70% in outpatient and 47.5% in inpatient departments [NRRPH, 2011].

First generation antipsychotics are given to prevent relapse rate. Sixty to eighty percentages of patients who were treated with improper dose and patients who stop taking medicine would be relapsed in 9-12 months. Patients who were continuously taking medicines found 18-32% relapse. Therefore the recommendation is taking medicine at least 1 year for first episode and at least 5 years for chronic cases [Crismon et al., 2005].

Non-compliance with antipsychotic medication is a major cause of relapse in the western world. The rates of partial or complete treatment non-adherence in people with schizophrenia are about 50%. Fifty four percentages of Thai people with schizophrenia had not taken their anti-psychotic medications as prescribed and demonstrated that the rate of relapse in Thai patients who were non-adherent were 18 times greater than the adherent patients [Maneesakorn et al., 2007].

In 2008, WHO launched the Mental Health Gap Action Program (mhGAP). The target is to develop and expand psychotic service into community hospital which might have no psychiatric specialist. Mental Health Gap Action Program (mhGAP) has been developed to set guidelines, assessment tools, strategies and service systems for developing and under developed country. One of the guidelines that had been developed was the pharmaceutical care guideline [WHO, 2011]. Pharmacist is one of an important patient care team to help patient monitoring in prevention, identifying and solving drug related problems. Beside these, pharmacist may help giving knowledge and advise patient and caregiver on the disease and drug use. This study was aim to assess whether pharmaceutical care in schizophrenia clinic

according to mhGAP guideline can help increase medication adherence, decrease relapse rate and increase quality of life.

Methodology

A Single-blinded, randomized, controlled clinical trial was performed at outpatient unit, Nakhon Ratchasima Rajanagarindra Psychiatric Hospital during February – July, 2014. The study has been approved by the ethic committee of Khon Kaen University (number HE 537352). The samples were schizophrenic patients followed up at schizophrenia clinic Nakhon Ratchasima Rajanagarindra psychiatric hospital at least 6 months before the study period which were during February – July 2014. They were divided into 2 groups, 50 patients each by systematic random sampling into study and control group. The samples were Outpatients aged at least 18 years, BPRS score < 35, able to read and understand Thai, No hospitalization within 6 months prior to the study period and patient had history of DRPs which was confirmed by physician or pharmacist. They need to sign the consent form before enroll into the study.

Sample size calculation compare mean medication adherence during study group and control group [Wittes J, 2002] :

$$n = \frac{2(Z_\alpha + Z_\beta)^2 \sigma^2}{\delta^2}$$

n = sample size, Test significance = 0.05 for two way power = 80%, $Z_{\alpha/2}$= Z0.05/2 = 1.96, Z_β= Z0.2 = 0.842, σ^2= The variance of study=0.08, δ^2= (The effect size)2 = 0.07 [Valenstein et al., 2009]. Each group should have at least 18 patients. To prevent the loss follow up patient, 50 cases in each group would be included in this study.

The selected samples in both groups would be interviewed, recorded and assessed by pharmacist as follow: Patient characteristics recorded, medication record, BPRS evaluation, WHOQOL-BREF-THAI 26 assessment, Medications adherence by MMAS and Pill count method, identification of drug related problem. They were followed up every month for 6 months. The study group was received pharmaceutical care by mhGAP for Schizophrenia at the clinic since the first visit and would be reminded to come for follow up 2 weeks ahead.

There were three parts of the mhGAP for Schizophrenia pharmaceutical care guideline [MPHPH, 2011] as follow:

a. Psychoeducation: Schizophrenia: meaning, cause, sign and symptom, therapy: short course therapy, long term therapy, and alarm symptom relapse of schizophrenia, instruction for taking care of schizophrenic patient for caregiver and family.

b. Medications information: Antipsychotic drugs: primary generation antipsychotics and secondary generation antipsychotics, antipsychotic drugs used as short course therapy and long term therapy, adverse drug reactions and management

c. Prevention of relapsing: Identify schizophrenia phase, cause of relapsing and prevention

Medication adherence was determined by pill count value > 80% [Grymonpre et.,1998] and The Morisky 8-Item Medication Adherence Scale (MMAS) > 6. [Eaddy et al., 2005; Sakthong et al, 2009] The relapse rate was determined as the percentage of patient who had psychotic symptom measured by The Brief Psychiatric Rating Scale (BPRS) > 37 or admission. [Almond et al., 2004; Suzuki et al, 2006] The WHOQOL-THAI-BREF 26 would be used to determine quality of life. [Mahuntnirunkul et al., 1998]

Statistical Analysis

1. Patients' demographics such as sex, drug allergy, education, chronic disease, drinking alcohol history, smoking history, drug abuse and living status were analyzed using chi-square test for nominal (categorical) data. Fisher Exact test was used when the data was lower than 5. Category variables were presented as percentage. Age and duration of illness was analyzed using independent t test, the normal, continuous variables data were summarized as mean ± standard deviation. Mann-Whitney U test were used for abnormal continuous variable data summarized as median ± IQR.

2. Pill count score, MMAS, BPRS score, WHOQOL-BREF-THAI-26 score, were analyzed using independent t-test, the normal, continuous variables data were summarized as mean ± standard deviation. Mann-

Whitney U test were used for abnormal continuous variable data summarized as median ± IQR. The p value of <0.05 was considered statistically significant.

3. Relapse rate, admission rate, and DRPs were analyzed using chi-square test for nominal (categorical) data. Fisher Exact test was used when the data was lower than 5. Category variables were presented as percentage. The p value of <0.05 was considered statistically significant.

Results and Discussion

The schizophrenic patients that had been included in the study were divided into study and control group, 50 patients each. Eleven patients withdrew from the study. Six patients had been referred to community hospital. Three patients did not come for follow up. Finally 44 patients in the study group and 45 patients in the control group were analyzed.

Patients' characteristics

The characteristics of patients in the study and control groups were shown in table 1. The baseline characteristics including gender, age, duration illness, occupation, education, living status, comorbid psychosis, comorbid physical , antipsychotic drug type , concomitant medications, smoking, drinking alcohol were compared between 2 groups of the study.

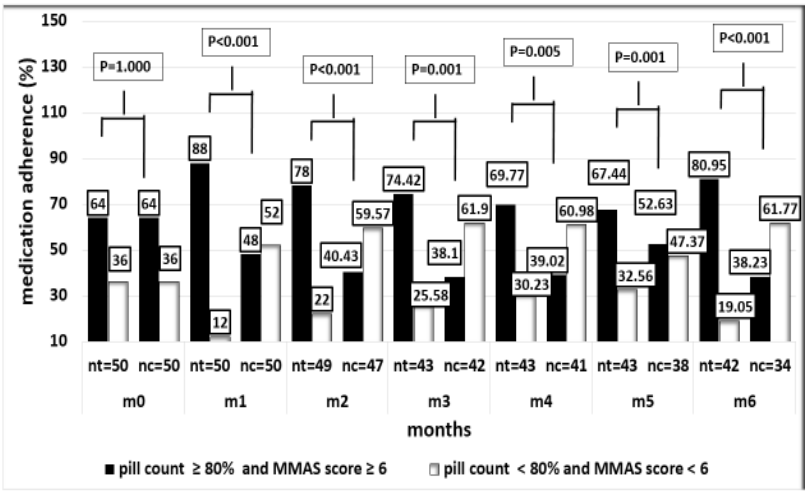
Table1 Patients characteristics in the study group and control group.

Data	Study group(n=44)	Control group(n=45)	P-value
Gender: male, n(%)	25(56.82%)	23(51.11%)	0.589[a]
Age (mean ± S.D), years	45.50 ± 10.83	42.52 ± 12.87	0.214[c]
Duration illness, median ± IQR, years	5.00 ± 5.25	4.00 ± 6.00	0.322[d]
Comorbid psychiatric illness, n(%)			
Bipolar	0(0.00%)	6(13.33%)	0.026[b]
Anxiety	6(11.64%)	4(8.89%)	0.522[b]
Smoking, n(%)	15(34.09%)	17(37.78%)	0.717[a]
Drinking alcohol, n(%)	7(15.91%)	5(11.11%)	0.563[a]
Occupation, n(%)			
Unemployed	25(56.81%)	33(73.33%)	0.065[a]
Student	0	1(2.22%)	1.000[b]
Merchant	0	2(4.44%)	0.494[b]
Employee	6(13.64%)	6(13.33%)	0.967[a]
Farmer	7(15.91%)	3 (6.67%)	0.197[b]
Government officer	4(9.09%)	0	0.056[a]
Business	2(4.55%)	0	0.242[b]

[a]Chi-square Test, [b]Fisher's Exact Test, [c]Independent t-test, [d]Mann-Whitney U Test.

Medication adherence

Medication adherence was determined by pill count and MMAS. Pill count value ≥ 80% and MMAS ≥ 6 should be met to count as medication adherence. We found that the percentage of medication adherence was statistical significant difference since first visit (month 1) and continued to be different to last visit (month 6) as shown in the figure 1.



*Chi-square test, m=month, nt=number study group, nc=number control group, m0=non significance, m1-6= significance difference at p value< 0.05.

Figure 1 Percentage of medication adherence determined by both MMAS ≥6 and pill count ≥ 80% (black bar), MMAS <6 and pill count < 80% (white bar) in the study group and the control group during 6 months.

Relapse Rate

The psychotic severity that determined by BPRS>37 were found since second visit (month1) in the control group (6%) but there was no BPRS > 37 in the study group which described in Table2. The BPRS > 37 were found in both groups since third visit (month2) through last visit (month 6). The two admitted patients (one in study and one in control group) were found during month2-3 in both groups. Both admitted patients had BPRS > 37. So the relapse had been found since second visit in the control group. At the end of the study, there were 12 from 275 visits in the study group and 38 from 279 visits in the control group with relapsing which is significantly different at p<0.001 in Table3.

Table 2 Percentage of BPRS ≥ 37, admission rate and relapse rate during 6 months.

Data	Month0		P-value	Month1		P-value	Month2		P-value
	Study group (n=50)	Control group (n=50)		Study group (n=50)	Control group (n=50)		Study group (n=49)	Control group (n=47)	
BPRS≥37; n(%)	0	0	1.000[a]	0	3(6.00%)	0.242[b]	1(2.04%)	4(8.51%)	0.199[b]
Admit rate; n(%)	0	0	1.000[a]	0	0	1.000[a]	0	0	1.000[a]
Relapse rate; n(%)	0	0	1.000[a]	0	3(6.00%)	0.242[b]	1(2.04%)	4(8.51%)	0.199[b]
Data	Month3		P-value	Month4		P-value	Month5		P-value
	Study group (n=44)	Control group (n=46)		Study group (n=44)	Control group (n=46)		Study group (n=44)	Control group (n=45)	
BPRS≥37; n(%)	2(4.55%)	6(13.34%)	0.267[b]	4(9.10%)	9(19.57%)	0.158[a]	3(6.12%)	9(20.00%)	0.069[a]
Admit rate; n(%)	1(2.27%)	1(2.17%)	1.000[b]	0(0.00%)	0(0.00%)	1.000[a]	0(0.00%)	0(0.00%)	1.000[a]
Relapse rate; n(%)	2(4.55%)	6(13.34%)	0.267[b]	4(9.10%)	9(19.57%)	0.158[a]	3(6.12%)	9(20.00%)	0.069[a]
Data	Month6		P-value						
	Study group (n=44)	Control group (n=45)							
BPRS≥37; n(%)	2(4.55%)	7(15.56%)	0.157[a]						
Admit rate; n(%)	0(0.00%)	0(0.00%)	1.000[a]						
Relapse rate; n(%)	2(4.55%)	7(15.56%)	0.157[a]						

[a]Chi-square Test, [b]Fisher's Exact Test , significance difference at p value< 0.05.

Table 3 Number and percentage of relapsing of schizophrenic patients in each month and during 6 months.

Month	No. of relapsing				P-value
	Study group		Control group		
	relapsing	n	relapsing	n	
Month1	0	50	3(6.00%)	50	0.242[b]
Month2	1(2.04%)	49	4(8.51%)	47	0.199[b]
Month3	2(4.55%)	44	6(13.34%)	46	0.267[b]
Month4	4(9.10%)	44	9(19.57%)	46	0.158[a]
Month5	3(6.12%)	44	9(20.00%)	45	0.069[a]
Month6	2(4.55%)	44	7(15.56%)	45	0.157[a]
Total(month1-6)	12(4.36)	275	38(13.62)	279	<0.001[a]

[a]Chi-square Test, [b]Fisher's Exact Test , significance difference at p value< 0.05.

Quality of life

The WHOQOL-THAI-BREF 26 was a self-administered report which used to determine quality of life in our study. At the beginning of the study the mean score of quality of life determined by WHOQOL-THAI-BREF 26 in the study group was higher than the control group. The mean scores in physical, psychological and social domain were not statistical significant difference but it was significant difference in environmental domain. By the end of the study the mean quality of life and scores in each domain in the study group were significantly higher than the control group except social domain as shown in table4.

Table 4 Quality of life compared between the study and control group at the beginning and end of the study.

Data	Baseline		P-value*	6 Months		P-value*
	Study group	Control group		Study group	Control group	
	(n=50)	(n=50)		(n=43)	(n=44)	
WHOQOL-BREF-THAI-26	76.46± 14.60	70.66 ±9.10	0.019	74.30± 13.93	66.63±10.87	0.005
Physical domain	20.72 ±4.36	19.46 ±2.59	0.082	20.16±3.98	17.66±3.60	0.003
Psychological domain	17.72 ±4.57	16.30 ±2.67	0.061	16.79±4.19	14.93 ±3.32	0.024
Social domain	8.86 ±2.09	8.12±1.70	0.055	8.26 ±1.79	7.91±1.58	0.340
Environmental domain	23.38±4.79	21.41±3.06	0.015	23.44±4.62	21.14±3.66	0.012

*Independent t-test show is Mean ± SD, significance difference at p value< 0.05.

Drug Related Problems

This study included only patients who had drug related problems and sampling into study and control group. We found 143 DRPs in the study group and 126 DRPs in the control group at the beginning of the study. There were 103 DRPs in the study group and 145 DRPs in the control group by the end of the study. Nine categories of DRPs at the beginning and the end of the study were identified. At the beginning we found that every patient in the study and control group had adverse drug reactions. All of the patients in the study group failed to receive medicine, whereas 94% in the control

group. The adverse drug reactions decreased in both group by the end of the study which were 38.64% and 60.00% in the study and control group, respectively (p = 0.044). The failure to receive medicine decreased to 36.36% and 66.67% in the study and control group, respectively (p = 0.004). The other categories of DRPs were not statistical significant difference between the study and control group both at the beginning and the end of study as shown in table 5.

Table 5 Number and percentage of patient that found DRPs in the study and control group at the beginning and the end of the study.

Type of drug related problems	Month0		P-value	Month6		P-value
	Study group (n=50)	Control group (n=50)		Study group (n=44)	Control group (n=45)	
1.Untreated indication	16(32.00%)	9(18.00%)	0.106[a]	1(2.27%)	3(6.67%)	0.616[b]
2.Improper drug selection	2(4.00%)	2(4.00%)	1.000[b]	2(4.55%)	1(2.22%)	0.616[b]
3.drug duplicated	1(2.00%)	2(4.00%)	1.000[b]	1(2.27%)	1(2.17%)	1.000[b]
4.too high dose medications	4(8.00%)	2(4.00%)	0.678[b]	1(2.27%)	1(2.17%)	1.000[b]
5.too low dose medications	0(0.00%)	1(2.00%)	1.000[b]	1(2.27%)	0(0.00%)	0.494[b]
6.Adverse drug reactions	50(100.00%)	50(100.00%)	1.000[a]	17(38.64%)	27(60.00%)	0.044[a]
7.Drug interactions	2(4.00%)	1(2.00%)	1.000[b]	2(4.55%)	1(2.22%)	0.616[b]
8.Invalid indication	0(0.00%)	0(0.00%)	1.000[a]	0(0.00%)	0(0.00%)	1.000[a]
9.Failure to receive medicines	50(100.00%)	47(94.00%)	0.242[b]	16(36.36%)	30(66.67)	0.004[a]

[a]Chi-square Test, [b]Fisher's Exact Test, significance difference at p value< 0.05.

Discussion

Patient characteristics in both groups were similar except co-morbid condition, bipolar, that the control group was higher than the study group.

Medication adherence was not different in both groups at the beginning of the study. Determination by pill count method could not be done in some patients because they did not bring the medicines at follow up visit. The percentage of medication adherence in the study group increased significantly difference from the control group since the second visit through the last visit. Kankratoke et al found that pharmaceutical care could increase medication adherence in the study group by 2 months.[Kankratoke et al, 2011] Valenstein, et al also found that pharmaceutical care process could increase medication adherence determined by pill count method significantly at 6 months. [Valenstein, et al, 2009]

The relapse were determined by BPRS $\geq$ 37 or admission. In our study all of the patients that were admitted had BPRS $\geq$ 37. The BPRS > 37 had been found in the control group since second visit while there was no any patient in the study group had BPRS > 37 in that visit. There were patients that had BPRS > 37 in both group since the third visit. At the forth visit there was one patient in each group admitted in the hospital. The relapse rate was significant difference which was 4.36% in the study and 13.62 % in the control group, respectively (p<0.001). Gumley et al found that relapse rate in the study and control group were 3 and 12 percent at month 3 and 8 and 20 percent at month 6, respectively. [Gumley et al, 2003] The same as Herz et al which relapse rate 5 and 15 percent at month3 and 8 and 23 percent at month 6 in the study and control group. [Herz et al, 2000] Our study also found 4.55%

and 13.34 % at month 3 in the study and control group and found 4.55% and 15.56 % at month 6 in the study and control group.

The determination of quality of life by WHOQOL- BREF-THAI 26 found that the mean score was 76.46± 14.60 in the study group and 70.66 ± 9.10 in the control group which was significant difference at the beginning of the study. When we determined the quality of life in each domain we found the physical, psychological and social domain were not significant difference in both groups except environmental domain. By the end of the study we found that mean quality of life and also physical, psychological and environmental domain in the study group were significantly higher than the control group. Onsombut et al found that pharmaceutical care in study group could increase quality of life score by WHOQOL- BREF-THAI 26 more than control group at 2 months but not statistical significant difference (97.50±10.03 and 8 6 . 4 0 ±9.95; p<0.711). [Onsombut et al, 2011] Our study aims to investigate only pharmaceutical care guideline according to mhGAP which full program was not implemented. All intervention process of the mhGAP has not been implemented in our study, so pharmaceutical care process might not increase quality of life of the schizophrenic patients. But when we analyzed each domain separately we still found the different in physical, psychological and environmental domain between both groups at the end of the study.

The criterion for inclusion of patient in this study was having DRPs. We found 143 DRPs in the study group and 126 DRPs in the control group. ADRs and failure to receive medicine were the most DRPs that found in every patient in both group. The failure to receive medicine decreased in the study group in month 4 which was significant difference from the control group. (p= 0.05) The ADRs decreased significantly difference in the study group in month 5 (p=0.010). The study of Onsombut et al found that DRPs were decreased 75.40% and 28.60% in the study and control group, respectively at 2 months. [Onsombut et al, 2011] The other DRPs seemed to be the same in both groups at the end of the study. But total DRPs were significantly difference in both groups which decreased from 143 to 103 in the study group and increased from 126 to 145 in the control group by the end of the study.

Conclusions

Pharmaceutical care by mhGAP program in patients with schizophrenia can increase medication adherence, decrease DRPs, psychotic severity and relapse rate by 6 months. The quality of life could not be determined in this study since we did not do full program of mhGAP.

References

Schizophrenia. National Institute of Mental Health online] 2013[cited 2013 July 20]. Available from: http://www.nimh.nih.gov/statistics/1SCHIZ.shtml.

Schizophrenia. World Health Organization [online] 2013[cited 2013 Jul 20]. Available from: http://www.who.int/mental_health/management/schizophrenia/en/.

Number and incidence schizophrenia patient Thailand in finical years 2011. Plan division department of mental health, Ministry of Public Health, Public Health [Online] 2011 [cited 20 Jul 2013]. Available from: http://www.plan.dmh.go.th/forums/index.php?topic=746msg799#msg799.

Stat finical year data 2011. Nakhon Ratchasima Rajanagarindra psychiatric hospital [Online] 2011[cited 20 Jul 2013]. Available from: http://www.jvkorat.go.th/newsite/%5Cstatistics%5CIPD%5.

Crismon ML, Argo TR and Buckley PF. Schizophrenia. In: Dipiro JT, Talbert RL, Yee GC, Matzke GR, Wells BG and Posey LM (Editors). *Pharmacotherapy: A Pathophysiologic Approach.* 7th ed. New York: McGraw-Hill Companies, Inc.; 2005.1099-120.

Maneesakorn S, Robson D, Gournay K and Gray R. An RCT of adherence therapy for people with schizophrenia in Chiang Mai, Thailand. *J Clin Nurs.* 2007 Jul; 16(7):1302-12.

mhGAP Intervention Guide. World Health Organization [Online] 2011 [cited 20 Jul 2013]. Available from: http://www.who.int/mental_health/publications/mhGAP_intervention_guide/en/

World Health Organization. mhGAP: Mental Health Gap Action Programme : scaling up care for mental, neurological and substance use disorders. Geneva, Switzerland, *World Health Organization, 2008*.

Wittes J. Sample size calculation for randomized controlled trials. Epidemilol Rev 2002; 24(1):39-53

Valenstein M, Kavanagh J, Lee T and et al. Using A Pharmacy-Based Intervention To Improve Antipsychotic Adherence Among Patients With Serious Mental Illness. *Schizophr Bull 2009*; 37(4):727-36.

Department of mental health, Ministry of Public Health, Public Health. The mhGAP Implementation Program for Psychosis: Practical Manual 2011-2012). Try volume 2011-2012; 1: Bangkok. Somdet Chaopraya Institute of Psychiatry; 2011.

Grymonpre RE, Didur CD, Montgomery PR, Sitar DS. Pill count, self-report, and pharmacy claims data to measure medication adherence in the elderly. *Ann Pharmacother* 1998; 32(7-8):749-54.

Eaddy M, Grogg A and Locldear J. Assessment of Compliance with Antipsychotic Treatment and Resource Utilization in a Medicaid Population. *Clin Ther 2005* ; 27(2):263-72.

Sakthong P, Chabunthom R and Charoenvisuthiwongs R. Psychometric properties of the Thai version of the 8-item Morisky Medication Adherence Scale in patients with type 2 diabetes. *Ann Pharmacother 2009* ; 43(5):950-7.

Almond S, Knapp M, Francois C, Toumi M and Brugha T. Relapse in schizophrenia: costs, clinical outcomes and quality of life. *British Journal of Psychiatry 2004*; 184(1):346-51.

Suzuki K, Awata S, Takano T, Ebina Y, Shindo T, Harada N and Matsuoka H. Adjusting the frequency of continuation and maintenance electroconvulsive therapy to prevent relapse of catatonic schizophrenia in middle-aged and elderly patients who are relapse-prone. *Psychiatry Clin Neurosci 2006*; 60(4):486-92.

Mahuntnirunkul S, Silapakit P, Poompaisarnchai W. Quality of life of people thai in critical economy. J Ment Health Thai 1998; 5(3): 4-15.

Kenkratoke J, Kanjanasilp, Leelathanaroek and Dudsadeeprasert J. Effect of pharmaceutical care in patients with schizophrenia and drug counseling for caregivers at Nakhon Ratchasima Rajanagarindra psychiatric hospital. *JNRRPH 2011*; 11(3):40-50.

Gumley A, O'Grady M, Mcnay L, Reilly J, Power K and Norrie J. Early intervention for relapse in schizophrenia: results of a 12-month randomized controlled trial of cognitive behavioural therapy. *Psychol Med 2003*; 33(3):419–431.

Herz MI, Lamberti JS, Mintz J, Scott R, O'Dell SP, McCartan L and Nix G. A program for relapse prevention in schizophrenia: a controlled study. *Arch Gen Psychiatry 2000* ; 57(3):277-83.

Onsombat W, Kanjanasilp and Leelathanalerk. Outcomes of Pharmaceutical Care in Schizophrenic Outpatients on Antipsychotics Adherence in Khonkean Rajanagarindra P sychiatric Hospital. *J Sci Techno MSU 2011*; 30(1): 62-73.