

## Effectiveness of a School-based Cognitive Behavioral Therapy Program for Thai Adolescents with Depressive Symptoms

Sararud Vuthiarpa, Hunsu Sethabouppha, Pratum Soivong, Reg Williams

**Abstract:** This quasi-experimental study sought to ascertain the effectiveness of a school-based cognitive behavior therapy program on depressive symptoms among Thai adolescents. Seventy, randomly selected, Thai students, from two public high schools in central Thailand, were randomly assigned to either an experimental or control group. The 35 students assigned to the experimental group received a 12 week, school-based, cognitive behavior therapy program that included one therapy session per week. The 35 students assigned to the control group received usual care from the school nurses, but not the 12 weekly therapy sessions.

Quantitative evaluation of the program was conducted, via self-report questionnaires, three times: half way through the program; immediately after program completion; and, four weeks after program completion. Qualitative program evaluation also was conducted, via a focus group, upon completion of the program. The effects of the program were determined via MANOVA (quantitative data) and content analysis (qualitative data).

Significantly reduced depressive symptoms and increased social and adaptive functioning were found across all three quantitative evaluation times. Significantly reduced negative automatic thought also was evident upon program completion and four weeks after program completion. The qualitative data demonstrated that the participants benefited from the intervention by their stated improvement of depressive symptoms, negative automatic thought, and social and adaptive functioning (i.e. relationships with family and friends, and being more mindful of school work). The findings suggest the program may be useful, especially in a school setting, in decreasing depressive symptoms among Thai adolescents.

*Pacific Rim Int J Nurs Res 2012 ; 16(3) 206-221*

**Keywords:** Depression; School-based cognitive behavioral therapy; Thai adolescents

### Background

Adolescents with depressive symptoms, in a school setting, is a common, debilitating and recurrent public health problem that often is unrecognized and/or untreated.<sup>1</sup> The Department of Mental Health, Ministry of Public Health, in Thailand, has indicated that Thai adolescents, who represent the future hopes and resources for the country's development, are at

**Correspondence to:** Sararud Vuthiarpa, RN, PhD (Candidate) Faculty of Nursing, Chiang Mai University, 110 Intawaroros Road, Muang District, Chiang Mai, Thailand 50200 **E-mail:** vsararud@yahoo.com  
**Hunsu Sethabouppha**, RN, PhD. Lecturer, Faculty of Nursing, Chiang Mai University, 110 Intawaroros Road, Muang District, Chiang Mai, Thailand 50200

**Pratum Soivong**, RN, PhD. Assistant Professor, Faculty of Nursing, Chiang Mai University, 110 Intawaroros Road, Muang District, Chiang Mai, Thailand 50200

**Reg Williams**, RN, PhD, BC, FAAN. Professor, School of Nursing, and Professor, Department of Psychiatry, Medical School, University of Michigan, 400 North Ingalls, Ann Arbor, MI 48109-5482, USA.

high risk of depression.<sup>2</sup> However, fewer than 5% of depressed Thai adolescents receive adequate treatment.<sup>3</sup> Adolescents with depressive symptoms appear to be prevalent across the world, with prevalence rates of 2.5% to 10% reported in developing countries, Asia, and some western European countries.<sup>4-7</sup> Some 3.7% of Thai adolescents have been found to be depressed.<sup>8</sup> It has been recognized that more than 12% of adolescents in the United States, who have experienced depression, will relapse within one year, with 33% of them relapsing within four years.<sup>9</sup> These circumstances contribute to the fact that by 18 years of age more than 30% of adolescents meet the criteria for a diagnosis of major depressive disorder.<sup>9-10</sup>

Depressed adolescents, including those in Thailand, are known to experience depressive symptoms, including negative automatic thought, and deficits in social and adaptive functioning.<sup>11,12</sup> In addition, they often exhibit learning difficulties,<sup>8,13</sup> low academic achievement,<sup>8,13</sup> drug and alcohol abuse and suicidal ideations.<sup>13,14,15</sup> family conflicts,<sup>8,13,15</sup> poor relationships with peers and teachers,<sup>13,15</sup> and behavioral problems.<sup>8,13,16</sup> They also are at high risk of attempting suicide.<sup>13,14</sup>

It has been hypothesized that depression among adolescents results from the interaction between their biological, psychological vulnerabilities and environmental factors.<sup>17</sup> The biological factors are comprised of genetic and neurochemical components,<sup>18</sup> while the psychological vulnerabilities consist of cognitive factors (i.e. negative automatic thought and environmental factors, such as various disruptive and maladaptive social patterns).<sup>18,19</sup> The interaction of these factors is believed to trigger the depressogenic process that leads to the development of one becoming depressed.<sup>18,19</sup> In this regard, prior research has focused on interventions that target cognitive and social behavior factors with respect to prevention and treatment of clinical depression among adolescents.<sup>1,20</sup>

One approach that has been used to prevent and decrease depressive symptoms among adolescents has

been school-based delivery of cognitive behavioral therapy (CBT).<sup>21,22-25</sup> Generally, adolescents appear to perceive school-based CBT to be less stigmatizing than a traditional, clinic-based treatment program for depression.<sup>26</sup> Among Asian countries, where cultural values encourage conformity to norms, school-based CBT may prove to be more beneficial. This is because adolescents, who know their friends are undergoing the same treatment that they are undergoing, often are more encouraged to normalize their behavior.<sup>27</sup> Although adolescents in Western countries have been found to benefit from participation in school-based CBT programs for depressive symptoms, no known study has investigated whether Thai adolescents may benefit from a similar program. Thus, the aim of this study was to evaluate, in adolescent Thais with depressive symptoms, the effectiveness of a 12-week, school-based CBT program for reducing depressive symptoms and negative automatic thought, and enhancing social functioning.

### **Conceptual Framework:**

The CBT program was based on Beck's Model of Cognitive Behavior Therapy (CBT)<sup>28,29</sup> and the Social Cognitive Learning Theory (SCLT).<sup>30</sup> According to the CBT model, negative automatic thought is the main cause of depression. Negative automatic thought has been described as consisting of a negative cognitive triad (a negative view of oneself, the environment and the future) that arises from a maladaptive developmental history that leads to depression.<sup>28</sup>

In addition, SCLT has been postulated as containing cognitive and social domains, with one's cognitive domain giving rise to negative automatic thought that leads to depression.<sup>30</sup> Negative thought, according to the SCLT, can lead to misperceptions of events and low levels of perceived adaptive competence, so as to preclude achievement of positive outcomes.<sup>31</sup> The SCLT also suggests, with respect to social domain,

that depression may be caused and maintained by the stressful life events that lead to disruptions in one's social functioning. Such disruption seems to be more severe for those who experience deficits in their behavioral self-regulation skills (e.g. using pleasant activities to elevate one's mood).<sup>31</sup> Thus, school-based CBT programs have targeted individuals' cognitive and social factors by restructuring their negative automatic thought and enhancing their social and adaptive functioning.<sup>29-31</sup>

## **Method**

**Design:** A quasi-experimental design was used.

**Ethical considerations:** Approval to conduct the study was granted by the Research Ethics Review Committee of the primary investigator's (PI) institution and the Directors of the two public high schools used as study sites. All potential participants and their parents or legal guardians were informed about the study's: purposes; intervention program; confidentiality and anonymity issues; and, potential risks and benefits. They also were told: what their voluntary participation would entail; they could withdraw without repercussions; and, the focus group discussion would be tape-recorded. All potential subjects and their parents or legal guardians who consented to participate were asked to sign an assent or a consent form.

**Setting:** The study was conducted at two public high schools in central Thailand. The PI surveyed the high schools in central Thailand that used the same school health policies and health services system, prior to randomizing the schools, via lot drawing, using each school's identification number.

**Sample:** The sample size was determined via a power calculation based on the mean scores of a randomized controlled trial that used CBT in treatment for adolescents with depression.<sup>32</sup> Therefore, a sample size of 32 subjects per group (intervention and control)

was determined to be needed for a total of 64 participants. Estimating a potential 20% attrition over the data gathering period, 76 subjects (38 per group) were determined to be needed.

The PI received permission, from the Director of each school, to conduct depression screening at the respective schools. After the screening, the PI and research assistants (RAs) verified that the potential subjects met the inclusion criteria. The inclusion criteria consisted of Thai adolescents who: were 14-17 years of age; had a mild to moderate depressive symptom score of 16 to 24 on the Center for Epidemiologic Studies Depression Scale (CES-D); were willing to participate; and, had one parent or legal guardian who gave consent for their participation. Potential subjects were excluded if they had a history of severe depression (score > 24 on CES-D). The PI and RAs pair matched the adolescents in the experiment and control group based on their: age; gender; GPA; and, depressive symptom score. The sample consisted of 74 adolescents (37 per group). During the study, two subjects in each group dropped out because of not wanting to miss a school activity and feeling uncomfortable in the group. Recruitment, matching and randomized selection of the subjects, as shown in **Figure 1**, occurred during the 2009 academic year. As shown in **Table 1**, no significant differences were noted between the experimental and control group subjects.

**Instruments:** Data were obtained from each subject via use of four self-report instruments and a focus group guide. The instruments included the: Demographic Data Form (DDF); Center for Epidemiologic Studies Depression Scale (CES-D);<sup>33</sup> Children's Automatic Thought Scale (CATS);<sup>34</sup> Child and Adolescent Social and Adaptive Functioning Scale (CASAFS); and, Focus Group Guidelines (FGG). The PI-developed Demographic Data Form (DDF) was used to obtain information regarding each participant's: age; gender; religion; grade point average (GPA); and, family monthly income.

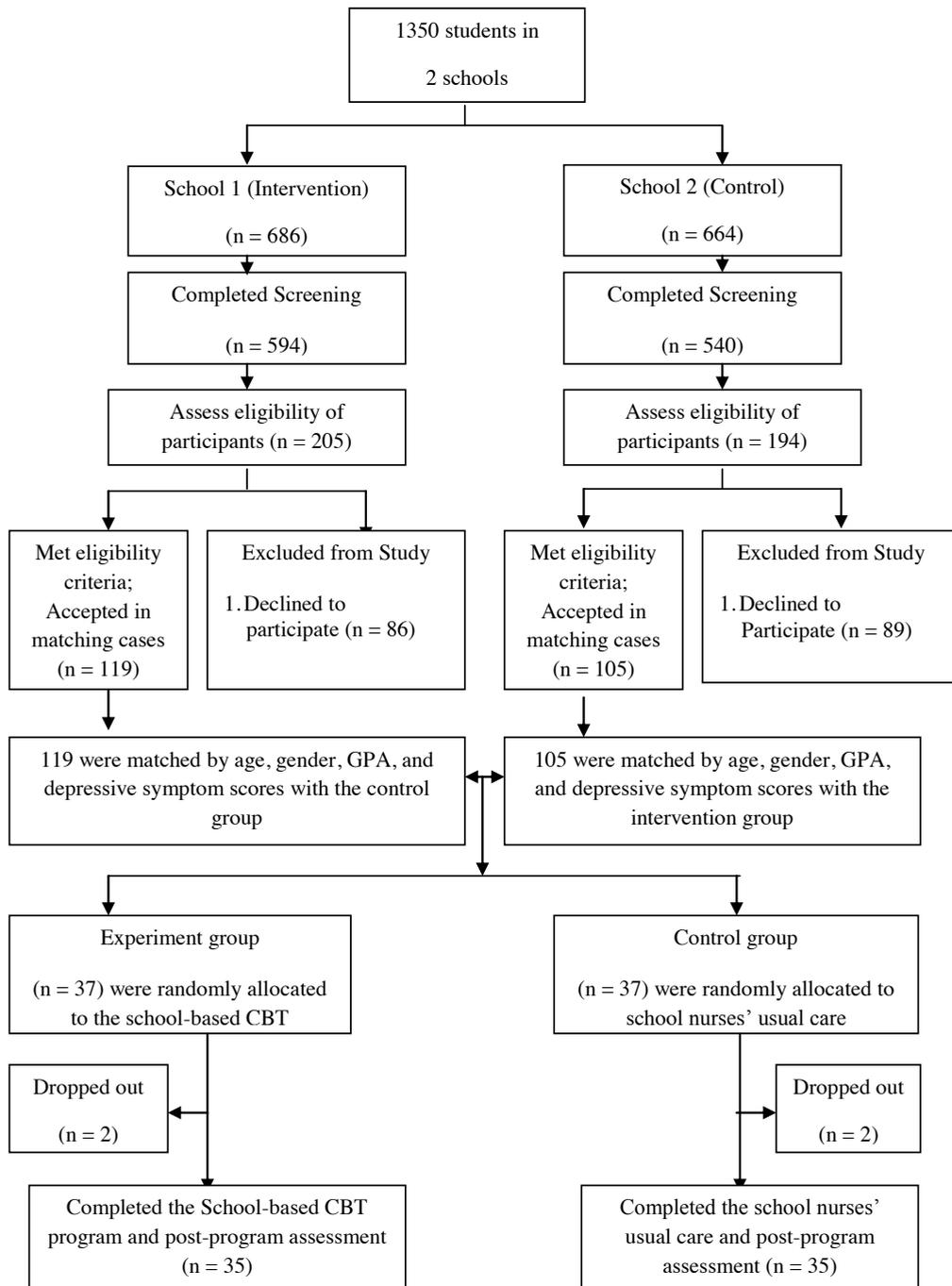


Figure 1 Flow Chart of Recruitment and Matched Pairs Procedure

**Table 1** Comparison of Demographic Characteristics by Group

Demographic Characteristics	Experimental Group (n = 35)	Control Group (n = 35)	t	df	p
<b>Age (year)</b>					
Range	15-16	15-16			
Mean (SD)	15.57(0.50)	15.51(0.51)	-0.47	68	0.43 <sup>ns</sup>
<b>CES-D Score</b>					
Range	16-24	16-24			
Mean (SD)	19.73(2.51)	19.51(2.68)	0.14	68	0.88 <sup>ns</sup>
<b>GPA in School</b>					
Range	1.54-3.81	1.50-3.65	0.58	68	0.75 <sup>ns</sup>
Mean (SD)	2.63(0.57)	2.71(0.56)			
	n (%)	n (%)	$\chi^2$	df	p
<b>Gender</b>					
Male	9 (25.70%)	9 (25.70%)	0.00 <sup>b</sup>	1	1.00 <sup>ns</sup>
Female	26 (74.30%)	26 (74.30%)			
<b>Religion</b>					
Buddhism	35 (100%)	35 (100%)	.0 <sup>a</sup>	-	- <sup>ns</sup>
<b>Household Income (baht/month)</b>					
≤ 20,000	18 (51.40%)	10 (28.60%)	3.81 <sup>b</sup>	1	0.054 <sup>ns</sup>
> 20,001	17 (48.60%)	25 (71.40%)			

**Note:** <sup>a</sup> = No statistics were computed. Religion was constant

<sup>b</sup> = 0 cells (0.0%) had an expected count of less than 5

<sup>ns</sup> = no significance

The Thai translated version<sup>33</sup> of the 20-item Center for Epidemiologic Studies Depression Scale (CES-D)<sup>35</sup> was utilized to measure the adolescents' symptoms of depression, including: depressed affect (i.e., blues, depressed, lonely, cry, sad); positive affect or well-being (i.e., good, hopeful, happy, enjoy); somatic symptoms (i.e., appetite, sleep); and, interpersonal problems (i.e., unfriendly, dislike).<sup>23, 36-38</sup> Each item consisted of one statement that described depressive symptoms. Respondents were asked to rate the past week's experience of depression on a 4-point, Likert-like, scale, ranging from 0 = "rarely or none of the time" to 3 = "most or all of the time." A summary

score was calculated by adding each of the responses after reversing the score on four negatively worded items. The total score indicated the level of depression. For example, a score of: <16 = non-depressed; 16 to 24 = mild to moderate depression; > 24 = severe depression.<sup>39</sup> The Cronbach's alpha for the instrument, in this study, was 0.98 for the experimental group and 0.89 for the control group.

The Thai version<sup>34</sup> of 40-item *Children Automatic Thought Scale (CATS)*, developed by Schniering and Rapee,<sup>40</sup> was used to assess negative beliefs across internalization and externalization difficulties. The CATS measures negative automatic

thought on four distinct factors (physical threat, social threat, personal failure and hostility) among persons 7–16 years of age. Respondents were asked to rate the frequency with which they experienced each thought, during the past week, on a 5–point Likert–like scale ranging from 0 = “not at all” to 4 = “all the time.” The rating for each of the items was summed to provide a maximum total score of 160. The higher the score, the greater the frequency of negative automatic thought. In this study, the overall CATS had a Cronbach’s alpha of 0.91 for the control participants and 0.93 for the experimental participants. The internal consistency of the subscales ranged from: 0.75 to 0.78 (physical threat); 0.74 to 0.88 (social threat); 0.84 to 0.85 (personal failure); and, 0.83 to 0.84 (hostility).

The 24–item, self–report *Child and Adolescent Social and Adaptive Functioning Scale (CASAFS)*, developed by Price, Spence, Sheffield and Donovan,<sup>41</sup> was used to examine the adolescents’ social and adaptive functioning. The CASAFS consisted of four subscales that measured social role functioning (school performance, peer relationships, family relationships and home duties/self–care). Respondents were asked to respond, on a 4–point Likert–like scale (1 = “never” to 4 = “always”), to each of the social and adaptive functioning items. Negatively–worded items required reverse–scoring before calculation of the total score which could range from 24 to 96. The higher the total score, the higher the level of social functioning. In this study, the CASAFS had an overall Cronbach’s alpha of 0.75 to 0.78. The internal consistency of the subscales revealed a coefficient alpha of: 0.65 to 0.79 (school performance); 0.61 to 0.51 (peer relationships); 0.75 to 0.68 (family relationships); and, 0.62 to 0.63 (home duties/self–care). To ensure stability of the instrument, the test–retest method was applied. A significant correlation ( $r = 0.78$  to  $r = 0.79$ ) was found between the CASAFS initial participation scores and the scores obtained four weeks

later. The test–retest correlation coefficient of the subscales revealed a significant correlation of: 0.66 to 0.79 (school performance); 0.59 to 0.73 (peer relationships); 0.58 to 0.73 (family relationships); and, 0.56 to 0.72 (home duties/self–care). After receiving permission, the PI translated the CASAFS into Thai before it was back–translated by three bilingually fluent individuals. The back–translated version of the instrument then was compared to the original one to assure no changes in meaning had occurred during translation.<sup>42</sup> With respect to any discrepancy, the PI sought consensus among the three translators.

The PI developed the *Focus Group Guidelines (FCG)* based on review of the literature for the purpose of exploring adolescents’ opinions regarding the effectiveness of the CBT program. The FCG included five open–ended questions that were reviewed and critiqued by three experts in CBT and focus groups. The questions were: “How valuable was the information presented in this program?”; “How did this program affect your mood, thoughts, and behaviors?”; “How did you apply or practice the skills presented in this study?”; “What did you think of the length of the sessions and the overall 12 weeks?”; and, “What would be your suggestions about activities after completion of the study?”

**Intervention:** The purposes of the CBT program were to: decrease high school, Thai adolescents’ depressive symptoms and negative automatic thought; and, enhance their social and adaptive functioning. The program was guided by a modified version of the original CBT manual, after permission was obtained from the original developers of the CBT manual.<sup>43</sup> The PI utilized the key constructs and concepts covered in the CBT intervention (overall design, structure to the process of CBT, and main cognitive and behavioral contents) in modifying the original CBT manual. Modification made in the original manual focused on Thai adolescents’ behavioral and social activities

(i.e. role playing, discussion-related topics, learning tasks and homework), all within the context of Thai adolescents' depression, learning, living styles and culture. The program's feasibility was examined for content validity by five experts, including two nursing

faculty with clinical experience in cognitive behavioral strategies, a psychologist, and two child and adolescent psychiatrists with cognitive behavior therapy experience. The details of the program are presented in **Table 2**.

**Table 2** Schedule, Objectives and Activities of the School-Based CBT Program

Session	Goals	Activities
Session 1	<ol style="list-style-type: none"> <li>1. To begin to establish relationships and acquaintances, and guidelines for each program session.</li> <li>2. To explain depression and CBT.</li> <li>3. To teach mood monitoring using the "Emotions Thermometer".</li> </ol>	<ol style="list-style-type: none"> <li>1. Introduce self, obtain names of participants, introduce the "Get Acquainted Activity" and explain guidelines.</li> <li>2. Teach about depression, and explain the rationale for the school-based CBT and how this treatment can help depression.</li> <li>3. Explain and discuss the meaning and recording of daily mood monitoring, and the assigning of homework.</li> </ol>
Session 2	<ol style="list-style-type: none"> <li>1. To review homework for mood monitoring.</li> <li>2. To teach goal setting.</li> </ol>	<ol style="list-style-type: none"> <li>1. Review homework assignment and reinforce progress made.</li> <li>2. Review initial goals, create sub-goals and relate goal-setting to other skills.</li> <li>3. Assign homework addressing sub-goals.</li> </ol>
Session 3	<ol style="list-style-type: none"> <li>1. To review homework and progress in goal setting.</li> <li>2. To teach the importance of involvement in pleasant activities and create an activity schedule.</li> </ol>	<ol style="list-style-type: none"> <li>1. Review homework assignment and reinforce progress made.</li> <li>2. Explain and discuss association between depression and the lack of active and enjoyable activities, and how doing pleasant activities can improve emotions, thoughts and behaviors.</li> <li>3. Identify and select pleasant activities in which to engage.</li> <li>4. Assign homework to increase involvement in pleasant activities (i.e. going to a movie, watching TV, reading or being with friends).</li> </ol>
Session 4	<ol style="list-style-type: none"> <li>1. To review homework and progress made in involvement in pleasant activities.</li> <li>2. To teach problem-solving.</li> </ol>	<ol style="list-style-type: none"> <li>1. Review progress made regarding involvement in pleasant activities.</li> <li>2. Explain and discuss how problem-solving can be used to deal with issues and incidents.</li> <li>3. Teach and practice problem-solving, using a scenario.</li> <li>4. Assign homework to integrate problem-solving with increased involvement in pleasant activities.</li> </ol>
Session 5	<ol style="list-style-type: none"> <li>1. To review homework and progress made in mood monitoring, and involvement in pleasant activities.</li> <li>2. To teach recognition of cognitive distortions.</li> </ol>	<ol style="list-style-type: none"> <li>1. Review homework assignment and reinforce progress made.</li> <li>2. Review reasons for and recognition of negative automatic thought (NAT) and how to record its presence.</li> <li>3. Assign homework to record presence of NAT.</li> </ol>

**Table 2** Schedule, Objectives and Activities of the School-Based CBT Program (continued)

Session	Goals	Activities
Session 6	<ol style="list-style-type: none"> <li>1. To review homework and progress made on recording NAT.</li> <li>2. To continue to identify NAT.</li> <li>3. To increase the ability to formulate and use realistic counter-thoughts.</li> <li>4. To review progress made toward goals.</li> </ol>	<ol style="list-style-type: none"> <li>1. Review homework assignment and reinforce progress made.</li> <li>2. Work on recognizing and labeling NAT.</li> <li>3. Confront and change NAT with the use of Socratic questioning, role playing, role reversal and formulation of counter-thoughts.</li> <li>4. Assign homework to address the use of realistic counter-thoughts.</li> </ol>
Session 7	<ol style="list-style-type: none"> <li>1. To review homework and progress made in applying realistic counter-thoughts.</li> <li>2. To improve basic skills for meeting people.</li> </ol>	<ol style="list-style-type: none"> <li>1. Review homework assignment and reinforce progress made.</li> <li>2. Explain and discuss rationale for social skill training and the fact that changing behavior is one way to change emotions.</li> <li>3. Improve social skills through role playing (i.e. starting a conversation, breaking into a group conversation, listening and ending a one-to-one or group conversation).</li> <li>4. Assign homework for practicing social skills and increasing involvement in pleasant activities.</li> </ol>
Session 8	<ol style="list-style-type: none"> <li>1. To review homework and progress made in improving social skills.</li> <li>2. To improve understanding of differences between passive, assertive and aggressive behavior.</li> <li>3. To identify underlying beliefs that inhibit one's use of assertive behavior.</li> <li>4. To increase use of assertiveness behavior.</li> </ol>	<ol style="list-style-type: none"> <li>1. Review homework assignment and reinforce progress made.</li> <li>2. Present content related to possible problems encountered, during difficult situations, when trying to stand up for one's self or when trying to ask for help.</li> <li>3. Provide examples of assertive and non-assertive responses, and discuss reactions to these responses.</li> <li>4. Provide assertiveness training through use of the "I" statement, role playing and tailored techniques.</li> <li>5. Assign homework regarding recording of cues that help with the use of assertive behavior.</li> </ol>
Session 9	<ol style="list-style-type: none"> <li>1. To review homework and progress made in using assertive behavior.</li> <li>2. To improve listening skills and understanding of others thoughts and beliefs.</li> <li>3. To practice compromise.</li> </ol>	<ol style="list-style-type: none"> <li>1. Review homework assignment and reinforce progress made.</li> <li>2. Explain and discuss rationale for listening to others, even when conflicts are present.</li> <li>3. Practice listening skills, using role playing, during "debates" on one or two current controversial issues.</li> <li>4. Relate difficulties in communication of possible NAT.</li> <li>5. Explain and discuss rationale for compromising in order to increase support, and reduce conflict and depression.</li> <li>6. Relate compromising to problem-solving and teach how to compromise, using role-playing scenarios.</li> <li>8. Assign homework on the use of compromise, as a problem-solving technique, with family, friends and/or teachers.</li> </ol>

**Table 2** Schedule, Objectives and Activities of the School-Based CBT Program (continued)

Session	Goals	Activities
Session 10	<ol style="list-style-type: none"> <li>1. To review homework and progress made in applying listening and compromising skills.</li> <li>2. To improve ability to relax.</li> <li>3. To identify effective relaxation techniques.</li> </ol>	<ol style="list-style-type: none"> <li>1. Review homework assignment and reinforce progress made.</li> <li>2. Identify situations that can lead to stress and discuss what approaches have been used to deal with stress.</li> <li>3. Explain and discuss rationale for using relaxation techniques.</li> <li>4. Teach and practice relaxation techniques: deep breathing, counting backwards, guided imagery, meditation and progressive muscle relaxation.</li> <li>5. Identify which relaxation techniques to practice, during the coming week, and assign use of these methods as homework.</li> </ol>
Session 11	<ol style="list-style-type: none"> <li>1. To review homework and progress made in practicing relaxation techniques.</li> <li>2. To enhance ability to control emotional distress.</li> <li>3. To develop a plan for coping with situations that trigger emotional distress.</li> </ol>	<ol style="list-style-type: none"> <li>1. Review homework assignment and reinforce progress made.</li> <li>2. Explain and discuss rationale for keeping emotions under control and identify precipitators of emotional distress.</li> <li>4. Plan specific coping actions to control emotional distress (i.e. taking a walk, going out with family members, going to the temple, engaging in pleasant activities or using relaxation techniques).</li> <li>5. Work on connecting control of emotional distress with the other skills learned (i.e. problem-solving, use of assertive behavior, formulating realistic counter-thoughts and compromise).</li> <li>6. Identify one or two stressful situations that might occur and discuss how to apply coping actions when situations arise.</li> <li>7. Assign homework related to creating list of steps to take when control of emotional distress is required and then practice carrying out the steps.</li> </ol>
Session 12	<ol style="list-style-type: none"> <li>1. To review homework and progress made in controlling emotional distress.</li> <li>2. To review progress to ward accomplishment of program goals.</li> <li>3. To review cognitive and behavior skills covered in program</li> <li>4. To determine which skills have been most helpful.</li> </ol>	<ol style="list-style-type: none"> <li>1. Review homework assignment and reinforce progress made.</li> <li>2. Inform participants that this is the last program session.</li> <li>3. Review progress made throughout program.</li> <li>4. Review all of the skills covered and identify which ones are most helpful.</li> <li>5. Encourage use of various skills learned, during the program, to assist in dealing with future situations.</li> <li>6. Thank the subjects for participating in the program.</li> </ol>

**Procedure:** After the adolescents and their parents/guardians gave consent for participation, the 35 subjects assigned to the intervention group were provided information about the time, place and schedule for the 12 week CBT program. They then were divided into six sub-groups of 5–10 participants each<sup>44</sup> based on the each subject's availability to attend the program. Then the school-based CBT program, which lasted for one hour each week for 12 weeks, was implemented. The subjects assigned to the control group did not receive the CBT program, but were provided usual care by the school nurses.

The PI conducted all session activities. One RA assisted in facilitation of the groups. The other RA collected data, via administration of the CES-D, CATS, and CASAFS, in both the experiment and control groups at the mid-point of the program (week six), immediately upon the completion of the intervention (week 12), and four weeks after the completion of the intervention (week 16). The control group subjects were offered an opportunity to participate, during the school break, in the school-based CBT after the post-program data were collected. However, they chose not to participate in the program. Thus, the PI provided all of them the CBT manual and workbook, as well as a relaxation CD.

**Data Analysis:** Descriptive statistics, Chi-square and t-test were used to analyze the demographic data. Multivariate analysis of variance (MANOVA) was utilized for testing the differences in depressive symptoms, negative automatic thought, and social and adaptive functioning between the experimental and control group. A paired t-test was used to compare the mean changes within the groups over time. Data from the focus group were analyzed via content analysis.<sup>45</sup>

## Results

Quantitative findings: As shown in **Table 3**, significant interaction effects were found between the experimental and control group with respect to

depressive symptoms and negative automatic thought. Also, significantly higher social and adaptive functioning scores were noted in the experimental group compared with the control group.

The experimental group's depressive symptoms were found to improve across treatments and during follow-up (see **Table 4**). Their depressive symptoms also decreased across the intervention phase, yielding significant main effects regarding group and time interaction ( $F=5.09$ ;  $p<0.01$ ). In addition, the experimental group's negative automatic thought scores were found to be significantly lower than the control group's negative automatic thought scores upon completion of the intervention, as well as upon follow-up.

As reflected in **Table 5**, the experimental group's social and adaptive functioning showed improvement over time, compared to the control group. Social and adaptive functioning was found to increase across the intervention phase, yielding a significant main effect on groups ( $F=4.34$ ,  $p<0.05$ ).

**Qualitative findings:** Upon completion of the intervention, 12 subjects were randomly selected to participate in a focus group. The focus group guidelines covered the value and effects of the information presented in the program, and the participants reflected on whether they had improved via participation in the program. They noted a decrease in the level of depressive symptoms they exhibited prior to taking part in the program. For example, one participant said, "I'm getting better. I can arrange time to do things. I can stay home after school and I can consider what to do to lessen my depressed mood." As indicated in this quote, this participant expressed an improvement in negative affect. Another participant mentioned that the PI helped her to become less sad (i.e., "I liked being in this group because I don't feel I'm alone. More, I don't feel bad because I have been taught that there are other people who go through the same thing as me and they improved after using skills from the program.").

**Table 3** Main Effects and Interactions, between Experimental and Control Groups, Regarding Depressive Symptoms, Negative Automatic Thought, and Social and Adaptive Functioning

Group	Time of Evaluation								Group effect		Time effect		Group* Time effect	
	Time 1		Time 2		Time 3		Time 4		F	p	F	p	F	p
	Mean	SD	Mean	SD	Mean	SD	Mean	SD						
<b>Depressive symptoms</b>														
Experiment	19.66	2.57	18.54	4.99	15.83	4.91	12.91	6.13	33.90	<.001	9.12	<.001	5.09	.002
Control	19.74	2.52	21.26	5.13	20.20	5.86	19.26	5.74						
<b>Negative automatic thought</b>														
Experiment	33.51	16.15	32.09	17.50	24.77	13.92	21.69	14.36	3.49	.063 <sup>ns</sup>	1.35	.258 <sup>ns</sup>	4.25	.006
Control	22.86	17.53	33.23	16.73	34.11	17.37	32.54	17.49						
<b>Social and adaptive functioning</b>														
Experiment	65.11	6.82	67.23	7.34	67.94	7.89	71.31	8.97	4.34	.038*	1.64	.179 <sup>ns</sup>	2.51	.059 <sup>ns</sup>
Control	67.11	6.61	65.29	8.61	65.29	8.12	66.11	8.38						

**Note:** Time 1 = baseline assessment;  
 Time 2 = six weeks after starting program;  
 Time 3 = immediately after program completion;  
 Time 4 = four weeks after program completion

**Table 4** Simple Effects on Depressive Symptoms and Negative Automatic Thought, between Experimental and Control Groups, at Various Time Periods

Variable	Time	Experimental Group		Control Group		F	df	p
		M	SD	M	SD			
<b>Depressive Symptoms</b>	Time 1	19.66	2.57	19.74	2.52	0.02	1	.89 <sup>ns</sup>
	Time 2	18.54	4.99	21.26	5.13	5.03	1	.03
	Time 3	15.38	4.91	20.20	5.86	11.45	1	.001
	Time 4	12.91	6.13	19.26	5.74	19.97	1	<.001
<b>Negative Automatic Thought</b>	Time 1	33.51	16.15	26.86	17.53	2.73	1	.10 <sup>ns</sup>
	Time 2	32.09	17.50	33.23	16.73	0.08	1	.78 ns
	Time 3	24.77	13.92	34.11	17.37	6.17	1	.01
	Time 4	21.69	14.36	32.54	17.49	8.06	1	.006

**Note:** <sup>ns</sup> = not significant; Time 1 = baseline assessment; Time 2 = six weeks after starting program; Time 3 = immediately after program completion; and, Time 4 = four weeks after program completion

**Table 5** Comparison of Mean Scores, between Experimental and Control Groups, on Social and Adaptive Functioning at Various Time Periods

Variable/ Group	Time of Evaluation								F	p
	Time 1		Time 2		Time 3		Time 4			
	Mean	SD	Mean	SD	Mean	SD	Mean	SD		
<b>Social and Adaptive Functioning</b>										
Experiment (n=35)	65.11	6.82	67.23	7.34	67.94	7.89	71.31	8.97	3.81	.01
Control (n=35)	67.11	6.61	65.29	8.61	65.29	8.12	66.11	8.38	0.42	.74 <sup>ns</sup>

Note: <sup>ns</sup> = not significant; Time 1 = baseline assessment; Time 2 = six weeks after starting program; Time 3 = immediately after program completion; and, Time 4 = four weeks after program completion

In addition, the subjects reported a reduction in the frequency of their negative automatic thoughts, an increase in their social and adaptive functioning, improved relationships with family and friends, and being more mindful of their school work. As one participant indicated, *“Now I can notice my negative thoughts and I know I can think differently. When I feel down I think differently, I feel better.”* The participants appeared to use their communication skills to solve relationship problems with their family and friends. As two participants stated: *“I talk with my mom more. I knew from the program that I should express my feelings to her in the right way...I better understood my mom. I felt better. I felt more positive in my home situation”*; and, *“I did the method of starting communication with friends and joining friends’ activities. Before attending the program, I just didn’t feel like I could talk to my friends. I felt like my friends thought I was strange.”*

Overall, the findings suggest the School-based Cognitive Behavioral Therapy Program had a positive influence on the participating adolescents’ levels of depression. As indicated by the subjects’ responses, the program provided them knowledge and skills they

could use when contending with their symptoms of depression.

## Discussion

The findings revealed that prior to the school-based CBT program no significant differences existed between the experimental and control group of adolescents with mild to moderate depression with respect to their depressive symptoms, negative automatic thought, or social and adaptive functioning. However, upon completion of the intervention program, as well as 4 weeks later, the results provided evidence of a significant decline in self-reported depressive symptoms and negative automatic thought, as well as enhanced social and adaptive functioning over the usual care, among the adolescents in the experimental group. In addition, the subjects indicated the CBT program was acceptable in that they had an appreciation for the positive changes they experienced, as well as the fact they did not incur any adverse effects while undergoing the intervention.

The mechanism underlying the subjects’ improvement may be due to the following. The first

stage (session 1–5) of the CBT program was aimed at reducing their depression scores to a normal range via behavioral techniques that helped them monitor their ability to change their life experiences.<sup>46</sup> The students learned to change their behavior by: setting goals; monitoring how they felt (mood); being more active, especially in enjoyable or pleasant activities; improving their social skills; and, developing effective communication, assertive training, compromising and problem-solving skills.<sup>47</sup> These techniques seemed to enable them to increase their normal activity experiences with their peers and prevent them from encountering potentially adverse effects (i.e. opting out of and avoiding interactions at school. Thus, the adolescents were more able to gain a sense of achievement from the accomplishment of behavioral tasks, as well as from learning new skills.<sup>46,47</sup>

The second stage (session 6) of the CBT program focused on identification and challenge of the negative automatic thoughts they adolescents experienced. Thus, their negative thoughts were analyzed and modified via substitution of positive thoughts, thereby changing their depressive symptoms.<sup>48</sup> These changes perhaps were most evident in the comments from the students assigned to the focus group where they stated they understood the connections among their emotions, thoughts and situations. They also indicated they were aware of the activities that made them feel better, happy and more active, and that they should engage in more such activities. In addition, these subjects stated recognition of the fact that restructuring their thought processes would help them alleviate their feelings of sadness, guilt and conflicts, and make them happier.

The third stage (session 7–12) of the CBT program sought to teach the subjects how to monitor their mood via regulation of their emotions and utilization of relaxation techniques. In addition, the adolescents were taught how to improve their social skills, use effective communication skills and

implement problem-solving skills, so as to enhance their social functioning and increase their number of pleasant activities and social contacts.<sup>48</sup>

Even though this study demonstrated the effectiveness of a school-based CBT program, the process of running such a program requires nurses with CBT training. With diligence and care, nurses with CBT knowledge and experience can provide effective treatment that can be part of the school curriculum. Additionally, the program was quite time consuming; therefore, five to eight sessions of this program, but that still cover the essential details, are recommended.

### **Limitations and Recommendations**

This study, like all studies, has limitations. Ten percent of the subjects dropped out of the study prior to its completion. This may have been due to the school-based CBT requiring the active participation of students even though some of them may not have been: comfortable being in a group; interested in joining other activities; and, allowed, by their parents, to participate. In addition, a threat to the internal validity of the study may have occurred since the PI conducted the focus group. Thus, it is recommended that an external evaluator conducts the focus group discussions in future studies.

Since the subjects expressed a need for their parents to better understand their depression and the CBT program, it is recommended that replication of this study be conducted with parental involvement in the program. Also, randomized clinical trials need to be conducted with different age groups and a wider range of schools to better evaluate the benefits of the program. In addition, a prospective follow-up study, regarding the effectiveness of the program, needs to be conducted at 3, 6 and 12 months, post-intervention, to evaluate the long-term benefits of the program. Perhaps most importantly, a training guide needs to be developed for school nurses to use in implementing the program throughout Thailand.

## Acknowledgements

Gratitude is expressed to the Thailand Nursing and Midwifery Council, and to the King Prajadhipok and Queen Rambhai Barni Memorial Foundation, for the grant provided for conduct of this research.

## References

1. Rice K, McLaughlin TF. Childhood and adolescent depression: A review with suggestions for special educators. *Int J Spec Educ.* 2001; 16(2): 85-96.
2. Department of Mental Health, Ministry of Public Health, Thailand. Mental health situation [cited 2006]. Available from: <http://www.dmh.go.th>.
3. Kaesornsamut P, Sithimongkol Y, Williams RA, Sangon S, Rohitsuk W, Vorapongsathorn T. Effectiveness of the BAND intervention program on Thai adolescents' sense of belonging, negative thinking and depressive symptoms. *Pacific Rim Int J Nurs Res.* 2012; 16 (1): 29-47.
4. Chen CN, Wong J, Lee N, Chan-Ho Lau J, Fung M. The Shatin community mental health survey in Hong Kong. *Arch Gen Psychiatry.* 1993; 81: 341-52.
5. Demyttenaere K, Bruffaerts R, Posada-Villa J, Gasquet I, Kovess V, Lepine JP, et al. WHO World Mental Health Survey Consortium. Prevalence, severity, and unmet need for treatment of mental disorders in the World Health Organization World Mental Health Surveys. *J Am Acad Child Adolesc Psychiatry.* 2004; 291(21): 2581-90.
6. Dong Q, Yang B, Ollendick TH. Fears in Chinese children and adolescents and their relations to anxiety and depression. *J Child Psychol Psychiatr.* 1994; 35: 35-63.
7. Kawakami N, Shimizu H, Haratani T, Iwata N, Kitamura T. Lifetime and 6-month prevalence of psychiatric disorders in an urban community in Japan. *Psychiatr Res.* 2004; 121: 293-301.
8. Trangkasombat U, Likanapichitkul D. Prevalence and risk factors for depression in children: An outpatient pediatric sample. *J Med Assoc Thai.* 1997; 80(5): 303-09.
9. Lewinsohn PM, Clarke GN, Seeley JR, Rohde P. Major depression in community adolescents: Age at onset, episode duration, and time to recurrence. *J Am Acad Child Adolesc Psychiatry.* 1994; 33(6): 809-18.
10. Weisz JR, McCarty CA. Effects of psychotherapy for depression in children and adolescents: A meta-analysis. *Psychol Bull.* 2006; 132(1): 132-49.
11. Charoensuk S. Negative thinking: A key factor in depressive symptoms in Thai adolescents. *Issues Ment Health Nurs.* 2007; 28(1): 55-74.
12. Price CS, Spence SH, Sheffield J, Donovan C. The development and psychometric properties of a measure of social and adaptive functioning for children and adolescents. *J Clin Child Adolesc Psychol.* 2002; 31(1): 111-22.
13. Ingersoll BD, Goldstein S. *Lonely, sad and angry: A parent's guide to depression in children and adolescents.* 1995; New York (NY): Doubleday.
14. Brent DA, Birmaher B. Clinical practice: Adolescent depression. *N Engl J Med.* 2002; 347(9): 667-71.
15. Kaewwaen E. Factors influencing depression among adolescents in the Sattatip district of Chonburi province [thesis]. Chonburi, Thailand: Burapa Univ.; 2007.
16. Meemarayat P. Depression in Thai adolescents. Unpublished medical specialty certificate in pediatrics. National Child Health Institute, Bangkok, Thailand; 2000.
17. Cicchetti D, Toth SL. The development of depression in children and adolescents. *Am Psychol.* 1998; 53(2): 221-41.
18. Beck AT. The evolution of the cognitive model of depression and its neurobiological correlates. *Am J Psychiatry.* 2008; 165(8): 969-77.
19. Lewinsohn PM, Rohde P, Seeley JR. Major depressive disorder in older adolescents: Prevalence, risk factors, and clinical implications. *Clin Psychol Rev.* 1998; 18(7): 765-94.
20. Hankin BL. Adolescent depression: Description, causes, and interventions. *Epilepsy Behav.* 2006; 8: 102-14.
21. O'Kearney R, Kang K, Christensen H, Griffiths K. A controlled trial of a school-based internet program for reducing depressive symptoms in adolescent girls. *Depress Anxiety.* 2009; 26: 65-72.
22. Calear AL, Christensen H. Systematic review of school-based prevention and early intervention programs for depression. *J Adolesc.* 2010; 33: 429-38.
23. Clarke GN, Hombrook M, Lynch F, Polen M, Gale J, Beardslee W, et al. A randomized trial of a group cognitive intervention for preventing depression in adolescent offspring of depressed parents. *Arch Gen Psychiatr.* 2001; 58: 1127-34.

24. Kowalenko N, Rapee RM, Simmons J, Wignall A, Hoge R, Whitefield K, et al. Short-term effectiveness of school-based early intervention program for adolescent depression. *Clin Child Psychol Psychiatr*. 2005; 10: 493-509.
25. Hankin BL. Adolescent depression: Description, causes, and interventions. *Epilepsy Behav*. 2006; 8: 102-14.
26. Fischer D, Fraley S, Postelwaite K, Salada G, Leskinen E, Ruffolo MC. Supervision manual implementing cognitive-behavioral interventions in school settings. Ann Arbor (MI): Department of Psychiatry, Univ. of Michigan; 2006.
27. Sandil R. Cognitive behavioral therapy for adolescent depression: Implications for Asian immigrants in the United States of America. *J Child Adolesc Ment Health*. 2006; 18(1): 27-32.
28. Beck AT. Depression: Clinical, experimental, and theoretical aspects. New York (NY): Harper & Row; 1967.
29. Beck AT. Cognitive therapy and the emotional disorders. New York (NY): International Universities Press; 1967.
30. Bandura A. Self-efficacy. In: Ramachandran VS, editor. *Encyclopedia of human behavior*. New York (NY): Academic Press; 1994. p. 71-81. (Reprinted in: Friedman H, editor. *Encyclopedia of mental health*. San Diego (CA): Academic Press; 1998.)
31. Weersing VR, Lyengar S, Kolko DJ, Birmahir B, Brent DA. Effectiveness of cognitive-behavioral therapy for adolescent depression: A benchmarking investigation. *Behav Ther*. 2006; 37: 36-48.
32. March J, Silva S, Petrycki S, Curry J, Wells K, Fairbank J, et al. Fluoxetine, cognitive-behavioral therapy, and their combination for adolescents with depression: Treatment for Adolescents with Depression Study (TADS) randomized controlled trial. *J Am Acad Child Adolesc Psychiatr*. 2004; 292(7): 807-20.
33. Trangkasombat U, Larpoonsarb V, Havanond P. CES-D as a screen for depression in adolescents. *J Med Assoc Thailand*. 1997; 42(1): 2-13.
34. Tapinta D, Songmuang K. Children Automatic Thought Scale (CATS) Thai version. In Songmuang K. *Negative automatic thoughts in junior high school students [thesis]*. Chiang Mai, Thailand: Chiang Mai Univ.; 2004.
35. Radloff LS. The use of the Center for Epidemiologic Studies Depression Scale in adolescents and young adults. *J Youth Adolesc*. 1997; 20: 149-66.
36. Kennard B, Silva S, Vitiello B, Curry J, Kratochvil C, Simons A, et al. Remission and residual symptoms after short-term treatment in the Treatment of Adolescents with Depression Study. *J Am Acad Child Adolesc Psychiatry*. 2006; 45: 1404-11.
37. Weissman MM, Wickramaratne P, Nomura Y, Warner V, Pilowsky D, Verdelli H. Offspring of depressed parents: 20 years later. *Am J Psychiatry*. 2006; 163: 1001-8.
38. Garber J, Clark GN, Weersing VR, Beardslee WR, Brent DA, Gladstone TR, et al. Prevention of depression in at-risk adolescents: A randomized controlled trial. *JAMA*, 2009; 301 (21): 2215-24.
39. Munoz RF. Scoring the mood screener and the CES-D. [cited 2008 Jun 12]; Available from <http://www.medschool.ucsf.edu/latino/pdf/manual.asp>.
40. Schniering CA, Rapee RM. Development and validation of a measure of children's automatic thoughts: The children's automatic thoughts scale. *Behav Res Ther*. 2002; 40: 1091-109.
41. Price CS, Spence SH, Sheffield J, Donovan C. The development and psychometric properties of a measure of social and adaptive functioning for children and adolescents. *J Clin Adolesc Psychol*. 2002; 31(1): 111-22.
42. Guillemin F, Bombardier C, Beaton D. Cross-cultural adaptation of healthy-related quality of life measures: Literature review and proposed guidelines. *J Clin Epidemiol*. 1993; 46(12): 1417-32.
43. Curry JF, Wells KC, Brent DA, Clarke GN, Rohde P, Albano AM, et al. Cognitive behavior therapy manual: Introduction, rationale, and adolescent sessions. [cited 2007 Feb 5]; Available from <http://www.duke.edu>.
44. Yalom ID. The theory and practice of group psychotherapy. 3<sup>rd</sup> ed. New York (NY): Basic Books, Inc; 1995.
45. Speziale HS, Carpenter DR. *Qualitative research in nursing: Advancing the humanistic imperative*. Philadelphia (PA): Lippincott Williams & Wilkins; 2003.
46. Dobson KS. *Handbook of cognitive behavioral therapy*. 3<sup>rd</sup> ed. Guildford Press: New York (NY); 2009.
47. Clarke GN, Rohde P, Lewinsohn PM, Hops H, Seeley JR. Cognitive-behavioral treatment of adolescent depression: Efficacy of acute group treatment and booster session. *J Am Acad Child Adolesc Psychiatry*. 1999; 38: 272-9.
48. Verduyn C. Cognitive behavioral therapy for depression in children and adolescents. *Tidsskrift for Norsk Psykologforening [Internet]*. 2011; [cited 2012 Feb 12]; 48:34-9. Available from: [http://www.psykologtidsskriftet.no/index.php?seks\\_id=132126&a=2](http://www.psykologtidsskriftet.no/index.php?seks_id=132126&a=2).

## ประสิทธิผลของโปรแกรมการบำบัดทางความคิดและพฤติกรรมโดยใช้โรงเรียนเป็นฐานในเด็กวัยรุ่นไทยที่มีภาวะซึมเศร้า

สารรัตน์ วุฒิอาภา, ھرรษา เศรษฐบุปผา, ประทุม สร้อยวงค์, Reg Williams

**บทคัดย่อ:** การวิจัยกึ่งทดลองนี้เพื่อศึกษาผลของการบำบัดทางความคิดและพฤติกรรมโดยใช้โรงเรียนเป็นฐานต่ออาการซึมเศร้าในวัยรุ่นไทย นักเรียนจำนวน 70 รายถูกสุ่มจากโรงเรียนมัธยมในเขตภาคกลาง 2 โรงเรียน และจัดให้เป็นกลุ่มทดลองและกลุ่มควบคุม โดยกลุ่มทดลองนักเรียนจำนวน 35 รายถูกสุ่มเพื่อรับโปรแกรม จำนวน 12 สัปดาห์ สัปดาห์ละ 1 ครั้ง ส่วนกลุ่มควบคุมนักเรียนจำนวน 35 รายถูกสุ่มเพื่อรับการดูแลตามปกติจากพยาบาลประจำโรงเรียน โดยไม่ได้รับโปรแกรมจำนวน 12 สัปดาห์ การประเมินผลเชิงปริมาณกระทำโดยใช้แบบสอบถามจำนวน 3 ครั้ง คือ กึ่งกลางระหว่างโปรแกรมสิ้นสุดโปรแกรมทันที และ 4 สัปดาห์ภายหลังโปรแกรมสิ้นสุด การประเมินผลเชิงคุณภาพกระทำโดยการสนทนากลุ่มภายหลังสิ้นสุดโปรแกรมทันที เพื่อวิเคราะห์ผลของโปรแกรม ใช้สถิติการวิเคราะห์ความแปรปรวนพหุคูณในข้อมูลเชิงปริมาณ ส่วนข้อมูลเชิงคุณภาพโดยการวิเคราะห์เนื้อหา

ผลการศึกษาพบว่าคะแนนอาการซึมเศร้าลดลงและคะแนนหน้าที่และการปรับตัวทางสังคมสูงขึ้นอย่างมีนัยสำคัญทางสถิติตลอดการประเมิน 3 ครั้ง ส่วนคะแนนความคิดอัตโนมัติทางลบพบว่าลดลงอย่างมีนัยสำคัญทางสถิติ เมื่อสิ้นสุดโปรแกรมและภายหลังโปรแกรมสิ้นสุด 4 สัปดาห์ ผลการวิเคราะห์ข้อมูลเชิงคุณภาพพบว่า กลุ่มทดลองได้รับประโยชน์จากโปรแกรมโดยทำให้อาการซึมเศร้า ความคิดอัตโนมัติทางลบ และหน้าที่และการปรับตัวทางสังคมดีขึ้น (เช่น สัมพันธภาพกับครอบครัวและเพื่อนดีขึ้น และมีความใส่ใจในการเรียนมากขึ้น) ผลการศึกษาครั้งนี้สามารถใช้เป็นแนวทางในการปฏิบัติการพยาบาล โดยการใช้โปรแกรมเพื่อลดอาการซึมเศร้า ดังนั้น โปรแกรมนี้จะเป็นประโยชน์ในการป้องกันและลดภาวะซึมเศร้าของวัยรุ่นที่มีปัญหาอาการซึมเศร้าในโรงเรียนต่อไป

*Pacific Rim Int J Nurs Res 2012 ; 16(3) 206-221*

**คำสำคัญ:** ซึมเศร้า การบำบัดทางความคิดและพฤติกรรมโดยใช้โรงเรียนเป็นฐาน วัยรุ่นไทย

**ติดต่อที่:** สารรัตน์ วุฒิอาภา, RN, PhD (Candidate) นักศึกษาปริญญาเอก คณะพยาบาลศาสตร์ มหาวิทยาลัยเชียงใหม่ 110 ถนนอินทวิโรต ต.ศรีภูมิ อ.เมือง จ.เชียงใหม่ 50200 ประเทศไทย  
E-mail: vsararud@yahoo.com

**ھرรษา เศรษฐบุปผา, RN, PhD.** อาจารย์ คณะพยาบาลศาสตร์ มหาวิทยาลัยเชียงใหม่ 110 ถนนอินทวิโรต ต.ศรีภูมิ อ.เมือง จ.เชียงใหม่ 50200 ประเทศไทย

**ประทุม สร้อยวงค์, RN, PhD.** ผู้ช่วยศาสตราจารย์ คณะพยาบาลศาสตร์ มหาวิทยาลัยเชียงใหม่ 110 ถนนอินทวิโรต ต.ศรีภูมิ อ.เมือง จ.เชียงใหม่ 50200 ประเทศไทย

**Reg Williams, RN, PhD, BC, FAAN.** Professor, School of Nursing, and Professor, Department of Psychiatry, Medical School, University of Michigan, 400 North Ingalls, Ann Arbor, MI 48109-5482, USA.