Effects of a School-based Intervention Program for Middle School Adolescent Girls with Depression: As Part of the School Health Services

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Purpose: The purpose of this study was to evaluate the effects of a school-based intervention program for middle school adolescent girls with depression. **Methods:** The study was a pretest–posttest repeated-measure design with a nonequivalent control group. Fifty eight students with depressive symptoms were recruited from two middle schools in Seoul, Korea. The data were collected from the intervention (n=30) and the comparison group (n=28). The research instrument was Reynolds Adolescent Depression Scale. **Results:** The intervention group greatly improved from baseline to 10 weeks and then saw a slight positive change between 10 and 13 weeks. **Conclusion:** The results of this research show that depression intervention programs are effective for young female adolescents. Thus the investigation has important school-based treatment implications, and should be integrated into school curriculums by school health nurses for early intervention of depressive symptoms in middle school adolescent girls.

Key words: Adolescent; Female; Depression; School health services

INTRODUCTION

Depression in adolescents affects social development, academic performance, and ultimately, success as an adult. Many studies have concluded that depression in adolescents is associated with many negative outcomes such as suicidal attempt, missed education and job opportunities (Daughters et al., 2009; Fergusson, Horwood, Ridder, & Beautrais, 2005). Although depression has been recognized widely in adolescents, it remains undiagnosed in many. Early recognition of depression symptoms is imperative to prevent further episodes that may continue into adulthood. Additionally, failure to address depression in adolescents can lead to an increase in suicides because the most important predictor for suicide is depression (Hess et al., 2004). Statistics Korea (2011b) recently reported that suicide was the primary cause of mortality among young people in South Korea.

Adolescence is a high-risk period for the onset of depressive disorders in young women. During early adolescence, the incidence of depression rises for both genders; however, the risk is greater for female adolescents. The prevalence of depression rises markedly in female adolescents after age 13 (Coleet al., 2009; Costello, Mustillo, Keeler, & Angold, 2004). In addition, Health and Camarena (2002) reported on the prevalence of depressive disorders for adolescents and noted that girls are approximately 3 times more likely to experience depression than boys are. Between the ages of 12–20 years, approximately 1 of every 6 girls experiences an episode of a major depressive disorder (MDD). Rates of minor depression peak at age 14, which is 2 years before the peak of MDD (Rohde, Beevers, Stice, & O'Neil, 2009). In addition, the onset of puberty is related with depressive symptoms. In general, early onset of puberty in girls is related with a high risk of depression (Birndorf, Ryan, Auinger, & Aten, 2005; Robins & Trzesniewski, 2005).

School is an important environment in an adolescent's life. Depression in adolescents often manifests itself in lower school performance in

both academic and extracurricular activities. Many depressed adolescents become disengaged from school and show little interest in improving grades, school activities, or interaction with peers (Reynolds, 2002). Most mental health professionals have obstacles in approaching adolescents who demonstrate depressive symptoms; however, school health nurses are in a better position to treat adolescents experiencing depression. As more adolescents than ever experience severe emotional distress at the beginning of puberty, early adolescence is an ideal time for education about depression. Merry, McDowell, Wild, Bir, and Cunliffe (2004) suggested the necessity of a study on the optimal delivery of depression prevention programs by teachers in the school curriculum. Sawyer et al. (2010) also investigated the effectiveness of a comprehensive classroom curriculum program as a school-based depression prevention program. However, little research on adolescent depression has been directed toward developing a depression intervention program that could be integrated into the middle school curriculum.

Because teens in primary care settings are not seeking mental health treatment even when depression is detected (Tanielian et al., 2009), a school-based program would be a useful tool for providing health education and delivering depression intervention program to young adolescents and simultaneously enabling school health providers in examining the students' mental health. The Korea Health Minister reported that girls had the highest number of suicide attempts during the middle school years and a high incidence rate of depression (Statistics Korea, 2011a; 2011b). Many adolescent girls in Korea suffer from depression, but there are no school-based intervention programs available for adolescent girls. Therefore, a depression intervention program that can be integrated into a school health program was developed and evaluated.

The purpose of this study was to develop a school-based intervention program appropriate for regular school curriculums, and evaluate the usefulness of the program by testing with a measure- degree of depressive symptoms. The hypothesis was that subjects in a school-based intervention program for middle school girls with depression would result in a decrease of depressive symptoms.

METHODS

1. Design

This study was a pretest–posttest repeated-measure design with a nonequivalent control group, intended to examine the effectiveness of a school-based intervention program for middle school girls with depression as a part of the school health program.

2. Sample

The participants in this study were early female adolescents in Seoul, a large urban setting in Korea. For sampling students with depressive symptoms, the research team provided depression screening tests at two schools. The sample consisted of grade 8 attending students with depressive symptoms selected from 340 students in two middle schools, in 2010. Inclusion criteria for this study were as follows: students who scored above 76 on Reynolds Adolescent Depression Scale-second edition-Korean (RADS-K); those who had no diagnosis of any psychological problems. All subjects were informed in their classrooms that they would be asked to answer some questions, and consent forms, including a description of the study purpose, permission to withdraw from the study at any time, and information about the researcher, were sent home for both parents and students to sign (n=340). For ethical issue, all participants and their legal guardians gave informed consent and their confidentiality and anonymity were protected. After posttest, subjects in the control group were monitored their mood during the study periods. And they were received the same lectures using PPT with students in the intervention group once a week for forty minutes with a total of three weeks.

In this population, more than 17% subjects were assigned into a depression group with clinical depression ranging from mild to severe. In this study, total sample size determined by G*Power 3.1 program (Power 1-β= 0.95; Effect size f= .25; Correlation among repeated measures= .05) was 44 students for 2 groups by 3 number of measurements in the repeated measures ANOVA, within-between interaction (Faul, Erdfelder, Lang, & Buchner, 2007). Sixty subjects assigned to the clinical depression range were included for this study. Each of two schools was assigned to the intervention (n=30) and comparison group (n=30). Two participants were dropped from the study as a result of being absent from school or withdraw from the study. Finally, twenty eight participants of the comparison group and 30 of the intervention group were on posttest and a corresponding follow-up response (Figure 1).

3. Measurements

There was a questionnaire used to measure the study variable of depressive symptoms in young female adolescents. The Reynolds Adoles-
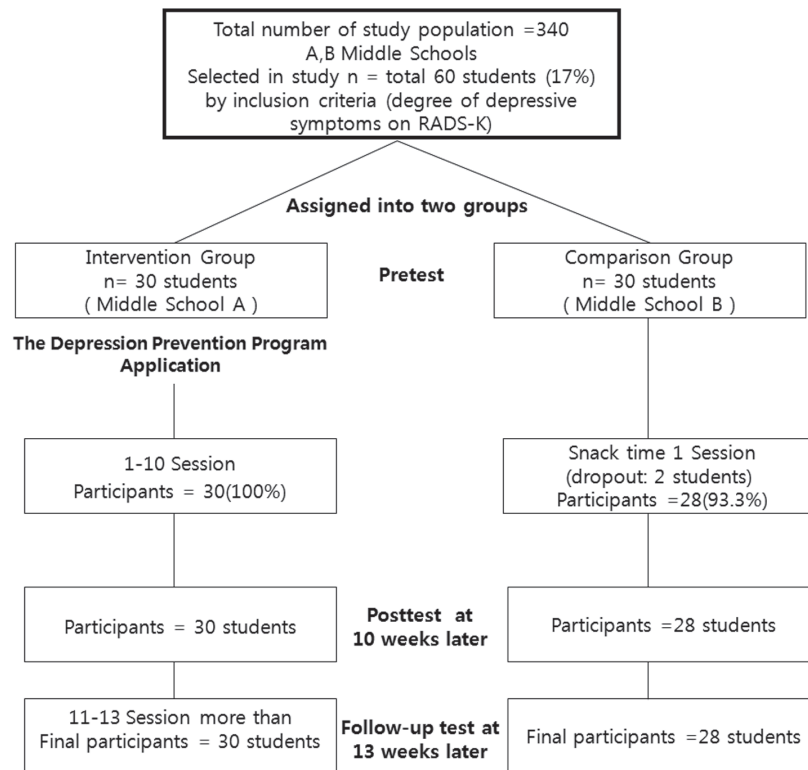
RADS-K=Reynolds Adolescent Depression Scale-second edition-Korean.

Figure 1. Participant flow chart.

cent Depression Scale, 2nd edition (RADS) has been used extensively to measure existing depressive symptoms in adolescents (Reynolds, 2002). The RADS was translated into the Korean language in 2009 and have been used for the previous pilot study. To maximize equivalence and minimize translation errors, the researcher used the following procedures (Weeks, Swerissen, & Belfrage, 2007): first, the translation method was used with 2 bilingual persons translating the original version into the Korean language, and another 2 bilingual persons translating the Korean version back into English; second, after the translation was complete, bilingual techniques were used with 5 adolescents who were in the same grade for identification of items yielding discrepancies; and third, the Korean version was field-tested to ensure that Korean middle school students comprehended the questions. Twenty-five adolescents randomly selected from the study sample reported no difficulty in understanding the questions.

The RADS-K was used to measure levels of depression pre and post-intervention. The RADS is a self-report measure of depressive symptomatology that was developed specifically for use with adolescents, and consists of 30 items with a 4-point Likert response format (almost never=1, hardly ever=2, sometimes=3, and most of the time=4). The four dimensions of adolescent depression was assessed by the RADS: dysphoric mood represents a primary dimension of depression and related symptomatology including sadness, crying behavior, loneliness, irritability, worry, and self-pity; the anhedonia/negative affect subscale evaluates reduced engagement in pleasant activities and generalized negative affect related to self; the negative self-evaluation subscale is a broadly defined sense of negative feelings about self that can be seen in adolescents who feel they are bad people; the somatic complaints subscale evaluates a classic somatic component of depression. The reported internal consistency for the total depression scale is high (.93), and the test-retest reliability for the subscales was moderately high, ranging from .77 to .84(Reynolds, 2002). The Cronbach's alpha coefficient for the RADS-K was .81 for the sample population in this study. Reynolds identified a cutoff score of 76 (above 76 in the clinical depression range) on the RADS as one that would best distinguish adolescents with depression and non-depression symptoms. This study was done with a sample of early female adolescents who recorded above 76 score of depression symptom on the RADS-K. Additionally, a general information questionnaire was used to collect

various demographic characteristics of the subjects.

4. Intervention

The school-based intervention program for depressed girls was developed by a researcher with extensive experience as a clinical practitioner and who was an adolescent mental health educator in the community for 10 years. The contents of the program originated from related references and consisted of various components such as cognitive restructuring, cognitive strategies, and social skill training (Frydenberg, 2008; Rohde, Beevers, Stice, & O'Neil, 2009; Sawyer et al., 2010; Schultz & Mueller, 2007; Swartz et al., 2007). The program was revised with the results of a preliminary study by the researcher. The content of the program was tested using 5 middle school students to ascertain whether it was interesting and understandable to young adolescents. The program included 10 hours of curriculum divided into 10 classes and individual online counseling for over 3 times (Table 1). The curriculum mainly addressed depression knowledge (the causes, early signs and symptoms, diagnosis,

and treatments), self-evaluation (exploring one's life experience, insight gaining), coping strategies for prevention of depression (self-help behaviors, find individual strength and connect it with a special activity) and individual online counseling as a follow-up support system, etc. The intervention program was implemented using multiple teaching methods (lecture, case method, small group discussion and poster presentation, and counseling by e-mail) and utilized multimedia and video. The researcher checked out what the subjects had learned last week, and encouraged them to express their experiences related to that in each session.

5. Procedure

The variable was measured at time of recruitment and again after depression intervention. The survey team administered the questionnaires during school hours and required about 20 minutes to complete. All subjects' identities were kept confidential and the research team was blinded. Before starting the first intervention program, 60 students with depressive symptoms completed the RADS-K questionnaires as a study

Table 1. The Contents of School-based Intervention Program for a Middle School Girls with Depression

Session	Contents	Teaching methods
1	Study instruction 1. Greeting 2. Provide guidelines for study participation	- Explain the program
2	Basic understanding about adolescent depression 1. Nature of adolescent depression 2. Cause of adolescent depression 3. Early signs and symptoms of adolescent depression 4. Diagnosis and treatments of depression	- Lecture using PPT - Self-exam about the experience of depression
3-4	Self-evaluation 1. Explore one's life experience 2. Obtain insight	- Self-reflection - Group counseling

5-6	Management strategy for depressed mood
	1. How to handle depressed mood
	  - Get regular exercise, sleep pattern & eating habit
	  - Get sunlight for at least 30 min. everyday
	  - Discuss your problems with others(friends, family, etc.)
	2. How to ask for help from others
	  - When experiencing sleep disturbance, loss of appetite, difficulty in school life & peer relationship, loneliness, etc. for at least 2 weeks
		- Lecture using PPT
		- Case method
		- Small group discussion

7-8	Prevention of depression and suicide 1. Self-help behaviors for prevention of depression 2. Meaning of adolescent suicidal behavior 3. Helping friends who are depressed or contemplating suicide	- Lecture using PPT - A short video - Activity, Q & A
9-10	Practical coping strategies for depression 1. Build a new daily schedule to overcome depression 2. Keep a diary as a routine work 3. Find individual strength and connect it with a special activity	- Chart for a daily schedule - A short video - Activity, Q & A
11-13	Support system 1. Individual online counseling for follow-up 2. Construct support system on an individual basis	- Provide information for email counseling after the meeting

population. The intervention program was implemented once a week for 10 weeks at the school. The posttest was administered after the tenth session of the program. A total of 58 students had both a pre and posttest. Also the researcher had provided individual follow-up counseling to the program participants for the long-term outcomes. After follow-up counseling for three times in a month, they responded to follow-up test. The data were collected by research survey team between August, 20 and December, 28 in 2010.

6. Data analysis

SPSS version 14.0 was used for analysis of the data. The chi-square test and t-test for independent samples were done to verify the homogeneity between the intervention group and the comparison group. For evaluation of the intervention effect, t-test and repeated measure analysis of variance with time of testing as the repeated-measure factor and treatment team and group (intervention or comparison) as the between-subjects factors were performed.

RESULTS

1. Homogeneity in demographic characteristics and de-pressive symptoms

The homogeneity test between the intervention and the comparison groups in demographic characteristics showed no significant differences (Table 2). As displayed in Table 3, baseline scores of depressive symptoms showed homogeneity between the intervention group (M = 85.74, SD = 7.97) and the comparison group (M = 83.68, SD = 5.87, t = 0.97, p = .338).

2. Demographic characteristics of the participants

The ages of the participating students (n = 58) were 13 (12.1 %) and 14 years (87.9 %). As displayed in Table 2, 46.6% of the subjects (including 3% of the only child) were the firstborn child and 53.4% were the second to the last child. Their parents' marital status was usually married (74.1%),

Table 2. Homogeneity Test for Demographic Characteristics of the Participants (*N* = 58)

Characteristics	Categories	Total n (%)	Intervention group (n = 30) n (%)	Comparison group (n = 28) n (%)	χ^2 or t (p)
Birth order	First	27 (46.6)	13 (48.1)	14 (51.9)	0.26 (.793)
	Not first	31 (53.4)	17 (54.8)	14 (45.2)	
Marital status of parents	Married	43 (74.1)	22 (51.2)	21 (48.8)	0.02 (.999)
	Divorce/separate	15 (25.9)	8 (53.3)	7 (46.7)	
School satisfaction	Yes	29 (50.0)	16 (55.2)	13 (44.8)	0.73 (.694)
	No	26 (44.8)	12 (46.2)	14 (53.8)	
	No response	3 (5.2)	2 (66.7)	1 (33.3)	
Economic status	High	6 (10.3)	2 (33.3)	4 (66.7)	1.44 (.486)
	Moderate	41 (70.7)	21 (51.2)	20 (48.8)	
	Low	11 (19.0)	7 (63.6)	4 (36.4)	
Income resources	Both parents	18 (31.0)	12 (66.7)	6 (33.3)	3.46 (.326)
	Father	21 (36.2)	8 (38.1)	13 (61.9)	
	Mother	16 (27.6)	8 (50.0)	8 (50.0)	
	Others	3 (5.2)	2 (66.7)	1 (33.3)	
Middle school grades	High	8 (13.8)	4 (50.0)	4 (50.0)	0.07 (.964)
	Moderate	22 (37.9)	11 (50.0)	11 (50.0)	
	Low	28 (48.3)	15 (53.6)	13 (46.4)	
Physical problems	Yes	23 (39.7)	14 (60.9)	9 (39.1)	1.28 (.294)
	No	35 (60.3)	17 (45.7)	19 (54.3)	
Depressed mood	Frequently	18 (34.0)	10 (55.6)	8 (44.4)	1.93 (.381)
	Sometimes	23 (43.4)	13 (56.5)	10 (43.5)	
	Rarely	12 (22.6)	4 (33.3)	8 (66.7)	
Hobby	Yes	20 (34.5)	13 (65.0)	7 (35.0)	2.16 (.174)
	No	38 (65.5)	17 (44.7)	21 (55.3)	
Negative life events	Many	18 (31.0)	10 (55.6)	8 (44.4)	1.73 (.409)
	Moderate	25 (43.1)	13 (52.0)	12 (48.0)	
	No	15 (25.9)	6 (40.0)	9 (60.0)	

but 25.9% were divorced or separated. They were satisfied with their school life (50%) or not (44,8%). Subjects' economic status was mostly moderate (70.7%). The household income resources were both parents for 31.0%, only the father for 36.2%, and only the mother for 27.6%. Subjects' middle school grades were low level for 48.3% or moderate level for 37.9%. 39.7% of the subjects reported that they currently had physical problems. The female adolescents in the study reported that 34% had depressed moods frequently, 43.4% had depressed mood sometimes, and 22.6% had depressed mood rarely within last year. Only 34.5% of the subjects had a hobby. Most subjects had negative life events: hardly (31.0%) or moderately (43.1%) in their everyday life.

3. Effects of depression intervention program

On the RADS-K, the intervention group greatly improved from baseline to 10 weeks and then saw a slight positive change between 10 and 13 weeks, while the comparison group saw none or a slight negative change from baseline to 13 weeks. Figure 2 shows significant changes from baseline to post- and follow-up test. In all subscales of depressive symptoms, including dysphoria (F=5.90, p=.004), anhedonia/negative affect (F=6.43, p=.002), negative self-evaluation (F=14.40, p<.001), and somatic (F=16.51, p<.001), a significant improvement was seen from pre- to follow-up test. We found statistically significant interactions between group and time for depressive symptoms (Table 3). In other words, the hypothesis that the depressive symptoms of the intervention group, who used the depression intervention program, would be reduced more than

that of the comparison group was supported (F=29.39, p<.001). Additionally, 92.5% of the subjects were satisfied with the program in this study.

DISCUSSION

The present study was designed to evaluate the effectiveness of an intervention program for middle school girls with depression. More than 17% subjects of this study population were assigned into a depression group with clinical depression ranging from mild to severe. Subjects assigned to the clinical depression range were encouraged to be referred to a clinician for diagnosis and treatment if they need further evaluation. The depression intervention program had totally 10 classes for group session. Additionally, three online counseling was provided for the pro-
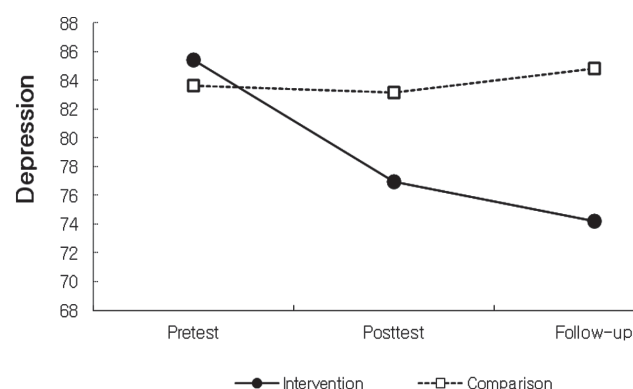

Figure 2. Changes in intervention and comparison groups of depressive symptoms.

Table 3. Comparison of Depressive Symptoms between Intervention and Comparison Groups $(N=58)$

Variables	Test point	Intervention group (n=30) M ± SD	Comparison group (n=28) M ± SD	t (p)	Factor	F (p)
Depression	Pre	85.47 ± 7.97	83.68 ± 5.87	0.97 (.338)	Time	19.29 (<.001)
	Post	77.00 ± 11.75	83.18 ± 10.31	-2.47 (.017)	Group	5.56 (.022)
	F/u	74.23 ± 10.82	84.86 ± 10.51	-3.79 (<.001)	Time × Group	29.39 (<.001)
Dysphoric	Pre	24.47 ± 3.22	24.68 ± 2.75	-0.27 (.789)	Time	11.37 (<.001)
	Post	21.03 ± 4.69	23.93 ± 3.86	-2.56 (.013)	Group	7.77 (.007)
	F/u	20.60 ± 4.25	24.18 ± 3.63	-3.44 (.001)	Time × Group	5.90 (.004)
Anhedonia/ negative affect	Pre	16.57 ± 3.34	16.29 ± 2.97	0.34 (.737)	Time	2.04 (.135)
	Post	16.40 ± 3.77	17.46 ± 3.02	-1.19 (.240)	Group	1.57 (.215)
	F/u	16.00 ± 3.53	18.18 ± 3.42	-2.38 (.021)	Time × Group	6.43 (.002)
Negative self-evaluation	Pre	23.17 ± 2.88	22.07 ± 3.45	1.32 (.194)	Time	18.74 (<.001)
	Post	19.67 ± 3.85	21.46 ± 3.35	-1.19 (.240)	Group	1.81 (.183)
	F/u	19.37 ± 3.68	21.82 ± 3.52	-2.38 (.021)	Time × Group	14.40 (<.001)
Somatic	Pre	21.27 ± 3.26	20.64 ± 2.23	0.85 (.402)	Time	17.33 (<.001)
	Post	19.13 ± 3.84	20.32 ± 3.30	-1.26 (.213)	Group	1.56 (.216)
	F/u	18.30 ± 3.50	20.61 ± 3.14	-2.64 (.011)	Time × Group	16.51 (<.001)

Pre=Pretest before intervention; Post=Posttest after 10th intervention; F/u=Follow-up test after third follow-up counseling.

gram participants. The researcher had tried to maintain the program effect for follow-up periods. Although a depressed mood is not easily changed, this program was effective for the improvement of depression in young female adolescents like the findings of previous studies (Kowalenko et al., 2005; Sawyer et al., 2010; Swartz et al., 2007).

The intervention produced generally positive results in the short-term, but the intervention effects tended to diminish by the later follow-up (Schultz & Mueller, 2007). It is important to examine results over the long term. So, the researcher administered follow-up counseling after the program, for the intervention group. To determine whether the effect persists after the intervention, the researcher compared the depression of the posttest and follow-up test. In this study, the intervention effect was maintained right after the follow-up counseling. There are some research evidences for the effects. The contents of depression intervention program consisted of various components such as cognitive restructuring, cognitive strategies, and social skill training. Also, the intervention program was implemented using multiple teaching methods. Some researchers strongly suggested those components for the effectiveness of depression program designed specifically for adolescents (Balaji, Andrews, Andrew, & Patel, 2011; Schultz & Mueller). Reynolds (2002) reported that anhedonia/negative affects was the highest level and dysphoric mood was the lowest level, among 4 subscales of RADS in his school-based standardization sample. But the subjects of the current study showed negative results. Although there is no any other evidence for the differences between American adolescents and Korean adolescents, the future researcher needs to evaluate the characteristics of female adolescent depression within cultural background.

In present study, most subjects reported they had negative life events in their everyday life. They reported experiences with familial risk factors such as parents divorce/separate, living with a single/no parents, and low household economic status. Also they had negative experiences in school life such as low school satisfaction or school grades. Their negative experiences can be supposed to be at an increased risk of depression. Tandon and Solomon (2009) suggested that intervention to prevent and treat depression in early adolescents is needed to address familial risk and protective factors influencing adolescents' depressive symptoms. The researcher was more concerned for the subjects and handled their risk factors in the small group discussion and individual online counseling as a critical issue. The social stigma associated with mental health care was a common barrier for seeking treatment for psychological symptoms in both adults and adolescents.

Adolescent patients who need mental health care especially fear rejection by peers if they were to see a mental health professional (Collins, Westra, Dozois, & Burns, 2004; Jaycox et al., 2006). But Swartz et al. (2007) reported that increased knowledge decreased the stigma associated with depression. For changing the attitude towards the treatment of depression, the researcher included a comprehensive knowledge about adolescent depression in this program: the definition of major depression; early sign and symptoms, treatments and prognosis of depression. The subjects understood the difference between a depressed mood and major depression, and the importance to decrease their feeling of social stigma. It was helpful to encourage subjects' attendance at the program.

This investigation has important school-based treatment implications; however, there are some limitations of this study. The study design had an intervention group assigned from a convenience sample of only one school for testing the effectiveness of a school-based depression intervention program. Also the results of this study were based on a self-report scale only. The findings from this study require replication.

CONCLUSION

The purpose of this study was to examine the effects of a school-based intervention program for depressed middle school girls. The study showed that the depression intervention program was effective for young female adolescents within a school setting. Korean middle schools focus mainly on advancing students to higher-level schools, with limited time provided for health program. However, most subjects were satisfied with the program in this study and they were successfully encouraged to learn about depression in a structured course. The subjects attended the program like a regular class and they welcomed receiving individual counseling. It may be resulted by that the contents and multi-teaching methods of the program were attractive for these young girls. Also, counseling for booster sessions may be effective for these female adolescents. Homogeneous group in aspects of age and gender was helpful for the program application. For an intervention program to be successful in the treatment of depression, the researcher suggests that school health providers include specific teaching methods for target group. And health professionals who are providing adolescent mental health care should know about the comprehensive demographic characteristics of their students. One of the intervention tips for a school health provider is that adolescents with high risk factors should be educated about depression knowledge, such as awareness of his/her de-

pressed moods and prevention of future psychological problems, at an early time. This may be done first by increasing awareness, second by asking for help from others, and third by accepting treatment. The researcher hopes that this program will be integrated into the existing school health program with further studies.

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