CHAPTER 3

METHODOLOGY

This chapter of this study describes research methodological approaches to test the brief cognitive-support treatment in comparison to usual care. The topics consist of research design, population and sample, settings, instrumentation, protection of human subjects' rights, data collection and intervention procedures, strategies to minimize threats to internal validity, and data analysis.

Research Design

A quasi-experimental, pretest-posttest design experiment of two groups with two follow-up sessions was conducted from July to November 2005 to evaluate the effectiveness of the brief cognitive-support treatment in reducing depressive symptoms in Thai secondary school students with mild to moderate depression.

Population and Sample

The target population in this study refers to public secondary school students with mild to moderate depression in Thasala District, Nakonsithammarat Province, Southern Thailand, generally representing the number of depressed adolescent students of other schools both within this province and throughout the country at large. Statistics show that the number of depressed adolescent students in Thasala District was 21.5 percents, similar to other districts in Nakonsithammarat Province

and to other parts of Thailand, which range from 16.3 to 24 percent (Petchsirasun, Aekwarangkoon, & Noonil, 2005).

To be eligible for participation in the study, students had to be first identified with mild to moderate symptoms of depression by a self-rated measure of depression and a clinical screen, a provider assessment tool. They also had to be 15 to 19 years of age with no diagnostic or treatment history of depression and substance abuse. Students were excluded if they reported a history of attempted suicide or self-injury or were currently abusing alcohol or drugs, receiving treatment for a mood disorder, receiving cognitive treatment for any condition, or enrolled in a behavior modification program. Using these criteria, eight eligible students did not participate in the study, six had active substance abuse problems and two refused to join the program.

1. Sample size

The sample size was approximated based on statistical power analysis, at a significance level of .05, and a desired power of .80. One meta-analysis was made of 14 studies of cognitive therapy in depressed adolescents and revealed that the effect size (*d*) was 0.77 (Butler & Beck, 2000). Therefore, the effect sizes on *F*-test on mean in the analysis of variance and covariance was computed by using the equation (Cohen, 1988):

$$N = \frac{n_{.05}}{400 f^2} + 1$$

Whereas $n_{.05}$ is the necessary sample size to detect f= .05 for a (significant level) = .05, with power = .80; the sub table of Table 8.4.4 illustrates $n_{.05}$ = 1571 (Cohen, 1988).

f is the standard deviation of standardized means translated from *d* (ES index for the *t*-test), which is equal to *d*/2 (Cohen, 1988). Thus, *f* = 0.77/2 = 0.385.

Substituting in the equation:

$$N = \frac{1571}{400\ (.385)^2} + 1 = 27.49$$

Using this equation, the target sample size for each treatment arm in the study was 28. Over-sampling by at least 20% was undertaken in order to reduce the threat of sample attrition. The final study sample was 70 students, 35 students per each group.

2. Sample selection

All students (N = 838) attending secondary schools in the Thasala District, Nakonsithammarat Province, Southern Thailand were screened for depression with the Thai translated Beck Depression Inventory (BDI, Beck et al., 1961; Sriyong, 1979). Based on this pre-screening, subject recruitment, then, was limited to the two of three schools in the district that had the largest number (School 1 = 40, School 2 = 38) of mild to moderately depressed students with BDI scores of 10 to 19 (mild to moderate depression). Then, a random selection method was used to assign the students of these schools in the study to either the treatment group or the control group. After the recruitment of the sample according to the inclusion criteria described above, all students were approached and given an overview of the study.

As a preliminary step towards assessing the potential influence of treatment perceptions regarding the treatment effectiveness, perceptions of treatment effectiveness were assessed among the adolescent students in the treatment group (n = 35), their parents/guardians (n = 35), and their teachers (n = 5) who were also

included to participate in this study. Thus, after approaching all students in the treatment group, their parents/guardians and their teachers also had been invited to a meeting and were given an overview of the study. The teachers had been selected voluntarily to participate in the study. Parents/guardians and teachers had been informed and given permission for the children and for themselves to join the program.

Settings

This study was included students from two secondary schools to participate in this study. Students from one school underwent treatment and students from the other school were the control group. Using two schools took into account the researcher's concern about diffusion that may occur from supportive interventions if the subjects of the two groups studied were in the same school.

Each of the schools had both similar and different characteristics. Both of them were public secondary schools located in Thasala District, were the same level of school, and reported similar incidence of mental health problems such as anxiety, stress, depression etc. Both schools had only one teacher for guidance providing basic counseling services to students and each had similar counseling systems. However, two schools differed in the numbers of students with the control school having 268 students and 89 teachers whereas the treatment school 340 students and 130 teachers.

Instrumentation

The research instruments in this study comprise three groups: a demographic data form, outcome measures that comprised depression scores and perceptions of treatment effectiveness, and brief cognitive-support treatment as follows:

1. The demographic data form, developed by the researcher and based on reviewed literature that showed the influence on depression among adolescents, included personal information such as gender, age, grade point average, history of substance use and family structures including parents' marital status, persons living with the student, the number of family members, family occupation, monthly family income, and adequacy of family income.

2. Outcome measures

This study used two assessment measures of depressive symptoms to gauge treatment effectiveness: a self-rated measure of depression used in pre- and post-treatment, and a clinical screen, a provider assessment tool, to first identify students with mild to moderate symptoms of depression. Follow-up participant self-ratings and provider-rated depression scores also were assessed at 6 and 12-weeks post-treatment. Additional outcome measures also included perceptions regarding the treatment effectiveness to evaluate the effectiveness and feasibility of the treatment among the students in the treatment group, their parents/guardians, and their teachers as follows:

2.1 Depression Scores

2.1.1 Beck Depression Inventory-BDI, (Beck et al., 1961) is a 21-item self-rated assessment of depressive symptoms. BDI items are single words or simple statements such as sadness, crying, guilty feelings, and suicidal thoughts or wishes. Respondents rate their experience of symptoms over the previous 2 weeks on a scale of 0 (none of the time, rarely, less than 1 day) to 3 (most or all of the time, for 5-7 days). The Sriyong (1979) Thai translation of the BDI defines scores of 0-9 as not depressed, 10-15 as mild depression, 16-19 as moderate depression, 20-29 as rather severe depression, and 30-36 as severe depression. Alpha coefficients for the internal consistency of the Thai translated BDI ranged from .73 to .92 with a mean of .86. Acceptable evidence of internal consistency (.81 to .86) in psychiatric and non-psychiatric populations has been reported (Beck et al., 1988). The research results from the study confirmed that the BDI has been shown to efficiently differentiate between depressed and non-depressed Thai adolescents. The alpha coefficient for the study was .85 (Tetvattana, 2003). In this study, the BDI internal consistency alpha coefficient was .89.

2.1.2 Hamilton Rating Scale for Depression-HRS, (Hamilton, 1960) is a 17-item clinician-rated assessment of depression symptoms. Four volunteer registered nurses employed at local district hospitals on inpatient psychiatric treatment units performed all HRS ratings in the study. The treatment training team tested the proficiency of each nurse. Usually, the HRS is rated by 2 trained clinicians per patient but this study used only one clinician per one student because of the lack in number and the limited time of clinicians who work in the hospital. However, tests of interrater reliability produced more than 80% level of agreement.

Students were rated on their experience of depression symptoms over the previous 2-weeks. Symptoms were rated from symptoms being absent to symptoms being present (0 to 2, 0 to 4). The higher value indicated the more severe the symptom rating. HRS items also are simple statements such as insomnia, work and activities, retardation, and agitation. The HRS Thai version was back-translated and was judged to be accurate. The Lotrakul et al. (1996) Thai translation of the HRS recommends that scores of 8-12 indicate mild depression, 13-17 to indicate less than major depression, 18-29 to indicate symptoms of major depression, and 30 and higher scores to indicate that distress may be due to more than just major depression or psychotic depression. The Thai translated HRS has been shown to be effective with the psychometric studies of reliability and validity yielding acceptable results. The kappa value of the scale was .87 ($p< 0.0001$), the internal consistency was good (standardized Cronbach's alpha coefficient = 0.7380) (Lotrakul et al., 1996) and the alpha coefficient for this study sample was .87.

2.2 Perception of Treatment Effectiveness Questionnaires

Two different Perception of Treatment Effectiveness Questionnaires were designed by the researcher to assess the perceptions of the students and also of their parents/guardians, and their teachers regarding the effectiveness of the brief cognitive-support treatment in reducing depression among adolescent students who received the brief cognitive-support treatment. The researcher generated the Perception of Treatment Effectiveness Questionnaires from the literature that was reviewed. Before the study, all of the items were assessed for content validity and item clarity by two psychiatrists, one psychiatric nurse, two psychologists, five adolescents from a youth group, six of their teachers, and nine of their parents. As a

result of pre-testing, the items were demonstrated to be valid and were considered to be comprehensive as described below:

2.2.1 Students' Perception of Treatment Effectiveness, a 12-item self-report measure specifically designed to assess the perceptions of treatment effectiveness among depressed students. Each item was rated on a 5-point (1 to 5) scale, ranging from 1 (low) to 5 (high). Total scores of the questionnaire ranged from 12 to 60. The reliability alpha coefficients for this measure at immediate post-treatment, 6-weeks, and 12-weeks were .83, .84, and .84 respectively.

2.2.2 Parents/Guardians' and Teachers' Perception of Treatment Effectiveness, a 5-item self-report measure specifically designed to assess the perceptions of treatment effectiveness in the parents/guardians and teachers who participated in the treatment. Each item described a particular manifestation of treatment satisfactions that was rated on a 5-point (1 to 5) scale, ranging from 1 (low) to 5 (high). Total scores range from 5 to 25. The reliability alpha coefficients for this measure at immediate post-treatment, 6-weeks, and 12-weeks were .83, .84, and .84 respectively.

3. Brief Cognitive-Support Treatment

The brief cognitive-support treatment was constructed and developed through these steps:

1. Having reviewed literature related to the topic of depression among adolescents, the results showed that negative views of the self, the world, and the future are causes of adolescents to lose self-esteem, self-satisfaction, feel

worthlessness, hopelessness, and powerlessness that lead to depression (Beck et al., 1961; Brown, 2001).

2. Developed a preliminary focus group discussion to explore and compare Thai adolescent students' perception about depression among depressed (n = 42) and nondepressed (n = 43) adolescent students aged between 15 to 19 years at two public secondary schools in Nakonsithammarat Province, Southern Thailand. The findings revealed that negative thoughts about family and school were associated with depression in the depressed adolescent students but were not so in non-depressed adolescent students (Aekwarangkoon, 2005). These results confirmed the prior evidences that negative thoughts were associated with depression (Beck et al., 1961).

3. Developed an overview of the model and structure for depression intervention among the adolescents from the literature reviewed. There are enormous evidences that support the efficacy of cognitive intervention for reducing depression among depressed adolescents, especially for those who suffer from mild to moderate depression (Embling, 2002; Gloaguen et at., 1998; Harrington & Dubicka, 2002). However, cognitive intervention needs specialists for the treatment process, but in reality, there is an inadequate number of psychiatrists, psychologist, and psychiatric nurses such as in Thailand.

Brief intervention is an effective strategy for helping adolescents to cope with cognitive and psychological problems (Fagan, 2003). The efficacy of brief interventions has been studied extensively in adolescents with psychological and behavioral problems such as drug addiction. Guidance teachers in the schools who passed the brief cognitive training course can process brief cognitive intervention. From the review of literature, the combination of cognitive treatment and brief

interventions seemed a promising approach to apply for reducing depression among Thai adolescent students in this study.

Although either brief or cognitive interventions were approved for reducing depression, research studies confirmed that these interventions failed in the long term if patients lacked social support (Finfgeld-Connett, 2005; Hupcey, 1998; Piper et al., 2002; Reunthongdee, 2001; Reinecke et al., 1998). Thus, social support is an important factor for treating depressed adolescents. These conclusions can be summarized in Figure 3:

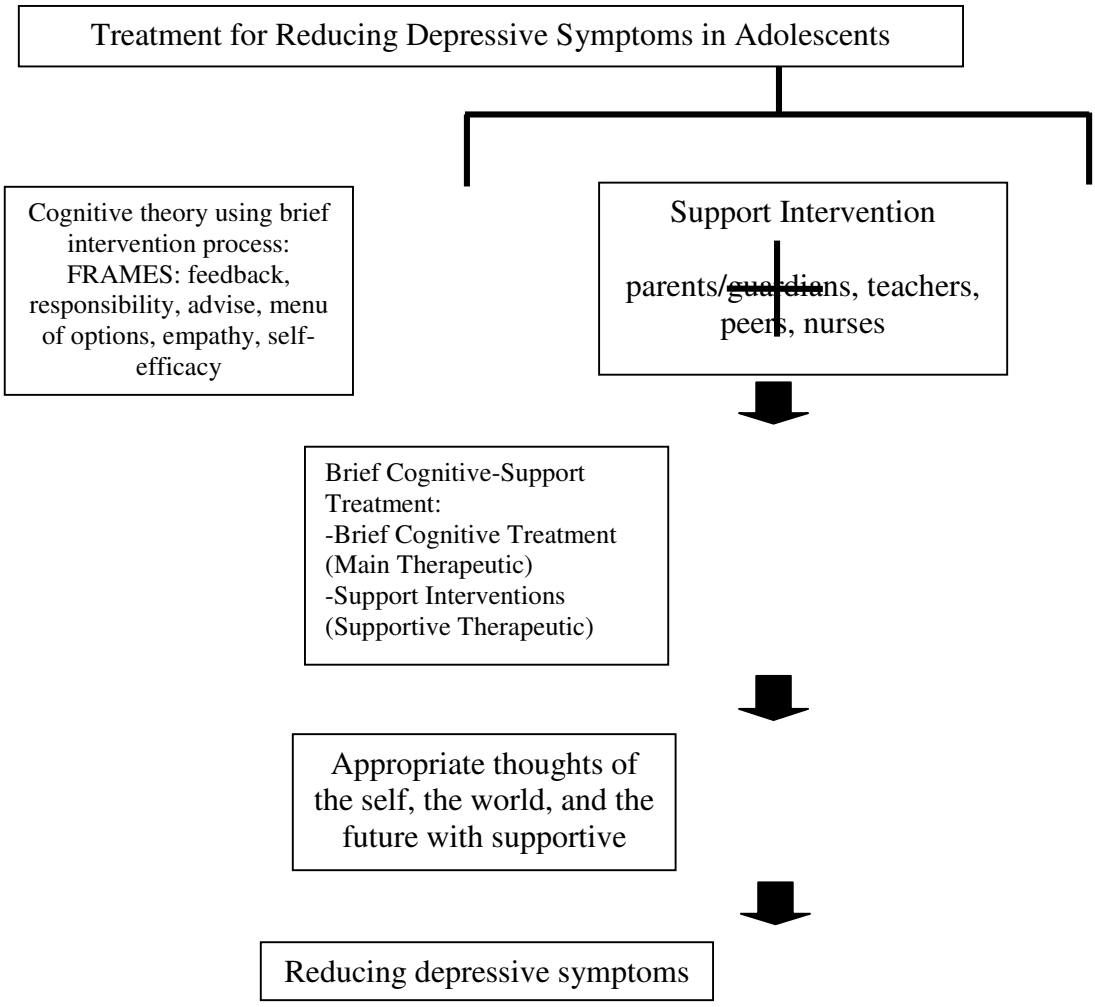

Figure 3 Overview of the model and structure of the depression intervention in adolescents

4. Developed a brief cognitive intervention.

4.1 Reviewed evidence related to the concept and process of brief and cognitive interventions for reducing depressive symptoms among adolescents.

4.2 Developed a treatment that combined the concept of cognitive and brief interventions.

4.3 The brief cognitive intervention for depression was examined by 5 experts consisting of two psychiatrists, a psychiatric nurse, and two psychologists, who are experts in brief intervention, cognitive behavioral modification, and adolescents in order to correct and improve the content and the structure of the intervention.

4.4 The treatment was tested-retested with 15 students at a secondary school in Thasala District.

4.5 The treatment was revised before actual utilization with the participants in this study.

5. The supportive interventions were developed. Students, teachers, and parents/guardians were asked to brainstorm to develop activities of the school environment to give support as followed by these steps.

5.1 The researcher shared knowledge about depression such as the etiology, signs, and symptoms including how to screen for depressive symptoms, the level of depressive symptoms with the affect at each level risk and protective factors, strategies for assessing and helping the depressed students focusing on environmental and social support, and then concluded with an open group discussion. The main objectives were to improve the accuracy of knowledge about depression, to reduce bias and stigma of depression and to raise awareness of the important role each person

plays in collaborating and promoting an environment of social support. These activities were processed with all of the three groups but separately in time.

5.2 Adolescent students, parents/guardians, and teachers were asked to brainstorm to develop effective and feasible strategies suited to their context to support the depressed students. The researcher shared the main characteristics of activities that assist in reducing depressive symptoms based on psychological theory focusing on guidance, practice, and emotional support to enhance a person's ability to cope with depression (Choenarom et al., 2005; Cohen & Willis, 1985; Jones, 2002; Finfgeld-Connett, 2005; Hupcey, 1998; Piper et al., 2002). The main characteristic of such activities include (1) promoting comprehensive understanding of depression, (2) providing opportunities to express feelings, conflict, and frustration, and (3) relaxation activities.

Based on such knowledge, students, parents/guardians, and teachers created activities for school environment support consisting of five activities: (1) mental health education on the school public announcement radio system that focused on depression, called "Sabai Sabai Sai Hunsa", (2) a game show that was called "The Sabai Show" that focused on mental health especially preventing depression and consisted of activities such as songs, mini-concerts, and games focusing on depression, (3) writing on a special bulletin board expressing one's feelings, called "Relaxation Board: Kradan Fitne", (4) discussing problems of depression with peer groups and teachers, called "Gift Box", and (5) drawing and painting pictures, called "Sangsan Wannasil".

5.3 The supportive intervention activities for depression was examined by 5 experts consisting of two psychiatrists, a psychiatric nurse, and two psychologists to correct and suggest improvements to the content and the structure of the intervention.

5.4 The role of each person in the treatment that was created by parents/guardians, teachers, nurses, and adolescent students was developed and discussed. The roles of each group were as follows: (1) parents/guardians would assess the signs and symptoms of depression in students, reassure and support them at home, and record their signs and symptoms as homework, following the guidelines in the handbook every week, (2) guidance teachers would use the brief cognitive treatment to consult with the depressed students to eliminate negative thoughts and promote psychological well-being in three weeks, assess the depressive signs and symptoms, and record the changes in the students following the guidelines in the handbooks, (3) nurses would assess the depressive symptom levels by using HRS selecting students in the severe cases for more in-depth care, and (4) peer groups would be involved in the five supportive activities at the schools.

The process for developing brief cognitive and supportive interventions can be summarized in Figure 4:

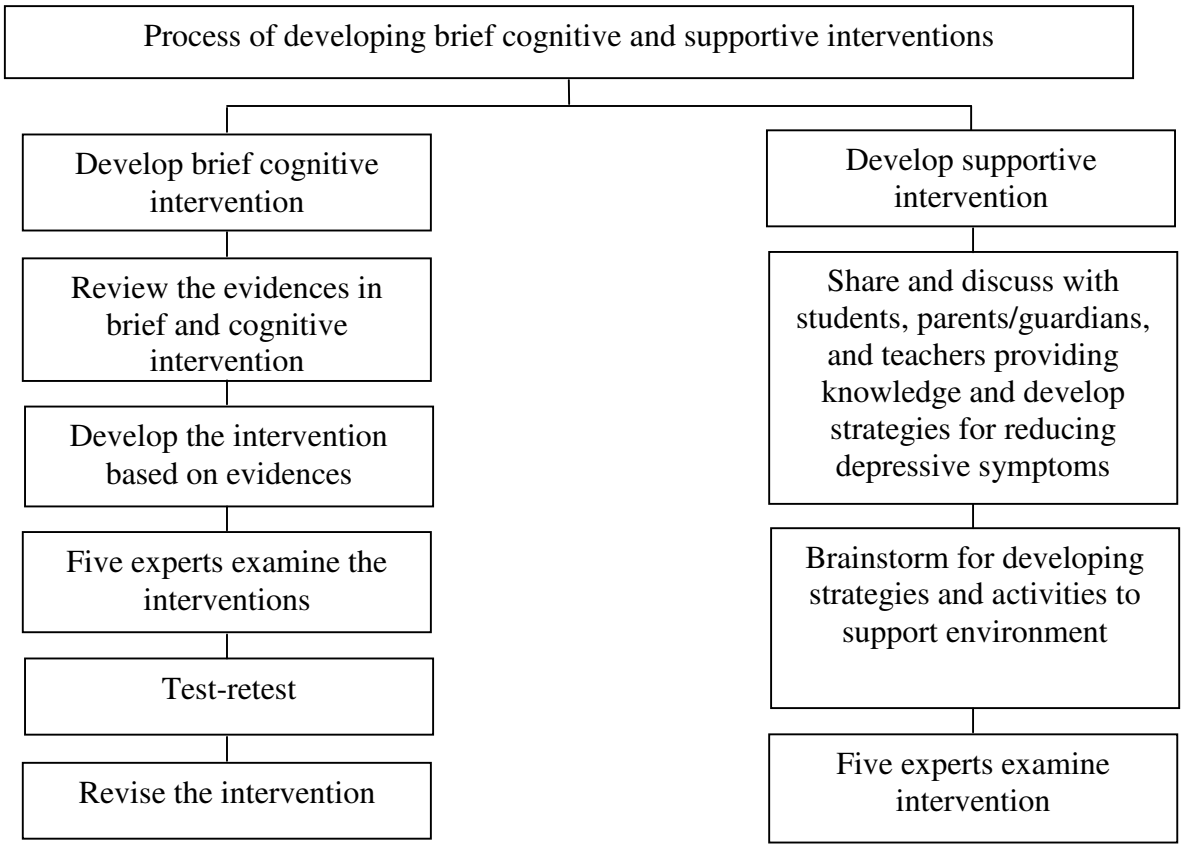

Figure 4 Process of developing brief cognitive and supportive interventions

The experimental treatment (Figure 5) draws on fundamental principles of brief (Fagan, 2003), cognitive (Beck et al., 1979), and supportive (Piper et al., 2002) theories of psychotherapy. In three weeks, the treatment delivered a structured individual brief cognitive intervention that was combined with a series of interpersonal support interventions at school. The brief cognitive sessions were scheduled once weekly, 20 to 40 minutes per session whereas the supportive activities either were daily or weekly. These activities were intended to provide the interaction with supportive individuals (parents/guardians, teachers, nurses, and peers) who could help to promote more positive coping responses (Oakley et al., 1999), address depression related to specific personal and social problems (Oakley & Kane, 1999),

and sustain the treatment gains achieved with brief cognitive intervention (Brown, 2001).

Brief Cognitive Interventions. The brief cognitive interventions follow 6 steps. There are FRAMES (feedback, responsibility, advice, menu of options, empathy, and self-efficacy (Fagan, 2003).

The Feedback step gives the student accurate information about his/her depressive symptoms using his/her BDI score, incidence rates for adolescent students depression in the Nakonsithammarat Province, and the general etiology and symptom responses of depressive illness. The aim of *feedback* is to increase the student's awareness of the symptoms and to decrease the social stigma of depression.

The *responsibility* step points out the impact of depression on the student's life and consequently the student's need to learn how to respond to symptoms of depression as directly as possible. The aim of this step, *responsibility* is to increase the student's awareness of self-management as a means of achieving therapeutic changes.

The next step, *advice,* allows the guidance teacher and student to identify and challenge distorted and negative thoughts that can promote depression and to identify and adopt more realistic thoughts. The aim of this step is to tailor the intervention to meet the student's particular needs.

The next step, *menu of options*, expands upon the *advice* step by constructing a set of self-management options that, because they are personalized, are more likely to be used and thus more likely to be helpful in reducing negative, depressing thoughts.

Empathy and self-efficacy, in the form of remarks made by the guidance teachers at each session, are intended to encourage and promote self-management.

Taken as a whole, the steps of FRAMES help individuals to identify, challenge, and replace distorted, negative thinking associated with symptoms of depression.

During the research program, the first session of brief cognitive intervention was used to establish a treatment relationship, to practice the steps, and to assign homework. The second session was used to help the student to self-evaluate his/her depression management experiences since the first session, and, based on that evaluation, to practice new methods of meeting personal needs and then to assign new homework. At the final session, the student once again reviewed and evaluated his/her ability to use the steps of FRAMES to self-manage depression, practice the steps with the guidance teacher, and the student and the guidance teacher would terminate their treatment relationship.

Support Interventions. The support interventions were developed by the researcher based on fundamental principles of supportive theory of psychotherapy (Piper et al., 2002). Supportive interpersonal interactions with teachers, peers, and nurses were combined with the three sessions of the brief cognitive intervention. The activities were:

1. "Sabai Sabai Sai Hunsa" was a brief mental health education audio broadcast program that provided accurate information about depression. The information presented descriptions of depression as a normal mood state, the etiology, risk factors, protective factors, signs and symptoms, and symptom management strategies required in the event of severe depressive illness.

2. "The Sabai Show" was a game played like a television game show that used relaxing mini-music concerts and a question and answer format. The game was

intended to decrease the stigma of depression by promoting knowledge-based positive attitudes towards depression and people who had depressive illness.

3. "Kradan Fitne" was a public announcement board that students could contribute comments, thoughts and feelings to and read at anytime. The writings were intended to be relaxing and allowed students to anonymously express difficult emotions, conflicts, and frustrations under supportive circumstances.

4. "Gift Box" was a peer discussion group intended to provide supportive discussions among 3 to 4 students accompanied by a selected best friend. The group was led by a member of a group of volunteer teachers identified by students as "favorite" teachers. The group was intended to provide students with opportunities to share their experiences with supportive individuals as they learned to self-manage their depression. At the same time, hearing others describe their experiences made it possible for students to learn from and support their peers.

5. "Sangsan Wannasil" was an optional drawing and painting session intended to provide students with an additional method of focused relaxation that promoted the release of emotions, feelings, and frustration through art. When combined with brief cognitive interventions, these activities accomplished important therapeutic aims. While learning new cognitive methods of self-managing, depressed students were exposed to positive reinforcing interpersonal support, learned additional behavioral methods of self-management, and relieved stress.

Brief Cognitive-Support Treatment	
Brief Cognitive Interventions	**Support Interventions**
Week 1 Session-1: Establish treatment relationship, learn and practice the steps of **FRAMES**. **F**eedback on depression. **R**esponsibility through awareness. **A**dvice in identifying and challenging distorted, negative thoughts. Advice in identifying and adopting more realistic thoughts. **M**enu of personal options for effective as-needed self-management. **E**mpathy and **S**elf-efficacy expressed at all sessions as verbal and nonverbal messages of active listening, respect, reassurance, and encouragement. **Week 2 & Week 3** Session 2 & 3: **E**valuate practice sessions. **S**hare homework experiences with depression self-management since previous session. **F**eedback on student's progress. **R**esponsibility by addressing personal protective and risk factors as part of the process. **A**dvice in recognizing and replacing distorted negative thoughts. **M**enu of personal options for best self-management practices continues to be developed. **A**ssign depression management homework.	**Daily** 30-minutes before the start of the school day, participants listen to various audio-broadcasts of mental health education lessons focusing on depression called "Sabai Sabai Sai Hunsa". All day, participants have access to a relaxation (white) board called "Kradan Fitne", used to express feelings by writing them on the board. **Weekly** One day per week, a 2-hour session using a game show format, called "The Sabai Show" is held after the last class of the day. The content of the game is prevention of depression. Game activities include singing, mini-concerts, and conventional games. One day per week participants attend a 1-hour group session with one best friend led by 4-teachers that students have identified as their favorite teachers. Groups of support, called "gift box" invite participants to discuss any distressing problems they may be experiencing. Each "gift box" includes 2 teachers and 3-4 participants with their friends. One day per week for 1-hour after lunch, interested participants meet as a group with one art teacher for "Sangsan Wannasil" or drawing and painting.

Figure 5 Model of brief cognitive-support treatment for mild to moderate depression provided by guidance teachers

Handbook Guideline. The handbook guidelines (see Appendix A) were designed by the researcher based on literature reviewed in order to generate and increase more understanding about depression among adolescent students, parents/guardians, and teachers. All content of the handbook guidelines were evaluated as appropriate by two psychiatrists, one psychiatric nurse, and two psychologists. The handbook guidelines are described below:

Students' handbook guideline consists of four parts: (1) How depression effect to me?, (2) How I know when I have depression, (3) How I manage my depression, and (4) My experiences for managing depression.

Parents/guardians' and teachers' handbook guideline consists of four parts: (1) How depression affects my daughter/son/student?, (2) How I know when my daughter/son/student has depression, (3) How I can help my daughter/son/student to manage depression, and (4) My experience in assisting of my daughter/son/student to manage depression.

Depressed adolescent students, their parents/guardians, and their teacher used the handbooks as practice guideline. Adolescent students recorded their experience in managing depression whereas their parents/guardians, and their teachers recorded their experience about their daughter/son/student in managing depression in which they participated and observed in the part 4 of the handbook guideline as their homework.

4. Usual care

Usual care is a single 30 to 40 minutes individual session with teacher-guidance advisor. The session provides students with problem-focused counseling

aimed at helping and encouraging students to solve distressing problems such as impaired attention during class. The guidance teacher uses in-depth interviews to comprehensively assess the student's problem. After identifying and describing the student's problem in detail, the guidance teacher provides instructive information on the use of distraction as a problem-solving method. These are conservative methods that can be generally adopted for use in the Thai secondary school system. It will be suggested to the students that they distract themselves from their negative thought and try to find ways of making themselves feel better. All severely depressed students, along with students who do not appear to have improved at the end of the program, are immediately referred to the district hospital nurse.

Treatment providers

All secondary schools in the Thasala District employ teachers who provide psychological counseling to students in addition to their classroom teaching. These guidance teachers are required to hold at least an undergraduate degree in education and have completed a training course in guidance counseling. Teachers- guidance advisors meet with students who appear to be or who complain of feeling depressed. In addition to guidance teachers, all schools are assigned a registered nurse employed at the nearby district or community hospital. Hospital nurses assigned to secondary schools must pass a required general course in counseling methods, have experience in caring for hospitalized patients with psychiatric conditions, and must also attend twice-yearly training programs in mental health care. Guidance teachers and community hospital nurses are responsible for recognizing and treating adolescent students suffering from depression. Because the aim of the study was to test the

effectiveness of the brief cognitive-support treatment in mild to moderate depressed adolescent students, no staff changes were made. There were five guidance teachers in the experimental treatment school and three guidance teachers at the control school who delivered all sessions of usual care.

For the experimental treatment school, a psychologist, a psychiatric nurse who is an expert in brief cognitive intervention as well as a researcher trained 5 volunteer guidance teachers to deliver 3 sessions of the brief cognitive treatment over a one week period. The following are the steps in the training process:

1. The researcher proposed an overview of the study, including the meaning, the objectives, the characteristics, and the activities of the brief cognitive-support treatment for reducing depressive symptoms in adolescent students.

2. The trainers shared knowledge including concepts and principles of brief intervention, cognitive intervention, supportive intervention, and depression. The contents covered the meaning, processes, strategies, and techniques of counseling. The essential characteristics of the guidance teachers, especially empathy, were raised and discussed as important issues.

3. The trainers explained the steps and procedures of the brief cognitive treatment for depression followed by a review of the intervention handbook guidelines.

4. The guidance teachers were guided word for word, in the processes to be followed according to the intervention guidelines. Counseling techniques were also added to these processes.

5. Training was conducted in role-play techniques as per the guidelines while having an open discussion at each step.

6. Each guidance teacher was trained to use the treatment followed by the guidelines with each other and with the students who were prepared to practice. The trainers observed throughout the process and weighted the scores. In the training process, each guidance teacher was tested for accuracy, uniformity, and consistency in delivering the experimental treatment. This proficiency testing allowed the research team to identify any problems early and take steps to correct them. The scores of everyone were in the 80 to 90 range.

7. Feedback was provided for each guidance teacher. Each person was trained until he/she passed with a score of more than 80 from 100 points.

8. Sessions 2 and 3 followed the same steps as points 3 through 7 above.

Protection of Human Subjects' Rights

Ethical approval had been granted from the Institutional Review Board of the Faculty of Nursing, Prince of Songkla University, Thailand before collecting the data.

To begin, the researcher was permitted to meet the school directors of all public secondary schools (N = 3) in Thasala District, Nakonsithammarat Province, Southern Thailand. The school directors were informed of the details of the study, the benefits and risks to the students. A letter asking for permission to collect data for screening the depression in the students was drafted by the Faculty of Nursing, Prince of Songkla University and was submitted to the school directors.

After human subject approval and permission from the school directors was granted, all adolescent students were contacted about using the BDI questionnaire to measure depression. Before using the questionnaire, they were informed by letter of

their rights about participating and were given an overview of the study. During this step, two schools that had large numbers of depressed students and who were willing to participate in the study were selected.

The researcher initially made an appointment with prospective participants to provide a personal introduction and to inform them of the procedures of the study. The prospective participants were invited to participate in the study and were assured that all information would be kept confidential, of the activities in the program, the persons involved in the program, the benefits and risks that might be a part of the process of the study, and also that they are free to withdraw from the study at any time if they wished to do so.

After the adolescent students indicated their willingness to participate, their parents/guardians were contacted in person to explain the process of the study, the rights for participating in the program, the benefits and risks to their daughter/son while participating. They were invited to participate and also provide their consent for their daughter/son to participate in the study. In addition, they also formally consented by signing a written consent prior participation in the study.

The author of this study is well aware of situations that may arise during the course of the study such as when subjects in either group show signs of severe depression and a worsening in their condition. In this case, the researcher would refer them to the healthcare team in the mental health and psychiatric department at Thasala Hospital. Those who might be worse after treatment at Thasala Hospital would then be referred to the psychiatrist at Maharaj-Nakonsithammarat Hospital. The researcher had conducted a pilot study to confirm the efficacy of the program prior to launching this study in a real situation.

Data Collection and Intervention Procedures

The data was collected continuously over a 5-month period, from July to November 2005. During July, an announcement was made in the three secondary schools in Thasala District, Nakonsithammarat Province for screening depression in all students (N = 838). Two of the schools were found to have the largest number (School 1 = 40, School 2 = 38) of students with mild to moderate depression (BDI scores = 10 to 19). The researcher approached the students who met all inclusion criteria and who were willing to make a commitment to the program. Their teachers/ counselors, their parents/guardians, and nurses also were approached. Everyone underwent an informed consent procedure by signing a written consent prior to participation in the study. They were asked to complete baseline measurements and depression was measured with BDI and HRS before starting the treatment implementation.

In August, the treatment group received the brief cognitive-support treatment whereas the control group received the usual care. The treatment processes lasted three weeks. The BDI and HRS were used to evaluate the depressive symptom levels in both groups immediately after the final treatment in week three. From September to November, the participants in the two groups were evaluated to determine the effectiveness of the treatment on depression scores measured by BDI, a self-rated assessment of depression symptoms, and by HRS, a clinician (registered district nurses)-rated assessment of depression symptoms at 6 weeks and 12 weeks after treatment. A blind evaluation method was employed in this study with the four registered district nurses who performed all HRS ratings in the study knowing which

students were in the treatment group and which in the control group. The perception of treatment effectiveness also measured at the same time the perception of treatment effectiveness of only those students in the treatment group, their parents/guardians, and their teachers as presented in Figure 6.

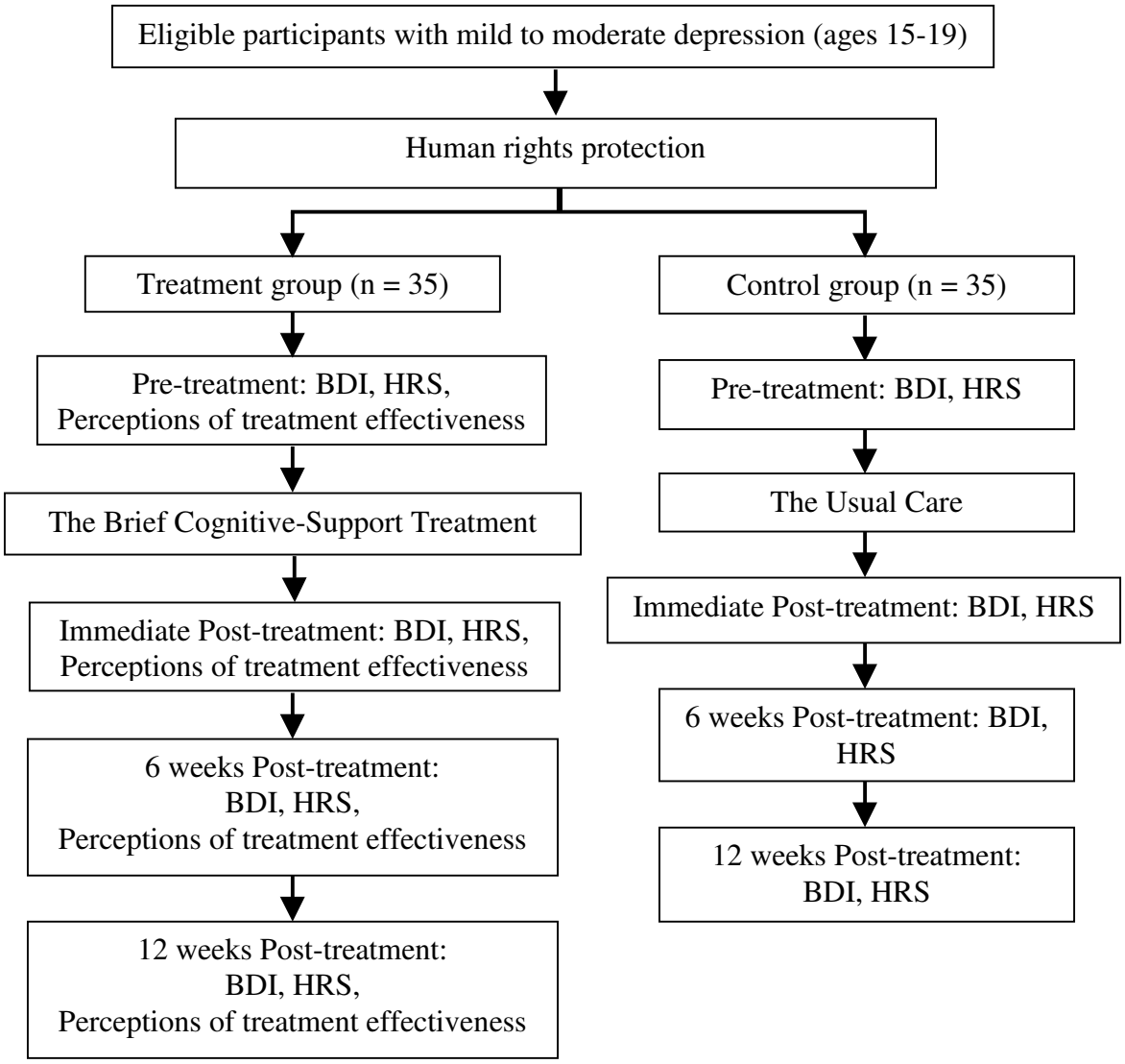

Figure 6 The research procedures

Strategies to Minimize Threats to Internal Validity

In order to minimize threats to internal validity, the participants were recruited from two schools that presented similar characteristics such as being in the same area, having similar mental health problems, being of similar size and having similar school policies. A random selection method was used to assign the study participants to either the treatment or the control groups based on the school the participant attended. This process addressed selection bias, a threat to the internal validity of the study design. Selection of two schools was also due to the researcher's concern of a threat to internal validity from a diffusion may be found if the treatment and control groups studied at the same school.

In addition, literature has shown that among basic characteristics of depressed students, gender, age, substance use, and a history of depression can influence the treatment. Therefore, to control maturation, the factors that could influence intervention and controlled variables differentiating these two groups at the point of pre-treatment measurement were analyzed. The researcher applied independent *t*-test and chi square analyses to control influencing variables to avoid influencing the study results by a difference in these variables. The results indicated no significant difference between the two groups among these variables. Furthermore, during pretreatment, using *t*-test, there were no group differences in BDI and HRS scores.

Mortality was also considered as a threat to internal validity, as the participants in this study would be monitored for changes of their cognitive condition and behavior for four months. Participants dropping out from the study might threaten the study validity. A previous study (Leichsenrring & Leibing, 2003) reported that for cognitive behavior therapy, the mean dropout rate was 16%. Therefore, for this study,

the sample was increased by at least 16% of the sample size calculation. Furthermore, to minimize the rate of participant loss and early drop out, several strategies adopted in the study were as follows: (1) participants were given a reminder by either telephone or in person two days before their appointment, and (2) if the participants failed to attend their scheduled appointments, the researcher immediately contacted them to reschedule as soon as possible.

As the researcher was concerned about a difference in quality of the treatment and in order to prevent a bias in treatment of the experimental treatment school, a psychologist, a psychiatric nurse, and the researcher trained five volunteer teacher/ counselors to deliver the 3-sessions, the cognitive portion of the experimental treatment. Each guidance teacher was then tested for accuracy, uniformity, and consistency in delivering the experimental treatment and the trainers weighted their scores. Each person was trained until he/she passed with a score of more than 80 from 100. This proficiency testing allowed the research team to identify any problems early and to take steps in order to correct them. In the same way, four nurses who participated in the study were trained to use the Hamilton Rating Scale for Depression (HRS). The nurses also were tested by the researcher in their ability to screen depression until they could use it effectively.

Data Analysis

Data were analyzed using the Statistical Package. Descriptive statistics included means, standard deviations, frequencies and percentages, were computed to summarize the data. Differences between the treatment and control groups were

evaluated using independent *t*-tests and chi square analyses. The only difference between the treatment and control groups was in monthly family income. Monthly family income was then used as a covariate in all subsequent group comparisons. The effect of the brief cognitive-support treatment was evaluated using a repeated measure of the multivariate analysis of covariance (MANCOVA) on the subjects' BDI and HRS scores separately. Between groups, differences at each time point were examined using one way analysis of covariance (ANCOVA). Follow-up analyses examined whether some items on the BDI and HRS were more sensitive to the effects of the treatment by computing, paired *t*-tests on each item of the two depression inventories for subjects in the treatment group only. In order to minimize the likelihood of a Type I error, a more conservative alpha level of .01 was used in evaluating the results of these analyses. Perceptions of treatment effectiveness of adolescent students who received the brief cognitive-support treatment, their parents/guardians, and their teachers were examined using separate repeated measures of multivariate analysis of variance (MANOVA). The change in perceptions of treatment effectiveness from baseline was examined at each of the three subsequent time points by way of paired *t*-tests.