

## Effectiveness of a Coaching Program for Family Caregivers of Persons with Schizophrenia: A Randomized Controlled Trial

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### Abstract

Basic knowledge regarding schizophrenia, having positive attitudes towards it, and possessing the necessary care skills are crucial aspects for caregivers have in order to provide sustainable care for a relative with schizophrenia. Coaching can facilitate successful caregiving through the understanding of a caregiver's knowledge, attitudes, and skills. This study examined the effectiveness of a coaching program in enhancing family caregivers' knowledge, attitudes, and skills related to caring for persons with schizophrenia. 100 primary family caregivers were randomly recruited. Of these, 50 participated in a coaching program, which lasted 7 weeks and employed implementation methods such as discussion, watching videos, providing information, training, observation, demonstration, role-plays, and telephone follow-ups. The coaching group participants showed significantly higher knowledge levels ( $F = 85.77, p < 0.001$ ), lower levels of negative attitudes towards schizophrenia ( $F = 13.22, p < 0.001$ ), and higher skill levels ( $F = 22.94, p < 0.001$ ) than those in the routine care group. The results also discovered significant improvements in knowledge, attitudes, and caregiving skills on follow-ups at week 2 and 1 month after the completion of the program in the coaching group, as compared to those in the routine care group ( $p < 0.001$ ). The coaching program examined in this study clearly indicated positive effects on caregiver knowledge, attitudes, and caregiving skills when compared with routine care.

**Keywords:** Coaching program, knowledge, attitudes, skills, schizophrenia

### Introduction

Schizophrenia has been reported in all countries and cultures. The prevalence of schizophrenia is increasing worldwide, and its current incidence rate is about 20 cases per 100,000 population per year. The age of onset is in early adulthood, between the ages of 15 and 35. The onset is 4 - 5 years earlier in males (15 - 25 years) than in females (25 - 35 years) [1]. Schizophrenia does not only cause disturbances for the patient, but also for their family [2]. Family caregivers experience a series of conflicts and tend to show emotional responses such as fear of violence, high levels of burden, stigma, frustration, sadness, feeling angry, and timelessness [3-5].

The impacts of stigmatization and misconceptions concerning persons with schizophrenia are significant [6]. Family caregivers face difficulties such as social stigma, and lack the necessary skills and resources to deal with the patient's behavior while caring for them [3-7]. Knowledge, positive attitudes, and appropriate skills are necessary while caring for relatives with long-term schizophrenia at home [8-10]. Hence, promoting a deeper level of understanding of schizophrenia, maintaining a positive attitude, and acquiring the necessary caregiving skills are essential aspects in improving the family caregivers'

performance in caring for their sick family members. The caregivers should have an adequate level of knowledge of schizophrenia, caregiving skills, and positive attitudes in order to be competent in providing satisfactory care for their loved ones [11,12]. Therefore, caregivers, as the “primary nurse” of the sick family members require interventions that help improve their knowledge, attitude, and skills in caring for people with schizophrenia [13]. To enhance the caregivers’ knowledge, attitude, and skills in caring for such patients at home, psychiatric nurses who are responsible for helping caregivers need to understand how to fulfill the caregivers’ needs and share experiences related to caring for a sick family member who has been discharged early from hospital [14]. Hence, a coaching program intervention can be used to improve the family caregivers’ knowledge, attitude, and skills in providing an optimal caring performance for their ill relatives [15,16].

In this study, the coaching program was based on the coaching process derived from Thorpe and Clifford [16] and Kolb [22]. It aimed to assist the caregivers in enhancing their knowledge, attitudes, and caregiving skills in providing effective care for their loved ones. The integration of the experiential learning theory into a coaching program process may help the researcher to support, encourage, and help the caregiver as an expert and the person “making it happen” [16]. Most coaching program studies have been conducted in other populations [15,17-19]. To date, no research regarding a coaching program for family caregivers in a psychiatric setting in Indonesia has been conducted. Most studies in psychiatric nursing setting have focused on behavioral therapy and psychoeducational programs [13,20]. Schizophrenic persons received a routine care program referred to as regular care services, which are provided by nurses in the outpatient department. The services comprise bi-weekly and monthly medical consultation and treatment planning by an attending psychiatrist and a brief family educational program provided by a psychiatric nurse. The educational program involves a group consultation using the traditional approach after seeing a psychiatrist, and the topics generally focus on the disease, taking medication, and what the family could do for their ill relative at home. In addition, the lessons learned from such a coaching program are expected to help family caregivers to obtain better knowledge, attitudes, and skills. With a coaching program, it is expected that they will be able to improve their performance regarding providing effective care for their sick family member. Therefore, it is important to develop and test the effectiveness of a coaching program on family caregivers’ knowledge, attitudes, and skills in caring for persons with schizophrenia.

## Materials and methods

### Research design

A randomized controlled trial with a 2-group repeated-measures design was used to examine and compare the effectiveness of a coaching program to family intervention for family caregivers of schizophrenia persons. The primary outcomes of the trial involved the caregivers’ knowledge, attitudes, and skills. The main results were that, over a 1-month follow-up after the 1<sup>st</sup> post-test, a significantly higher level in the knowledge of caregivers, and a lower level in the attitudes of caregivers and for caregiving skills, was seen in the caregivers in the coaching group than in those who received routine care only.

### Population and sample

The primary caregivers of persons with schizophrenia were selected randomly by research assistants using minimization randomized program in the outpatient department at a psychiatric hospital in Medan, Indonesia. One-hundred primary caregivers met the inclusion criteria: (1) age 18 to 65 years old; (2) mentally alert; (3) able to understand and read Bahasa Indonesia; (4) to be a primary caregiver; (5) living with and caring for a family member, who, at recruitment, had met the DSM-IV-TR diagnostic classification for schizophrenia for at least 1 year; (6) able to be accessed by telephone; and (7) have a DVD player at home. Caregivers who cared for more than one relative with schizophrenia, and/or did not complete the full program, were excluded from the study.

**Sample size and estimated study power**

The sample size of this study was estimated using power analysis, and the effect size was obtained from a meta-analysis [19]. The average effect size (*d*) suggested by a meta-analysis on 18 studies of the effect of coaching on an individual level was 0.60. According to Cohen [21], the required sample size for a significant criterion is 0.05, power = 0.80, and the effect size (*d*) = 0.60, this effect size indicating a moderate effect size of 0.60 (moderate effect size ranging from 0.40 to 0.60). Therefore, the effect size from the *F*-test on the mean in the analysis of variance and covariance, computed by using the equation from [21], yields a requirement of 45 participants in each group. From the 420 caregivers that met the criteria of the study, 100 were randomly selected and assigned to the 2 groups (n = 50 caregivers in each group), with an attrition rate of 10 %.

**Procedure of the coaching program**

Participants in the coaching group were intended to receive the coaching program intervention, which consisted of teaching about the nature of schizophrenia, educating on how to provide effective care for persons with schizophrenia, and a telephone contact at weeks 5 and 6 to evaluate their performance regarding care and to help improve their knowledge, attitude, and skills for future care. The routine nursing care for the caregivers in the outpatient department included providing a brief family education about relapse prevention, having regular every 2 weeks or monthly check-ups, promoting self-care for daily living, and following a medication program. Participants in the routine care group received the routine care provided by the psychiatric nurse and the psychiatrist at the outpatient department. Each participant participated in the routine care program for a period of 7 weeks. Finally, the researcher assessed the participants' success concerning each objective. Participants were also asked if they had any questions regarding the coaching program activities. Meanwhile, participants in the routine care group did not undergo the coaching program.

**Table 1** Coaching program for family caregivers.

Steps of coaching	Time	Objectives	Coaching activities
<b>Step 1:</b> Clarifying coaching needs and goals ♦ Group activity	Week 1	<ul style="list-style-type: none"> <li>Caregiver understands the goals of the program</li> <li>Coach identifies a real need for coaching</li> <li>Coach the caregiver to achieve the goals of the coaching program</li> </ul>	<b>Introduction of the coaching program</b> <ul style="list-style-type: none"> <li>Definition, objectives, and the process of the coaching program</li> <li>List the objectives of the coaching program</li> </ul>
<b>Step 2:</b> Agreeing to specific development needs ♦ Group activity	Week 2	<ul style="list-style-type: none"> <li>Caregiver identifies the needs of caregivers</li> <li>Caregiver learns about schizophrenia from a video</li> <li>Coach identifies the caregivers' existing knowledge, attitudes and caregiving skills related to schizophrenia</li> <li>Coach helps caregiver identify which resources to access or seek professional help</li> </ul>	<ul style="list-style-type: none"> <li>Discuss needs related to caregiving</li> <li>Review caregiver understanding about schizophrenia</li> <li>Discuss existing attitudes towards schizophrenia</li> <li>Discuss skills used in caring for ill relatives at home</li> <li>Recognize resources to access or seek professional help such as seeing the psychiatrist regularly at the psychiatric hospital or discussing any difficulties with community mental health nurses in the community health center</li> </ul>
<b>Step 3:</b> Formulating a detailed plan ♦ Group activity	Week 3	<ul style="list-style-type: none"> <li>Coach caregiver to develop an action plan</li> <li>Caregiver develops new skills for caring</li> </ul>	<ul style="list-style-type: none"> <li>Set up a plan to care for the sick family member</li> <li>Teach and educate caregiver about important skills (problem solving, managing hallucinations, delusions, aggressive behavior, effective communication, and medication adherence skills)</li> <li>Demonstrate skills needed to be improved through role-plays on a given scenario</li> <li>Assess caregiver's confidence in implementing goals and action plan</li> </ul>

Steps of coaching	Time	Objectives	Coaching activities
<b>Step 4:</b> Performing activities ♦ Individual activity	Week 4	<ul style="list-style-type: none"> <li>Caregiver implements the agreed plans</li> <li>Coach collects evidence on caregiver performance</li> </ul>	<ul style="list-style-type: none"> <li>Brief review of topic of previous step</li> <li>Implementation of agreed plans</li> <li>Identification of problems in applying plans</li> <li>Evaluate caregiver on what is done right and what still needs to be improved</li> </ul>
<b>Step 5:</b> Reviewing activities and planning to improve performance ♦ Individual activity	Week 5 and 6	<ul style="list-style-type: none"> <li>Coach identifies strengths and areas for development</li> <li>Caregiver revises action plans</li> </ul>	<ul style="list-style-type: none"> <li>Follow up caregiver progress in achieving goals and implementing plans by using phone calls</li> <li>Modify plans</li> <li>Summarize all activities performed by caregiver</li> <li>Evaluate objectives and overall performance of coaching program</li> </ul>
<b>Step 6:</b> Terminating the coaching program ♦ Group activity	Week 7	<ul style="list-style-type: none"> <li>Coach evaluates overall accomplishment of coaching program</li> <li>Prepare caregiver to continue self-development plans</li> </ul>	<ul style="list-style-type: none"> <li>Encourage caregiver to continue teaching and educating the ill relative</li> <li>Encourage caregiver to contact coach by telephone if need be to discuss caring performance</li> <li>Terminate coaching program</li> </ul>

### Methods of the coaching program

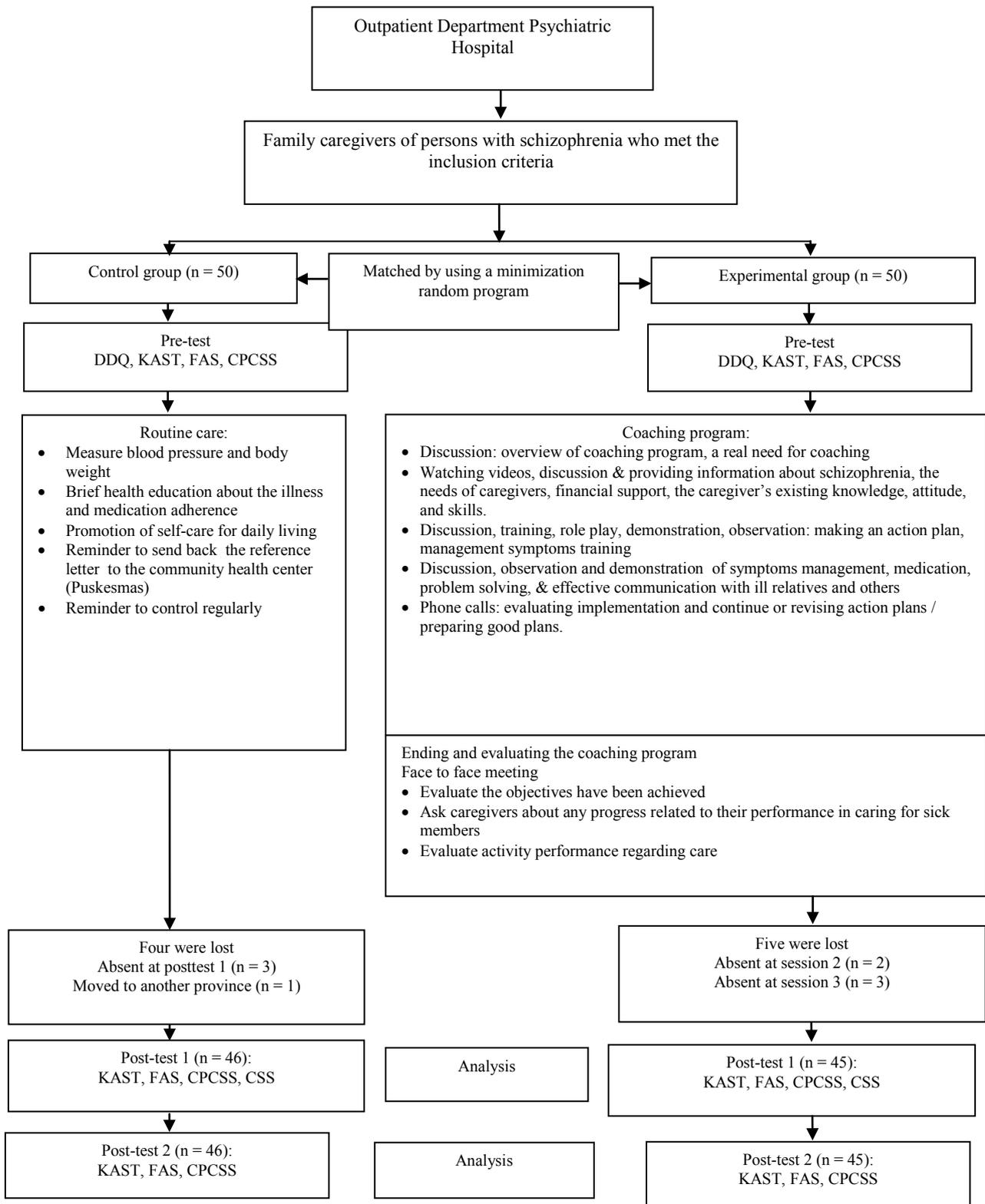
Kolb's [22] experiential learning theory provides a framework for the coach to develop the important skills required to manage situations and for the coaching relationship during the coaching process [16]. Coaching is a process that helps persons by equipping them with knowledge, skills, and opportunities through a learning experience [16]. The major methods of the coaching program were (1) providing information and discussing about the nature of schizophrenia, the kinds of symptoms, medications and the way to manage their side effects, how to recognize and respond to worsening signs and symptoms, using a checklist/log to record the daily monitoring of activities, identifying family resources to address financial issues, seeking professional help, familiarization with caregiver organizations in Indonesia, and the importance of family support; (2) training caregivers to perform new skills to solve encountered problems, managing hallucinations, delusions, and aggressive behavior symptoms, employing effective communication, and improving the medication adherence of persons with schizophrenia; (3) role-plays; (4) demonstrations; (5) observation of caregivers in performance regarding care; and (6) phone calls.

### Description of the coaching program intervention

The 7-week coaching program was based on the experiential cycle of learning theory proposed by Kolb [22] and Thorpe and Clifford [16]. Both the experiential cycle of learning theory and coaching programs were used to guide the contents and methods of the coaching program in this study. It was also used to guide the steps of disseminating the coaching program intervention. The objective of the program was to enhance the caregivers' knowledge, attitudes, and skills in caring for persons with schizophrenia. It covered 6 steps (**Table 1**): (1) clarifying the coaching needs and goals; (2) agreeing to specific development needs; (3) formulating a detailed plan for coaching; (4) performing a task or activity; (5) reviewing activities and planning to improve performance; and (6) ending the coaching relationship.

A. Each family caregiver was given program materials that included a DVD on schizophrenia and a caregiver's guide booklet. The booklet was developed by the researcher, and contained 4 components: (1) general information about schizophrenia, (2) useful knowledge for caregivers, (3) information on necessary caregiver skills, and (4) appropriate caregiver interventions in caring for persons with schizophrenia. In the previous research study, the booklet was used during all of the coaching program sessions [23]. In addition, the participants in the routine care group also received the DVD and caregiver's guide booklet after completion of the 2<sup>nd</sup> post-test.

B. Training of caregivers on caring for persons with schizophrenia involved teaching caregivers how to take care of sick family members experiencing the symptoms of hallucinations, delusions and aggressive behavior, how to communicate effectively within the support system, and how to help a sick member with medication adherence.



**Figure 1** The implementation phase of data collection procedure.

### **Procedure for data collection**

One hundred participants who met the inclusion criteria were randomly selected and contacted by the trained research assistants. Then, they were invited to participate after obtaining written informed consent by means of a consent form. The duration of the program was 7 weeks and consisted of 6 steps. However, step 5 was conducted at week 5 and 6. The program was held once a week. Group sessions were 1.5 to 2 h long at week 1, 2, 3 and 7. An individual coaching approach used when visiting the participant's home at week 4, and an individual approach using phone calls was used at week 5 and 6. The individual session was 1 h long. In the outpatient department, trained research assistants administered the pre-test questionnaires (and characteristic of participants) before the participants were randomized into 2 groups (Time 1). Age, gender, education level, and duration of taking care were entered into the minimization randomized controlled trials [24]. Then, 2 weeks after intervention, the research assistants distributed the KAST, FAS, CPCSS, and CSS questionnaires to conduct the first post-intervention (Time 2). Finally, one month after the 1<sup>st</sup> post-test, the research assistants were to follow-up the improvement of the caregivers' knowledge, attitudes, and skills by conducting the 2<sup>nd</sup> post-test (Time 3). The reason for using research assistants to collect data was to minimize the threat of experimenter bias.

### **Measurements**

The Knowledge about Schizophrenia Test (KAST) was used to measure the level of knowledge about schizophrenia among caregivers of persons with schizophrenia. It was modified by Compton, Quintero, and Esterberg [25]. The 6 domains of the Knowledge about Schizophrenia Test were: causes, symptoms, diagnosis, course, treatments, and self-help. This inventory consisted of 18 items, with "true" (score = 1) or "false" (score = 0) responses for each item. The possible score ranged from 0 to 18 - a higher score indicated a higher level of knowledge regarding schizophrenia. The Kuder-Richardson formula ( $KR20$ ) was used to determine the internal consistency of the data. The translated Indonesia version indicated satisfaction content validity and internal consistency ( $KR20 = 0.82$ ).

The Family Attitude Scale (FAS) is a self-reporting questionnaire for measuring the emotional climate of the family caregiver in relation to a relative with schizophrenia, developed by Kavanagh *et al.* [26]. This questionnaire, consisting of 30 items, was also employed in this study. The answer was rated on a 5-point Likert scale, from 0 (never) to 4 (every day). The total score ranged from 0 to 120. A higher score indicated higher levels of negative attitudes. The reliability of the scale was 0.83, and the content validity was 0.8.

The Chiang Mai Psychiatric Caregiving Scale (CPCSS) was used to measure the caregivers' skills in caring for the schizophrenic psychiatric patient at home. The Thai version of CPCSS was developed by Tungpunkom *et al.*, as cited in Suriyong, Tungpunkom, and Chalinee [27]. The CPCSS was composed of a 50-item list of caregiving skills, and used a Likert-type scale of 0 (the patient can do it by himself or no condition occurs) to 3 (done all the time). This scale was translated into Indonesian and validated by the study's Indonesian caregivers with a content validity of 0.8 and a reliability of 0.82.

The Modified Caregiver Satisfaction Scale (CSS) questionnaire was a modified version of the one originally developed by Bakas *et al.* [28] that aimed to evaluate the degree of the caregivers' satisfaction with the coaching program. The modification was carried out by the researcher. It is a 9-item self-reporting instrument with 3 subscales: usefulness, ease of use, and acceptability. Each item was rated on a 5-point Likert scale, ranging from 1 (disagree) to 5 (strongly agree). The internal consistency reliability for the Indonesian version of CSS was 0.83.

### **Ethical considerations**

Approval for the study was granted by the Institutional Review Board (IRB) of the Faculty of Nursing, Prince of Songkla University, Thailand (code: MOE 0521.1.05/2804), and the Ethics Committee of the Faculty of Nursing, University of Sumatera Utara, Indonesia. Signed informed consent forms were obtained from all of the 100 participants before the intervention, and confidentiality was maintained.

### Statistical analysis

The demographic data, both of the caregivers and schizophrenic patients, were described in terms of frequency, mean, and standard deviation. They were analyzed using descriptive statistics, the chi-square test, the independent *t*-test, and the Mann-Whitney *U* test. The CSS scores after the completion of the intervention were computed to describe both their means and standard deviations. The assumption of normality, linearity, homogeneity of variance, and multicollinearity of this study were also tested [29]. A Repeated Measure ANOVA was used to examine the differences of the KAST, FAS, and CPCSS mean scores at across time and between the coaching and routine care groups. Pairwise comparisons using Bonferroni corrections were conducted to assess the differences across time of each pair. An Independent *t*-test was used to test the differences of mean scores between groups. Moreover, threat to internal validity was used to minimize the measurement bias.

## Results

### Characteristics of the participants

100 participants were randomly assigned to the coaching (*n* = 50) and routine-care (*n* = 50) groups. In the routine-care group, the average age was 46.74 years (*SD* = 13.44), ranging from 21 to 65 years. Only 38 % of them had graduated from high school. An income of < 100.67 USD per month was reported in 36 % of them. The majority of them lived with 1 to 3 family members at home (68.0 %). Most of them were either the parent, sibling, or spouse of the patient (48.0, 34.0 and 12.0 %, respectively). The average length of care time was 7.06 years (*SD* = 3.69), with a range of 1 to 12 years.

The average age of the coaching group was 46.40 years (*SD* = 13.64), ranging from 23 to 65 years. A larger percentage of participants were female (70.0 %) compared to males. 46.0 % of them had graduated from high school. In addition, among 44.0 % of them, the median income was more than USD 143.81. Most of these participants (52.0 %) lived with 1 to 3 family members at home. They were either the parent, sibling, or spouse of the schizophrenia-affected person (42.0, 40.0 and 12.0 %, respectively). The average length of care time was 7.72 years (*SD* = 3.58), ranging from 1 to 12 years.

Regarding the patients, in the routine-care group, the average age of the schizophrenic persons was 35.64 years (*SD* = 9.66), with a range between 20 and 57 years. The duration of the illness was 7.12 years (*SD* = 3.63). The mean number of hospitalizations was 3.32 times, ranging from 1 to 10 times. Predominantly, antipsychotics of the atypical type were used to treat the persons with schizophrenia in this study (60.0 %). As for the patients' disease condition, 40.0 % of them were of a stable condition. In the coaching group, the average age of the persons with schizophrenia was 36.70 years (*SD* = 8.68), ranging from 21 to 61 years. On average, our participants had been diagnosed with schizophrenia for a period of 7.80 years (*SD* = 3.59). The average number of hospitalizations was 3.04 (*SD* = 2.50), ranging between 1 and 10 times. Most of them took atypical antipsychotics (56 %), and their disease conditions were stable (40 %). When comparing between the 2 groups, no statistically significant differences in terms of the demographic characteristics were found (**Table 2**).

**Table 2** Characteristics of family caregivers and patients at recruitment ( $n = 100$ ).

Characteristics	Routine care	Coaching	Test value	<i>p</i>
	( <i>n</i> = 50)	( <i>n</i> = 50)		
	<i>n</i> (%)	<i>n</i> (%)		
Age (years)	$M = 46.74, SD = 13.44$	$M = 46.40, SD = 13.64$	-0.13 <sup>a</sup>	0.90
Gender				
Male	18 (36.0)	15 (30.0)	0.40 <sup>b</sup>	0.67
Female	32 (64.0)	35 (70.0)		
Educational level				
Elementary school	8 (16.0)	2 (4.0)	4.87 <sup>c</sup>	0.30
Junior high school	8 (16.0)	9 (18.0)		
High school	19 (38.0)	23 (46.0)		
Diploma	6 (12.0)	4 (8.0)		
Bachelor	9 (18.0)	12 (24.0)		
Income (USD per month)				
< 100.67	18 (36.0)	8 (16.0)	6.45 <sup>c</sup>	0.09
100.67 - 143.81	15 (30.0)	19 (38.0)		
> 143.81	17 (34.0)	23 (44.0)		
Number of family members living with patient				
1 - 3 persons	34 (68.0)	26 (52.0)	2.77 <sup>c</sup>	0.25
4 - 6 persons	15 (30.0)	23 (46.0)		
7 - 9 persons	1 (2.0)	1 (2.0)		
Relationship to ill relative				
Spouse	8 (16.0)	6 (12.0)	2.03 <sup>c</sup>	0.73
Parent	24 (48.0)	21 (42.0)		
Sibling	17 (34.0)	20 (40.0)		
Grand parent	0 (0)	1 (2.0)		
Other (son/daughter)	3 (6.0)	2 (4.0)		
Length of care time (years)	$M = 7.06, SD = 3.69$	$M = 7.72, SD = 3.58$	0.90 <sup>a</sup>	0.37
Patients				
Age (years)	$M = 35.64, SD = 9.66$	$M = 36.70, SD = 8.68$	0.58 <sup>a</sup>	0.56
Duration of illness (years)	$M = 7.12, SD = 3.63$	$M = 7.80, SD = 3.59$	0.94 <sup>a</sup>	0.35
Number of hospitalizations (times)	$M = 3.32, SD = 2.91$	$M = 3.04, SD = 2.50$	-0.07 <sup>d</sup>	0.94
Type of medication				
Typical antipsychotic	22 (44.0)	20 (40.0)	0.16 <sup>b</sup>	0.84
Atypical antipsychotic	28 (56.0)	30 (60.0)		
Patient condition				
Improved	17 (34.0)	19 (38.0)	0.28 <sup>c</sup>	0.87
Stable	20 (40.0)	20 (40.0)		
Worsened / Unstable	13 (26.0)	11 (22.0)		

Note: <sup>a</sup> = t-test, <sup>b</sup> = Chi-square, <sup>c</sup> = Likelihood Ratio, <sup>d</sup> = Mann-Whitney *U* test

### Intervention effects

There were no statistically significant differences in any of the mean scores of outcome measures at baseline between the 2 groups ( $p > 0.05$ ). The intervention group's mean scores of the KAST at the 3 measurement times were significantly higher than those of the controls ( $F = 85.77, p < 0.001$ ). A statistically significant difference between the groups and time ( $F = 89.78, p < 0.001$ ) was also detected,

and there was an interaction effect between coaching time and knowledge level. The participants in the coaching group experienced an increase in knowledge at Time 2 compared with those in the routine-care group. The mean knowledge scores in the coaching group at Time 2 and Time 3 was significantly higher than that of the routine care group ( $t = 9.48, p < 0.001$  and  $t = 13.43, p < 0.001$ ).

For the attitudes, the analysis demonstrated a significant overall improvement in attitudes between the 2 groups ( $F = 13.22, p < 0.001$ ), and the measurement times ( $F = 28.80, p < 0.001$ ). Moreover, the interaction between attitudes and coaching time length was statistically significant ( $p < 0.001$ ). The means of negative attitude scores of the coaching group at Time 2 and Time 3 were significantly lower than those of the routine care group ( $t = -4.67, p < 0.001$  and  $t = -6.78, p < 0.001$ , respectively).

Furthermore, regarding the mean skill scores using the one-way repeated measure of ANOVA, the participants in the coaching group had significantly higher caring skills scores than their counterparts ( $F = 17.30, p < 0.001$ ). The analysis also demonstrated significant differences between the groups ( $F = 22.94, p < 0.001$ ), and time ( $F = 17.65, p < 0.001$ ). Also, an interaction between skill level and time of measurement was found. In addition, the *t*-test revealed statistically significant higher mean caregiving skill scores in the intervention group compared with the routine care group at Time 2 and Time 3 ( $t = 5.23, p < 0.001$  and 1-month  $t = 6.84, p < 0.001$ , respectively).

**Table 3** Clinical measure scores at pre-test and 2 post-tests and ANOVA test (Group × Time) results ( $n = 91$ ).

Instrument	Routine care group (n = 46)						Coaching program group (n = 45)						F
	Time 1		Time 2		Time 3		Time 1		Time 2		Time 3		
	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD	
KAST	8.91	2.22	9.65	2.48	10.09	2.08	9.56	2.74	13.82	1.64	14.62	0.94	85.77***
FAS	35.85	14.66	36.24	14.85	34.41	12.40	39.00	17.64	23.00	11.98	19.16	8.70	13.22***
CPCSS	99.22	21.79	97.54	20.78	101.39	17.34	96.51	17.69	116.04	12.36	120.67	7.96	22.94***

Time 1 = baseline measurement at the start of intervention; Time 2 = 2 weeks after completion the intervention; Time 3 = 1 month after the 2<sup>nd</sup> intervention; KAST = Knowledge About Schizophrenia Test; FAS = Family Attitude Scale; CPCSS = Chiang Mai Psychiatric Caregiving Scale; \*\*\*  $p < 0.001$

From **Table 3** it showed that it was found that the KAST scores of the coaching group mean increased significantly at Time 2 (from M = 13.82, SD = 1.64 at Time 3 to M = 14.62, SD = 0.94) compared with Time 1 (M = 9.56, SD = 2.74). For the FAS, mean scores in the coaching group at Time 2 and Time 3 (M = 23.00, SD = 11.98 and M = 19.16, SD = 8.70) had decreased from those of Time 1 (M = 39.00, SD = 17.64). Moreover, the CPCSS scores in the coaching group (M = 116.04, SD = 12.36 and M = 120.67, SD = 7.96, respectively) at Time 2 and Time 3 had increased compared with those of Time 1 (M = 96.51, SD = 17.69).

#### Satisfaction of Caregivers with the Coaching Program

The mean total score of the caregiver satisfaction with the coaching program was 37.87 (SD = 3.97). Of the 3, the sub-scale with the highest score of satisfaction was acceptability (M = 4.41, SD = 0.55); the one with the lowest score was usefulness (M = 4.14, SD = 0.59). The results showed that our participants had a high level of satisfaction with the coaching program intervention.

#### Discussion

In the present study, the coaching program for family caregivers of persons with schizophrenia presented positive effects at week 2 after completion of the program and the one-month follow-up. The participants in the coaching group had significantly higher knowledge levels than those of the routine care

group. Pairwise comparisons revealed that, in both groups, the mean scores of knowledge regarding schizophrenia at Time 2 of intervention and Time 3 changed significantly from those of Time 1. Knowledge regarding schizophrenia was one topic of discussion in this study. The nurse coach explored the caregiver's current knowledge about schizophrenia and its treatment, medication use and compliance, and the available community mental health services. The nurse coach also provided important information about schizophrenia and its treatment, the available community services, and the organization of the schizophrenia community care in Indonesia. A DVD and the caregiver's guide booklet were given to each caregiver who participated in the coaching program. Earlier evidence suggests that DVDs and booklets can be used as additional resources in a coaching program. The DVD contained testimonies from individuals who have experienced the illness, as well as medical professional information [31]. Furthermore, in this study, a case scenario about schizophrenia and a schizophrenia symptom checklist were also given to each caregiver. The coach asked them to fill it out. These strategies allowed the nurse coach to validate the caregiver's knowledge about the nature of schizophrenia. In addition, the booklet offered information for caregivers who provide emotional support to patients, and included a list of resources for caregivers who need support themselves [23]. The nurse coach asked caregivers what they had learned after watching the video in the next session. In the current study, there was an improvement in knowledge among caregivers after entering the coaching program using a video and home visit strategy. Consistent with the findings of this study, research indicates that participation in a coaching program by using a video and conducting home visits can improve the knowledge of caregivers caring for a relative [30]. Indeed, the coaching program also demonstrated significant improvement in knowledge of ways to help the relative about learning at home [31].

Furthermore, among the coached participants, there was an improvement in attitude scores over the 3 measurement times, compared with those in the control group. This outcome could have resulted from the effect of the intervention over time. Collaborative relationship is the essence of a coaching program. It is focused, and uses conversation to help caregivers achieve their goals in caring performance [32]. The participants in the coaching group received the coaching program, integrated with routine care, while those in the routine care group received routine care only. The nurse coach used conversation to build collaborative relationships in both individual and group approaches. The intervention consisted of both the individual and group coaching approach. In this study, both individual and group coaching fitted with the characteristics of the participants. In order to change negative attitudes, the nurse coach used various skills, such as listening, questioning, assertiveness, information giving, problem solving, decision making, observation, facilitation, and summarization skills. During group coaching, the participants shared and learned from each other's experiences related to caring for their sick loved ones with schizophrenia. Interacting with caregivers by using an individual approach while they feel at ease in their home may also develop their ability to share their feelings and way of life regarding the sick family member's illness. These positive changes were maintained at the 1-month follow-up, and were more significant than those in the routine-care group. Thus, this study provides support for the improvement in the attitudes of caregivers towards schizophrenia. Similarly, in a previous study, a coaching program for parents of children with learning disabilities demonstrated positive effects at 6 months after the completion of the program. Participation in family coaching led them to spend more time helping their child learn at home, change the way they help their child succeed in school, and increase parent-child interaction [33]. These results are consistent with those of other studies found in literature [34]. For example, it has been reported that a positive emotional state was associated with decreased aggressive child behavior.

The findings of the present study showed that, at week 2 and 1 month after the intervention, caregivers in the coaching group had significantly higher skill scores than those at baseline when compared with caregivers in the routine care group. On the other hand, the mean skill scores did not follow the same trend. However, statistically significantly higher mean caring skill scores were found at the week 2 and 1 month follow-ups between caregivers in the coaching and routine care groups. With training and practice, skills become integrated and implemented with ease in the process of caring for an ill family member [35]. Thus, our results clearly indicated better outcomes concerning caring skills in the coaching group. These results concurred with those regarding parent skill acquisition from a previous RCT study on coaching parents. Shanley and Niec [36] reported that the positive parenting skill level of

caregivers who received the coaching program increased significantly compared to those who did not. Moreover, there was a significant difference in positive parenting skills between the coached group and the control group. The results showed that the effect of coaching could be a crucial factor in changing the behavior of caregivers, and serve as a predictor of skill development beyond the influence of caregivers at the initial skill level.

A coaching program could increase the level of perceived social support, as well as reduce both stress levels and the negative coping responses of parents acting as the primary caregivers. This condition helps parents to respond more positively to their children with learning disabilities [37]. In addition, coaching is one method used by caregivers to provide instruction for sick family members with schizophrenia. A study conducted by Tungpunkom [38] showed that caregivers used coaching as a method to help their sick relatives perform daily activities, such as eating and bathing, particularly when they neglected their personal care.

Coaching can be a helpful intervention for families and children by assisting them in performing tasks, staying on time, managing time, developing skills, and strengthening their motivation. For example, Sleeper-Triplett [39] reported that coach working with parents of very young children or children in pre-teen years or directly with teen clients can lead to an improvement in family life, better success in school, and optimum readiness for adult life. Graham *et al.* [17] found that an improvement in childrens' and mothers' performances and mothers' competency can be achieved through coaching intervention.

Our findings were also consistent with those of a previous one-group time-series design study involving a coaching program for caregivers. Its results pointed out the effectiveness of coaching in improving the caregivers' and the sick family members' occupational performance and the caregivers' parenting self-competence. These improvements were sustained, and could be generalized to other areas of performance [17].

Coaching is an interactive process involving observation and reflection, in which the coach promotes the learner's ability to support family caregivers in both being and doing. Coaching is also applied to health and education situations where adults seek to apply new knowledge and skills or alter their responses to life situations [40]. Coaching can provide support, enhance self-assessment and learning, and develop new skills. The process of coaching can also help caregivers become active participants in providing care for their ill family member [15,41].

## Conclusions

A randomized controlled trial was used to examine the effectiveness of a coaching program that aimed to enhance family caregivers' knowledge, attitudes, and skills in caring for persons with schizophrenia. This study provided evidence that a coaching program is a kind of nursing intervention that can enhance the caregivers' knowledge of schizophrenia, attitudes towards the disease and its treatment, and the relevant caregiving skills.

## Limitations of the study

The present program was designed for primary caregivers who lived with and cared for a sick family member for at least one year, and had access to a telephone. Therefore, it would have limited application for caregivers who live with and cared for more than one ill relative at home. Also, this program may not be applicable to caregivers who have cared for a sick relative for less than one year and do not have access to a telephone. Lastly, this study cannot offer any insight into the long-term effectiveness of this program, as the follow up period was only 1 month long. The efficacy of a long-term coaching program intervention should be studied further.

## Implications for nursing practice

Psychiatric nurses can use this coaching program in both hospital and community settings. Using a coaching program intervention, psychiatric nurses and caregivers can jointly develop an appropriate plan of care in order to increase caregivers' ability to manage the symptoms of schizophrenia. In order to

provide a coaching program intervention, psychiatric nurses must have an understanding of the caregiver's ethnic and cultural background. This is because both the caregivers and their sick family members who present themselves to the outpatient department of a hospital or community health center are from various ethnic backgrounds.

### Recommendations for further study

Since this study used repeated measures only at the baseline and week 2 after completion of the coaching program, and one month follow-ups, future research with a longer follow-up is necessary to determine the sustainability of the outcomes of this study. Additionally, effective strategies, good ideas, and adaptation for changing are vital to the coaching process. As nurse coach, we must identify the needs of caregivers in caring performance. Therefore, psychiatric nurse coaches need to conduct the coaching booster to enhance caregivers' knowledge, attitudes, and skills, and maintain the sustainability of caring performance. Studies employing large sample sizes and different settings, e.g., in community health centers, are also highly recommended.

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