

Effectiveness of a Transitional Care Program for Persons with Schizophrenia

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ABSTRACT

A randomized control trial (RCT) design was conducted to test the effectiveness of a transitional care program for persons with schizophrenia. A sample of 80 persons with schizophrenia living in Ubon Ratchathani was recruited and randomly assigned to either an experimental (41) or control group (39). The experimental group received a transitional care program developed by the researcher, whereas the control group received the usual care. Data were collected at the 8th and 12th week after the intervention by using the Medication Compliance Inventory (MCI), the Positive and Negative Symptoms Scale (PANSS), the Thai World Health Organization Quality of Life Scale-Brief Version (WHOQOL-BREF-THAI) and readmission records. Data were analyzed using descriptive statistics and repeated measure analysis of variance.

The study results showed no significant difference in medication adherence and psychotic symptoms at the 8th and 12th week after intervention between experimental and control groups. For the quality of life, there was a significant difference over time between the experimental and control groups ($p < 0.05$). There were no readmissions for either group at the 8th week but the number of readmissions of the control group was higher than that of the experimental group at the 12th week. Although significant differences of medication adherence and psychotic symptoms were not found, significant differences between the experimental and control treatment options did exist for the quality of life. To confirm the intervention effects and generalizability to persons with schizophrenia for transitioning from hospital to home, this research should be repeated with a larger sample size and longer-term follow-up.

Keywords: Transitional care program for schizophrenia, Randomized control trial, Medication adherence, Psychotic symptom, Quality of life, Number of readmissions

INTRODUCTION

Schizophrenia is a chronic, disabling and potentially-terminal mental health illness. Approximately one percent of the world population has experienced schizophrenia (Buchanan and Carpenter, 2005). In Thailand, the prevalence of people with schizophrenia is 5.37 per 1,000 (Department of Mental Health, 2005). As a significant mental health problem, it also contributes to a large proportion of the demand on the mental health service system (Buchanan and Carpenter, 2005). The symptoms of schizophrenia can appear either gradually or suddenly, as well as being severe and long-lasting, so chronic schizophrenia often results in a high degree of disability (Lee et al., 2006). Moreover, schizophrenia not only affects the patient (Kimhy et al., 2004) but also can affect their families (Gaebel et al., 2006), community (Angermeyer and Dietrich, 2006), and healthcare budgets (Knapp, 2005).

Persons with schizophrenia experience changes that can lead to multiple problems. Acute psychotic exacerbations may precipitate a rapid return to the worst level of functioning (Buchanan and Carpenter, 2005), necessitating moving from home to psychiatric hospital. Not only do they have to deal with changes in their health but also in their surroundings, moving between their community with inadequate resources and hospitals with full resources (Moller, 2005). However, in Thailand, Pra-armataya et al. (2005) found that ineffective post-discharge outcomes influenced persons with schizophrenia including self-management of chronic illness, inadequate follow-up care, and inadequate patient and family preparation to manage care upon returning home. If not properly prepared, relapse symptoms, which include positive and negative symptoms, may lead to hospital readmission (Marland and Cash, 2001). Hospital readmission is a significant quality indicator for a smooth health transition from hospital to home (Naylor et al., 2004). Readmissions are required for self-care deficits and worsening psychotic symptoms (Bowers, 2005) due to non-adherence to antipsychotic medication (Hudson et al., 2004). Importantly, medication adherence is positively associated with quality of life (Swanson et al., 2004) and is negatively associated with positive symptoms and readmission for schizophrenia (Coldham et al., 2002). Therefore, preparation before hospital discharge is necessary to improve patients' functioning, prevent worsening of psychotic symptoms and hospital readmission, enhance medication adherence, and improve quality of life (Naylor et al., 2004).

Transitional care is a set of actions designed to ensure the coordination and continuity of healthcare as patients are transferred between different locations, or different levels of care within the same location (Parry et al., 2003). Transitional care was widely used in various groups of clients with physical illness who needed extended care and was considered to be very effective for the improvement of transitional care outcomes such as the number of readmissions, quality of life, severity of symptoms, and medication adherence (Naylor et al., 2004; Reynold et al., 2004; Coleman et al., 2006). Reports of research studies conducted in both Western countries (Naylor et al., 2004; Coleman et al., 2006) and Thailand (Thosingha, 2000; Angkhanit, 2005; Teeranute, 2005) have generated important information regarding transitional care programs for various

patient groups. However, little is known about the effectiveness of transitional care programs for patients with mental illness, particularly schizophrenia (Reynolds et al., 2004; Price, 2007). In Thailand and other countries, few studies have directly investigated the effectiveness of a transitional care program in persons with mental illness, including schizophrenia. The few studies that have been conducted seem to have some limitations including too small a sample size and lack of a comparison group, hence, the findings cannot be generalized (Pienthong, 2002; Checkchantuek, 2003; Reynolds et al., 2004; Price, 2007). To fill this gap, this study aims to test a transitional care program for persons with schizophrenia. The objective of this study is to describe the differences in medication adherence, psychotic symptoms, quality of life, and the number of readmissions of persons with schizophrenia between those receiving and not receiving a transitional care program.

Conceptual framework

Schizophrenia causes numerous critical problems. After psychotic symptoms stabilize and many difficulties no longer exist, patients' reaction to their illness shifts to the impact of schizophrenia on their health. In addition, during the transition from hospital to community, persons with schizophrenia experience very high, stress-inducing problems including psychotic symptoms, adjustment to future living, finding or maintaining employment, the possibility of future hospitalization, general well-being, as well as interpersonal stressors—loneliness and issues related to social activities, relationships with parents, and relationships with other relatives or significant others. The difficulties of negotiating this transition, in combination with the societal response toward those with schizophrenia, impact the ability to reintegrate into successful community living. Patients lack information about these stressors that may affect them during this transition.

To address these difficulties and stressors related to transitioning from the hospital setting back into community living, various approaches have been developed to help schizophrenia patients. Transitional care consisting of therapeutic nursing (Schumacher and Meleis, 1994) involves three interrelated concepts: assessment of readiness, preparation for transition, and role supplementation. Parry's (2003) concept of care transition has four components (medication self-management, personal health records, follow-up visits, and warning signs) to facilitate a smooth transition from hospital to home with a nurse Transition Coach. "Assessment of readiness" is a multidisciplinary effort and requires a comprehensive understanding of the client. It includes each of the conditions identifying the needs and health problems of the client. Another therapeutic is "preparation for transition" that creates optimal conditions for implementing new skills. Information and coaching (including skill training, counseling, and support with medication self-management, personal health records, follow-up visits, and warning signs) are provided to develop client skills. Finally, "role supplementation" is a transitional model used to decrease cost and enhance the quality of care for people being discharged from acute care settings. Clients participate in decisions about goals and the means of attaining their health. Nurses can assess the patients' readiness, prepare them and their environment, and choose the appropriate way to enhance

their skills. The outcomes were attained as evidenced by the achievement of patients' skills to obtain readiness for discharge, decrease psychiatric symptoms and the number of readmissions, as well as increasing medication adherence and quality of life. It is essential to consider the link between the process and quality of transitional care during hospitalization and after discharge in the community (Reynolds et al., 2004; Price, 2007; Rose et al., 2007) (see Figure 1).

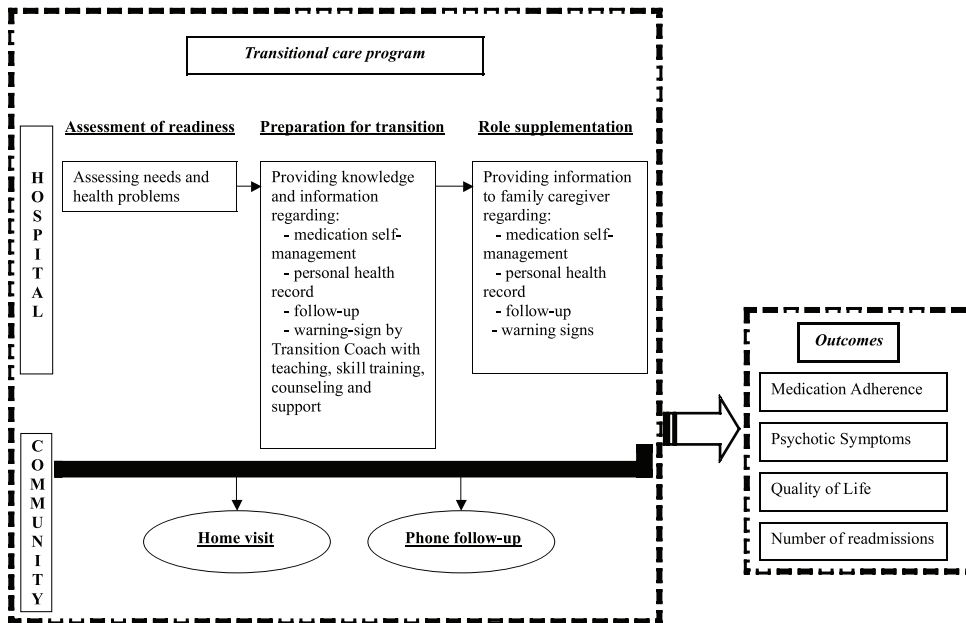


Figure 1. The conceptual model of this study.

MATERIALS AND METHODS

Study design and sample

Following ethical approval from the Research Ethics Review Committee, Faculty of Nursing, Chiang Mai University and Prasrimahabodi Psychiatric Hospital, Ubon Ratchathani, Thailand, the researchers conducted a randomized control trial. The subjects in this study were all 20 to 60 years of age, diagnosed with schizophrenia (as determined based on the Structured Clinical Interview of the Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition), and had been admitted to an inpatient unit at Prasrimahabodi Psychiatric Hospital. A trained nurse reviewed the medical records and screened persons with schizophrenia to determine whether they were eligible. The subjects who met the following criteria were invited to participate in this study: (1) a Mini Mental State Examination (MMSE) score ≥ 17 , (2) at least one family member staying with them, (3) residing within 50 kilometers of Prasrimahabodi Psychiatric Hospital, Ubon Ratchatani Province, (4) contactable by telephone or mail, (5) a willingness to have the researcher visit their home, and (6) provided informed

consent to participate in the research, either in verbal or written form. Subjects were excluded if they had received a diagnosis of drugs or alcohol dependence, or organic brain disorders. If persons with schizophrenia met the criteria, they were informed about the study and, if agreeable, informed consent was obtained.

The sample size was calculated by the formula for testing the difference between two means (Norman and Streiner, 2000). It yielded a control group and an experimental group of 33 persons each with a statistical power = 0.90 at $f = 0.05$, and a level of significance of 0.05. An additional 10 persons (30%) were added to each group to allow for the possibility of dropouts. The total sample size was 86 persons. Two of the experimental group and four of the control group dropped out of the study before completion. At the end of the study, 80 subjects (41 in the experimental group and 39 in the control group) provided post-program data completion.

Recruiting process

A trained nurse screened case notes of patients, with 86 meeting the inclusion criteria. The researcher and research assistant obtained written informed consent from relatives and patients on the first day of admission. Persons with schizophrenia were assessed at baseline and then randomized by an independent randomization service. The subjects in the usual care group continued receiving standard care, including medication treatment, occupational therapy, group counseling and recreational therapy. The subjects in the treatment group received the Transitional Care Program in addition to their usual care.

Intervention

In the experimental group, persons with schizophrenia were given appointments to participate in the small group program along with goals and a plan for individual home visits after enrolling and signing the consent form. The first hospital visit and baseline assessment was also arranged. The researcher and research assistant implemented the intervention following all protocols. Each member of the experimental group received eight hospital visits, two home visits, and three follow-up phone calls. The control group members received no intervention from the researcher or research assistant. Follow-up data were collected from both groups at the 8th and 12th week after finishing the program. A summary of the intervention process is provided in Table 1 below.

Table 1. Summary of the intervention process.

| Phase | Session | Contents | Method | Time |
|---|---|--|---|-------------------|
| 1. Hospitalization period | | | | |
| Assessment of readiness | The 1 st day of admission | - Establish the relationship - Introduce the program, orientation, assess the subject's needs and problems | - Individual sharing - Information from questionnaire & interviewing | 45-60 min/session |
| Preparation for transition | 1 | - Assess the subject's knowledge and understanding about schizophrenia | - Small group discussion - Participation in group process | 45-60 min/session |
| | 2 | - Personal Health Record | | |
| | 3 | - Providing symptom information about hallucinations, delusions, and coping methods - Review and discuss the warning signs and relapse | | |
| | 4 | - Review stress, causes, and its consequences - Discuss and practice how to manage stress | - Small group discussion - Participation in group process | 45-60 min/session |
| | 5 | - Identifying side effects - Review medication and its side effects as well as how to manage side effects effectively | | |
| | 6 | Physician follow-up and referral | | |
| | 7 | How to avoid alcohol and drug use | | |
| | 8 | The hospital discharge day: - Review and address medication and symptom self-management as well as personal health record - Providing phone number of researcher and healthcare setting | | |
| Role supplementation (for family caregiver) | 1 st day of hospitalization | - Establish the relationship/ Introduce the program - Assess caregiver's needs and problems | - Small group discussion | 30 min/each |
| | 2 nd week of hospitalization | - Discuss the caregiver's concerns/experiences and difficulties with management | | 30-45 min/each |
| 2. Post hospital discharge or at home period | | | | |
| Home visit | 1 st and 2 nd week after hospital discharge | - Assess the patient's health condition - Discuss the patient's concerns/problems | - Individual counseling at the first follow-up | 30-45 min/each |
| Phone follow-up | 1 st day, 3 rd week and 4 th week after hospital discharge | - Assess the patient's health condition - Discuss the patient's concerns/problems in daily living | - Individual counseling at the first follow-up | 15-30 min/each |

Measurements

The research instruments included the Demographic Data Questionnaire, Medication Compliance Inventory (MCI) (Putkao, 1998), Positive and Negative Symptom Scale (PANSS)(Kay et al., 1987), Thai World Health Organization Quality of Life Scale–Brief Version (WHOQOL-BREF-THAI) (Mahatnirunkul et al., 1997). Adequate internal validity of all research instruments has been demonstrated. Therefore, validity was not replicated in this study.

Medication adherence of persons with schizophrenia was measured with MCI, which contains seven items including consistency of taking medication, amount of medication taken, contact with outpatient clinic, and psychiatrist follow-up. The internal consistency reliability of MCI in this study was 0.82.

Psychiatric symptoms of persons with schizophrenia were measured with the Positive and Negative Symptom Scale (PANSS). It contains 29 items, including 7 positive symptoms that are related to psychosis and thought disorders, 7 negative symptoms that are related to deficits in affect and behavior, and 15 general psychopathology items that are related to the general severity of illness (e. g., anxiety). High scores indicate more psychotic symptoms and low scores indicate less psychotic symptoms. The internal consistency reliability of PANSS in this study was 0.87.

Quality of life was measured with the Thai World Health Organization Quality of Life Scale ñ Brief Version (WHOQOL-BREF-THAI). It contains 26 items for measuring four domains of quality of life including physical, psychological, social, and environmental. Twenty-three of the items had a positive view and three a negative view. The internal consistency reliability of WHOQOL-BREF-THAI in this study was 0.88.

For number of readmissions, information was obtained through a review of hospital admission records.

Assessors

Two research assistants were trained to evaluate the outcomes of intervention. After training, the research assistants were asked to rate two patients independently. High inter-rater reliability (Polit and Beck, 2004) was found. Importantly, the research assistants were blinded to the study’s aims and the subjects’ allocation status to either the experimental or control groups. Subjects were advised not to reveal details of intervention received during blinded assessments by research assistants.

Data collection

Data were collected over a 9-month period. At the initial appointment, an overview of the study was provided to all subjects. The researcher and research assistant explained to the prospective subjects the purpose and procedure of the study and gave assurances of the voluntary participation and confidentiality of participation. The subjects were randomly assigned to the experimental and control groups. The experimental group received the transitional care program. The control group received usual care. The questionnaire was used to collect

data on medication adherence, psychotic symptoms, and quality of life. Both the experimental and control groups were asked to complete assessments of cognitive impairment using MMSE before starting the intervention implementation (only participants with a score of 17 or higher were included in the study). At the 8th and 12th week following the transitional care intervention program, subjects were evaluated as to the effects of the program on medication adherence, psychotic symptoms, quality of life, and number of readmissions. During the 8th and 12th week follow-up period, the researcher and research assistant conducted individual telephone counseling with the experimental group subjects. If the subjects encountered problems, the researcher and research assistant made additional phone calls to help the subjects solve any problems. Each telephone contact required 5 to 15 minutes, depending on the participant's problems.

Data analysis

The characteristics of the study subjects were described by frequency and percentage. T-test, Chi-square test, and Fisher's exact test were used to test differences of the characteristic variables between the experimental and control groups. Means and standard deviations were used to describe the total scores on the MCI, PANSS, and WHOQOL-BREF-THAI scales. Frequency and percentage were used to describe the number of readmissions in the experimental and control groups at each point of time. Repeated measured analysis of variance (ANOVA) was used to compare the difference in MCI, PANSS, and WHOQOL-BREF-THAI scores between and within the experimental and control groups at each point of measurement.

RESULTS

Eighty subjects remained in the study. Their age ranged from 20-50 years (the mean age of the control group was 29.6 years; the mean age of the experimental group was 30.5 years). The majority was male (76.9% in the control group and 75.6% in the experimental group). The demographic data did not differ significantly between the experimental and control groups (Table 2).

Table 2. Demographic variables of the control and experimental groups.

| Demographic characteristics | Control group (n = 39) number (%) | | Experimental group (n = 41) number (%) | | p-value |
|--|--------------------------------------|-------|---|-------|--------------------|
| Age (years) | | | | | |
| 21-30 | 26 | 66.7 | 23 | 56.1 | .584 ^t |
| 31-40 | 8 | 20.5 | 13 | 31.7 | |
| 41-50 | 5 | 12.8 | 5 | 12.2 | |
| Range | 21-47 | | 20-50 | | |
| Mean (SD) | 29.62 (6.84) | | 30.51 (7.70) | | |
| Gender | | | | | |
| Male | 30 | 76.9 | 31 | 75.6 | .890 ^a |
| Female | 9 | 23.1 | 10 | 24.4 | |
| Marital Status | | | | | |
| Single | 24 | 61.5 | 26 | 63.4 | .985 ^a |
| Married | 13 | 33.4 | 13 | 31.7 | |
| Divorced/Widowed/Separated | 2 | 5.1 | 2 | 4.9 | |
| Education | | | | | |
| Primary school | 11 | 28.2 | 14 | 34.1 | .947 ^a |
| High school | 17 | 43.6 | 17 | 41.5 | |
| Diploma | 9 | 23.1 | 8 | 19.5 | |
| Bachelor's degree | 2 | 5.1 | 2 | 4.9 | |
| Occupation | | | | | |
| Unemployed | 11 | 28.2 | 12 | 29.3 | .983 ^a |
| Farmer | 14 | 35.9 | 16 | 39.0 | |
| Laborer | 13 | 33.3 | 12 | 29.3 | |
| Merchant | 1 | 2.6 | 1 | 2.4 | |
| Personal income (THB per month) | | | | | |
| < 1,000 | 23 | 58.9 | 26 | 63.4 | 1.000 ^a |
| 1,001-2,000 | 6 | 15.4 | 5 | 12.3 | |
| 2,001-3,000 | 8 | 20.5 | 8 | 19.5 | |
| > 3,001 | 2 | 5.2 | 2 | 4.8 | |
| Adequacy of income | | | | | |
| Adequate | 11 | 28.2 | 11 | 26.8 | .890 ^a |
| Inadequate | 28 | 71.8 | 30 | 73.2 | |
| Treatments (more than one answer) | | | | | |
| Oral antipsychotic medication | 39 | 100.0 | 41 | 100.0 | .376 ^a |
| Depot antipsychotic medication | 30 | 76.9 | 36 | 87.8 | .669 ^a |
| Supportive psychotherapy | 23 | 59.0 | 25 | 61.0 | .611 ^a |
| Electroconvulsive Therapy (ECT) | 11 | 28.2 | 9 | 22.0 | .504 ^a |
| Cognitive Behavior Therapy | 0 | 0.0 | 3 | 7.3 | .243 ^a |

Table 2. (continued).

| Demographic characteristics | Control group (n = 39) number (%) | | Experimental group (n = 41) number (%) | | p-value |
|--|--------------------------------------|------|---|------|-------------------|
| Reasons of admission (more than one answer) | | | | | |
| Discontinuation of medication | 31 | 79.5 | 34 | 82.9 | .136 ^a |
| Alcohol and drug use | 25 | 64.1 | 22 | 53.7 | .349 ^a |
| Stressful life event | 12 | 30.8 | 13 | 31.7 | .964 ^a |
| Suicide attempt | 3 | 7.7 | 2 | 4.9 | .671 ^a |
| Duration of being schizophrenia (years) | | | | | |
| 1-5 | 37 | 94.9 | 39 | 95.1 | .800 ^t |
| 6-10 | 5 | 5.1 | 2 | 4.9 | |
| Range | 1-7 | | 1-7 | | |
| Mean (SD) | 2.64 (1.41) | | 2.56 (1.42) | | |

Note: ^t = t-test; ^a = Chi-square test

Medication adherence in the experimental and control groups significantly increased at the 8th week and then decreased at the 12th week (Figure 2). Comparing changes in the medication adherence between the two groups at the 8th and 12th week, the results showed no significant differences. When the medication adherence scores were compared within each group, there were significant differences in medication adherence at baseline, 8th week, and 12th week in both groups (Table 3).

Table 3. Mean difference in medication adherence between groups and points of measurement.

| Medication adherence | SS | Df | MS | F | p-value |
|------------------------|--------|---------|-------|-------|---------|
| Within subject | | | | | |
| Time | 6.429 | 1.349 | 4.766 | 5.605 | .012 |
| Time x group | .713 | 1.349 | .528 | .621 | .478 |
| Error | 89.479 | 105.232 | .850 | | |
| Between subject | | | | | |
| Group | 1.655 | 1 | 1.655 | 1.663 | .201 |
| Error | 77.641 | 78 | 1.663 | | |

Note: Time means different time intervals, such as baseline, 8th week, and 12th week after intervention.

- Time x Between Group means interaction between time and group.
- Evaluated by using repeated measures ANOVA, p = 0.05

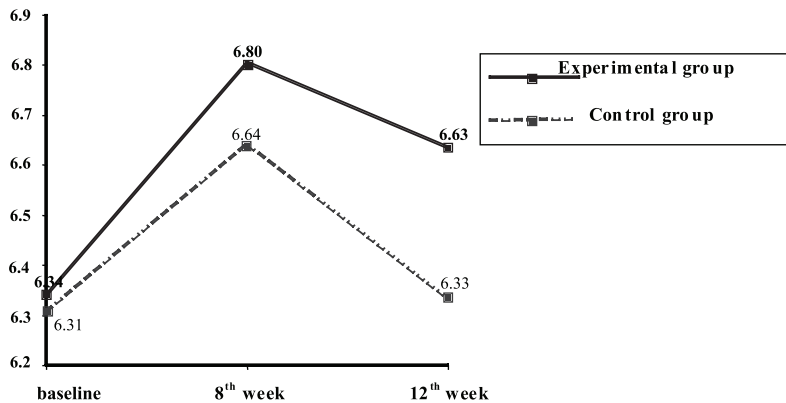


Figure 2. Changes in medication adherence of the control and experimental groups at baseline, 8th week, and 12th week.

The psychotic symptoms in the experimental groups decreased at the 8th week and 12th week whereas those in the control group decreased at the 8th week and then increased at the 12th week (Figure 3). Comparing changes in the psychotic symptoms between the two groups at the 8th week and 12th week, the results showed no significant differences. When the psychotic symptoms scores were compared within each group, there was a significant difference in psychotic symptoms at baseline, 8th week, and 12th week in both groups (Table 4).

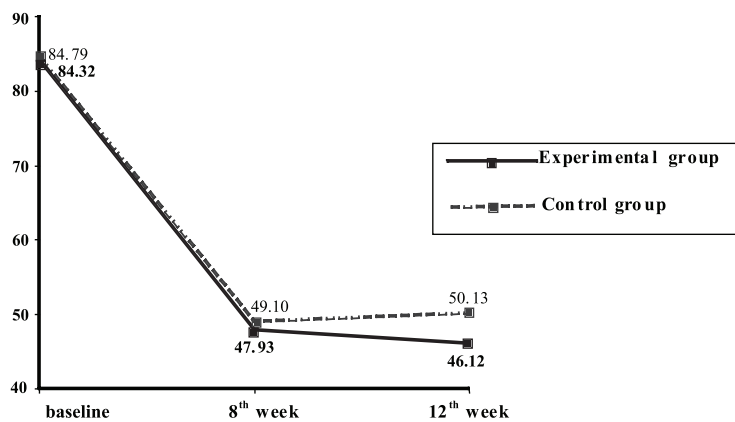


Figure 3. Changes in psychotic symptoms of the control and experimental groups at baseline, 8th week, and 12th week.

Table 4. Mean difference in psychotic symptoms between groups and points of measurement.

| Psychotic Symptoms | SS | df | MS | F | p-value |
|------------------------|-----------|--------|-----------|---------|---------|
| Within subject | | | | | |
| Time | 69991.839 | 1.083 | 64648.316 | 302.176 | .000 |
| Time x group | 139.572 | 1.083 | 128.917 | .603 | .452 |
| Error | 18066.861 | 84.447 | 213.943 | | |
| Between subject | | | | | |
| Group | 213.421 | 1 | 213.421 | 1.879 | .174 |
| Error | 8859.496 | 78 | 113.583 | | |

Quality of life in the experimental groups increased at the 8th week and 12th week, whereas that in the control group decreased at the 8th week and 12th week (Figure 4). Comparing changes in the quality of life between the two groups at the 8th week and 12th week, the results showed significant differences. When the quality of life scores were compared within each group, there were significant differences in the quality of life at baseline, 8th week, and 12th week in both groups (Table 5).

Table 5. Mean difference in quality of life between groups and points of measurement.

| Quality of Life | SS | df | MS | F | p-value |
|------------------------|-----------|---------|-----------|---------|---------|
| Within subject | | | | | |
| Time | 3023.952 | 1.650 | 1832.171 | 58.656 | .000*** |
| Time x group | 5720.885 | 1.650 | 3466.205 | 110.969 | .000*** |
| Error | 4021.190 | 128.737 | 31.236 | | |
| Between subject | | | | | |
| Group | 11017.617 | 1 | 11017.617 | 43.699 | .000*** |
| Error | 19665.983 | 78 | 252.128 | | |

From Table 6, at the 8th week, both groups had no readmissions, whereas, at the 12th week, there were three (7.7%) readmissions in the control group and one in the experimental group (2.4%).

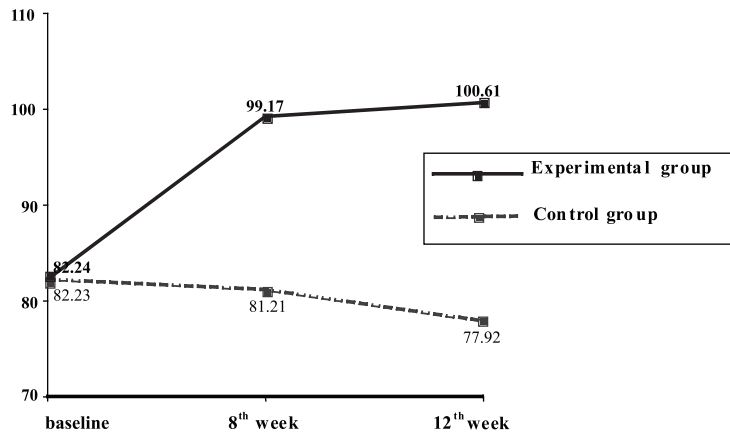


Figure 3. Changes in psychotic symptoms of the control and experimental groups at baseline, 8th week, and 12th week.

Table 6. Number of readmissions at the 8th week and 12th week of the control and experimental groups.

| Number of Readmissions | Control group (n= 39) | Experimental group (n= 41) |
|------------------------|------------------------|-----------------------------|
| 8 th week | 0 | 0 |
| 12 th week | 3 (7.7%) | 1 (2.4%) |

DISCUSSION

The transitional care program was effective in improving the quality of life in persons with schizophrenia. At the end of the program, the mean of the quality of life in the experimental group was better than that in the control group at a level of significance of 0.05. This finding is consistent with the finding of Aguglia et al. (2007) who reported that psychoeducational intervention was effective in improving the quality of life among persons with schizophrenia. The subjects in the experimental group reported improvement due to several factors such as the ability to manage symptoms, stress management skills, and medication adherence. As a result, their psychotic symptoms decreased and their quality of life improved. Many studies reported that psychotic symptoms were negatively associated with a schizophrenia patient’s quality of life (Smith, 2002; Narvaez et al, 2008). Moreover, Olfson et al. (2000) found that medication adherence was an important predictor of quality of life in persons with schizophrenia as well as that medication adherence had a positive effect on quality of life (Puschner et al., 2009).

In addition, the number of readmissions of the subjects in the experimental group was lower than that of the patients in the control group at the 8th and 12th week. This is supported by Mccann et al., (2008), who stated that medication compliance could help prevent relapse and decrease the number of hospitalizations.

Moreover, according to Suzuki et al. (2003), psychotic symptoms are associated with the number of readmissions. Importantly, the present study supports the benefits of home visits, and their associated interpersonal relationships, making subjects and families better able to manage symptoms and medication as well as prevent readmissions. Therefore, the program was successful in decreasing the number of readmissions.

The transitional care program also provided specific knowledge, skills and motivation to help those in the experimental group, through: 1) assessment of readiness—assessing needs and health problems, 2) preparation for transition—providing knowledge and information regarding medication self-management, personal health record, follow-up, and warning-signs by transition coach with teaching, skill training, counseling, and support, and 3) role supplementation—providing information to family caregivers regarding medication self-management, personal health record, follow-up, and warning-signs. By so doing, they were better able to understand the nature of their illness, how to manage medication and symptoms, and identify needs and problems through coaching during hospital, home, and phone visits.

However, no significance differences were found between the experimental and control group regarding their medication adherence and psychotic symptoms. This may be because before the transitional care program, most subjects in both groups had high scores in their medication adherence and low scores in psychotic symptoms. After the acute phase, many schizophrenia patients are less symptomatic and function better, partly because of taking antipsychotic medication (Harrow and Jobe, 2007). However, after acute hospital treatment, when these patients leave the hospital, not all patients originally treated with antipsychotic medications continue on these medications (Lieberman et al., 2005).

The increase in medication adherence at the 8th week following intervention may be a result of discussing the problem with the patients and caregivers in order to convince the patient to recognize the importance of the appointment for receiving medication from the home visit and phone follow-up. This is supported by Kopelowicz et al. (2003), who found that the discussion around the issue of medication self-management is associated with medication adherence. In addition, Chaiyajan (2007) conducted a psychoeducational program in Thai persons with schizophrenia using telephone contacts regarding disease, medication, and symptoms. The results revealed that those in the experimental group reported a more positive attitude toward medication than those in the control group. It is likely that the program to enhance the patient's attitude toward medication had a positive effect on medication adherence. The most reliable factor to predict the patient's medication adherence was the patient's attitude toward medication (Lan et al., 2003). However, given both the experimental and control groups in this research showed high medication adherence before the program, and both received knowledge and skills from their healthcare providers, it is likely a ceiling effect was reached, with both groups achieving and maintaining high medication adherence.

In addition to the decrease in psychotic symptoms of the control group, it

also significantly decreased at the 8th week follow-up. This decrease may be due to their continually taking antipsychotic medication. In recent years, some have suggested that the initial therapeutic dose of antipsychotic medication should be maintained in the long-term treatment of schizophrenia (Lehman et al., 2004). The use of antipsychotic medication has been shown to reduce the risk of relapse symptoms (Lieberman et al., 2005). Psychotic symptoms gained in the control group may be due to the psychoeducation routinely provided by nursing personnel and the communication of knowledge from the experimental subjects.

CONCLUSION

The transitional care program for persons with schizophrenia aimed to assess readiness and prepare patients regarding information and skills for transition from hospital to their home or community as well as help family caregivers prepare role supplementation to provide care effectively for patients. The results showed that the program had an effect on quality of life and number of readmissions of persons with schizophrenia. Replication of the research with a larger sample size and longer-term follow-up should be conducted in order to reassure the intervention effects and generalizability to persons with schizophrenia for bridging the transition from hospital to home.

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REFERENCES

- Aguglia, E., E. Pascolo-Fabrici, F. Bertossi, and M. Bassi. 2007. Psychoeducational intervention and prevention of relapse among schizophrenia disorders in the Italian community psychiatric network. *Clinical Practice and Epidemiology in Mental Health* 3: 7-19.
- Angermeyer, M. C., and S. Dietrich. 2006. Public beliefs about and attitudes towards people with mental illness: A review of population studies. *Acta Psychiatrica Scandinavica* 113: 163-179.
- Angkhanit, M. 2005. Effectiveness of transitional care program for persons with heart failure. Master's thesis. Chiang Mai University, Chiang Mai, Thailand.
- Beebe, L.H., and L. Tian. 2004. TIPS: Telephone intervention—problem solving for persons with schizophrenia. *Issues Mental Health Nursing* 25(3): 317-329.
- Bowers, L. 2005. Reasons for admission and their implications for the nature of acute inpatient psychiatric nursing. *Journal of Psychiatric and Mental Health*

- Nursing 12(2): 231-236.
- Buchanan, R. W., and W. T. Carpenter. 2005. Concept of schizophrenia (Page 1,329-1,345). In B. J. Sadock and V.A. Sadock (eds) Kaplan and Sadock's comprehensive textbook of psychiatry (8th ed.). Lippincott Williams and Wilkins, Philadelphia.
- Chaiyajan, W. 2007. Effects of psychoeducational program on attitude toward medication and compliance with first appointment after discharge among schizophrenic patients. Master's thesis. Mahidol University, Bangkok, Thailand.
- Checkchantuek, P. 2003. Evaluation of promotion in participatory of community for caring psychiatric patients. Paper presented at the Thai Mental Health Annual Conference, Bangkok, Thailand.
- Coldham, E. L., J. Addington, and D. Addington. 2002. Medication adherence of individuals with a first episode of psychosis. *Acta Psychiatrica Scandinavica*, 106: 286-290.
- Coleman, E. A., C. Parry, S. Chalmers, and S. Min. 2006. The care transitions intervention: Results of a randomized control trial. *Archives of Internal Medicine* 166(17): 1822-1828.
- Department of Mental Health. 2005. The statistical report of the number of inpatients in mental hospitals under Department of Mental Health. Department of Mental Health, Ministry of Public Health, Bangkok.
- Gaebel, W., H. Zäske, and A. E. Baumann. 2006. The relationship between mental illness severity and stigma. *Acta Psychiatrica Scandinavica* 113(Suppl. 429): 41-45.
- Harrow, M., and T. H. Jobe. 2007. Factors involved in outcome and recovery in schizophrenia patients not on antipsychotic medications: A 15-year multifollow-up study. *Journal of Nervous and Mental Disease* 195(5): 406-414.
- Hudson, T. J., R. R. Owen, C. R. Thrush, X. Han, J. M. Pyne, P. Thapa, & G. Sullivan. 2004. A pilot study of barriers to medication adherence in schizophrenia. *Journal of Clinical Psychiatric* 65(2): 211-216.
- Kay, S. R., A. Fiszbein, and L. A. Opler. 1987. The Positive and Negative Syndrome Scale (PANSS) for schizophrenia. *Schizophrenia Bulletin* 13(2): 261-276.
- Kimhy, D., J. M. Harkavy-Friedman, and E. A. Nelson. 2004. Identifying life stressors of persons with schizophrenia at hospital discharge. *Psychiatrics Services* 55(12): 1444-1445.
- Knapp, M. 2005. Costs of schizophrenia. *Psychiatry* 4(10): 33-35.
- Kopelowicz, A., R. Zarate, V. G. Smith, J. Mintz, and R. P. Liberman. 2003. Disease management in Latinos with schizophrenia: a family-assisted, skill training approach. *Schizophrenia Bulletin* 29(2): 211-227.
- Lan, C. M., S. J. Shiau, and L. C. Li. 2003. Knowledge, beliefs, attitudes and drug compliance in schizophrenia patients [Electronic version]. *Tzu Chi Medical Journal* 15(6): 369-374.
- Lee, H. C., S. Y. Tsai, H. C. Lin, and C. C. Chen. 2006. The association between psychiatrist numbers and hospitalization costs for schizophrenia patients: A population-based study. *Schizophrenia Research* 81(2-3): 283-290.

- Lehman, A. F., J. Kreyenbuhl, R. W. Buchanan, F. B. Dickerson, L. B. Dixon, R. Goldberg, L. D. Green-Padenet, W. N. Tenhula, D. Boerescu, C. Tek, N. Sandson, and D. M. Steinwachs. 2004. The Schizophrenia Patient Outcomes Research Team (PORT): Updated treatment recommendations. *Schizophrenia Bulletin*, 30(2): 193-217.
- Lieberman, J.A., T. S.Stroup, J. P. McEvoy, M. S. Swartz, R. A. Rosenheck, D. O. Perkins, R. S. Keefe, S. M. Davis, C. L. Davis, B. D. Lebowitz, J. Severe, and J. K. Hsiao. 2005. Effectiveness of antipsychotic drugs in patients with chronic schizophrenia. *New England Journal of Medicine* 353(12): 1209-1223.
- Mahatnirunkul, S, W. Tanthipiwattanasakul, W. Phumpaisanchai, K. Wongsuwan, and R. Prammanajirungkul. 1997. Comparison of the WHOQOL-BREF (26 items). Suan Prung Psychiatric Hospital, Chiang Mai, Thailand.
- Marland, G. R., and K. Cash. 2001. Long-term illness and patterns of medicine taking: are people with schizophrenia a unique group? *Journal of Psychiatric and Mental Health Nursing* 8(3): 197-204.
- Mccann, T. V., G. Boardman, E. Clark, and S. Lu. 2008. Risk profiles for non-adherence to antipsychotic medications. *Journal of Psychiatric and Mental Health Nursing*, 15(8): 622-629.
- Moller, M. D. 2005. Neurobiological responses and schizophrenia and psychotic disorders (Page 386-422). In G. W. Stuart and M. T. Laraia (eds) *Principles and practice of psychiatric nursing* (8th ed.). CV Mosby, St. Louis.
- Narvaez, J. M., E. W. Twamley, C. L. McKibbin, R. K. Heaton, and T. L. Patterson. 2008. Subjective and objective quality of life in schizophrenia. *Schizophrenia Research* 98(1-3): 201-208.
- Naylor, M. D., D. A. Brooten, R. L. Campbell, G. Maislin, K. M. McCauley, and J. S. Schwartz. 2004. Transitional care of older adults hospitalized with heart failure: A randomized, controlled trial. *Journal of the American Geriatrics Society* 52(5): 675-684.
- Norman, G.R., and D. L. Streiner. 2000. *Biostatistics: The Bare Essential* (2nd ed) B. C. Decker, Hamilton.
- Olfson, M., D. Mechanic, S. Hansell, C. A. Boyer, J. Walkup, and P. J. Weiden. 2000. Predicting medication noncompliance after hospital discharge among patients with schizophrenia. *Psychiatric Services* 51(2): 216-222.
- Parry, C., E. Coleman, J. Smith, J. Frank, and A. Kramer. 2003. The care transition: A patient-centered approach to ensuring effective transfers between sites of geriatric care. *Home Health Services Quarterly* 22(3): 1-17.
- Pienthong, C. 2002. Development of mental health network. Paper presented at the Thai Mental Health Annual Conference, Bangkok, Thailand.
- Polit, D. F., and C. T. Beck. 2004. *Nursing research: principle and methods* (7th ed) Lippincott Williams and Wilkins, Philadelphia.
- Pra-armataya, S., D. Kotchaprom, and T. Thanee. 2004. A case research of Prasrimahabhodi Psychiatric Hospital, Ubon Ratchathani: To develop a model for discharging of psychiatric patients having complicated problems to

- communities. *Journal of Psychiatric Nursing and Mental Health of Thailand* 18(1): 35-45.
- Price, L. M. 2007. Transition to community: A program to help clients with schizophrenia move from inpatient to community care; a pilot study. *Archives of Psychiatric Nursing* 21(6): 336-344.
- Puschnere, B., M. C. Angermayera, M. Leeseb, G. Thornicroftb, A. Schenec, M. Kikkertc, L. Burtid, M. Tansellad, & T. Beckere. 2009. Course of adherence to medication and quality of life in people with schizophrenia. *Psychiatry Research* 165(3): 224-233.
- Putkao, S. 1998. Factors affecting medication compliance in schizophrenic patients. Master's thesis, Chiang Mai University, Chiang Mai, Thailand.
- Reynolds, W., W. Lauder, S. Sharkey, S. Maciver, T. Veitch, and D. Camaron. 2004. The effects of a transitional discharge model for psychiatric patients. *Journal of Psychiatric and Mental Health Nursing* 11(1): 82-88.
- Rose, L. E., L. Gerson, and C. Carbo. 2007. Transitional care for seriously mentally ill persons: A pilot study. *Archives of Psychiatric Nursing* 21(6): 297-308.
- Schumacher, K.L., and A. I. Meleis. 1994. Transitions: a central concept nursing. *IMAGE: Journal of Nursing Scholarship* 26(2): 119-127.
- Smith, R. P. (2002). Quality of life in schizophrenia: The relationship between participant self-report and clinical assessment. *Abstract Academic Health Services Research Health Policy Meeting*, 19, 14.
- Srihiran, R. 2001. Effect of telephone follow-up on self care practices of schizophrenia patients after discharge. Master's thesis, Chiang Mai University, Chiang Mai, Thailand.
- Suzuki, Y., S. Yasumura, A. Fukao, and K. Otani. 2003. Associated factors of readmission among schizophrenic patients. *Psychiatry and Clinical Neurosciences* 57(6): 555-561.
- Swanson, J. W., M. S. Swartz, and E. Elbogan. 2004. Effectiveness of atypical antipsychotic medications in reducing violent behavior among persons with schizophrenia in community-based treatment. *Schizophrenia Bulletin* 30(1): 3-20.
- Teeranute, A. 2005. Development of transitional care program model for the elderly with chronic illness. Ph.D. dissertation, Khon Kaen University, Khon Kaen, Thailand.
- Thosingha, O. 2000. The effects of transitional care program on facilitating severely burn survivors from hospital to home. Ph.D. dissertation, Mahidol University, Bangkok, Thailand.