

Effectiveness of Web-Based Multimedia Mental Health Educational Program on Anxiety, Depression, Self Concept and School Adjustment in Adolescents

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Summary

The objective of this study was to evaluate a web-based multimedia mental health educational program for adolescents to improve on anxiety, depression and self concept and help enhance school adjustment. A quasi-experimental design was used. The target population was adolescents who use the Internet on a regular basis. The adolescent were assigned to either control group or experimental group. The web-based educational program had significant effect to relieve anxiety, depression and more self concept. Meanwhile, there had no significant effect to improve school adjustment. Results suggest that web-based program may contribute to improved adolescents' mental health.

Key words: *Information Systems, Internet, Mental Health, Adolescent*

1. Introduction

Many adolescents have mental health problems that interfere with their normal development and daily life activities. Some mental health problems are mild, while others are more severe. Some mental health problems last for only short periods of time, while others, potentially, last a lifetime. The National Institute of Mental Health (NIMH), part of the National Institutes of Health (NIH), reports the following: Research studies have reported that up to about 5 percent of children and up to 8 percent of adolescents in the US suffer from depression. Anxiety disorders are among the most common mental health problems that occur in children and adolescents.

All over the world, researches about adolescent issues have been increasing over time. This continuous increase is due to past events evidencing that youth issues greatly contribute to future social problems if they are not recognized, prevented, and treated earlier [1]. Specifically Korean adolescents experience strong feelings of stress, confusion, self-doubt, pressure to succeed, and other fears while growing up. When it happens, inadequately managed stress can lead to anxiety, withdrawal, aggression, physical illness, or poor coping skills such as smoking and alcohol use.

Although depression and anxiety common in adolescents, many depressed youth do not seek or receive either psychiatric evaluation or treatment [2]. Without effective treatment, depression can leave children and adolescents with psychological sequel that increase vulnerability to recurring depressive episodes, impaired occupational functioning, and lowered life satisfaction [3-4].

Adolescents, like adults, may experience stress everyday and can benefit from learning stress management skills. In recent years, together with the widespread use of the Internet, Web-based interventions may be the most cost-effective and efficient option to improve mental health management [5].

Access to the rapidly increasing store of web-based information is essential for effective public health practice including mental health education. Hence, the author had previously developed an open web-based multimedia mental health information service system (URL: <http://www.baejy.com/youth/>) designed for mental health promotion for adolescents.

Since 2006, the web-site has been continuously providing free mental health services for Korean adolescents. Accordingly, the next phase is to evaluate the effectiveness of this web intervention as revisions will be done through further research results for the enhancement of the program. The purpose of this paper was to examine the effectiveness of a web-based multimedia health education program on anxiety, depression, self concept and school adjustment in adolescents.

2. Methodology

2.1 Research design

To evaluate the effects of the web-based multimedia mental health education program in adolescents, the non-equivalent control group pretest-posttest design was used.

2.2 Sample

Seventy five adolescents participated in this study. All participants were randomly assigned to either the control ($n=37$) or the experimental group ($n=38$).

2.3 Intervention Program

All participants engaged in an 8-week program to test the effectiveness of the intervention. Anxiety, depression, self concept and school adjustment scores were measured before the program began and after the program ended.

The subjects in the experimental group were trained through the web-based health information service system. Web content includes an introduction, information about mental health management in adolescents, self-assessment and guidance, interventions for improving mental health, directory of self-help groups, and counseling and additional community resources. The web site was released using the URL: <http://www.baejy.com/youth> (Figure 1 to 4).

They accessed the website two days a week and at least one hour per day. The control group, on the other hand, was prohibited to access the site for the entire 8-week duration. Instead, they were to use, freely, other generally available websites.

All subjects were supervised by IP address monitoring to know when and how long they accessed the website and its specific contents.

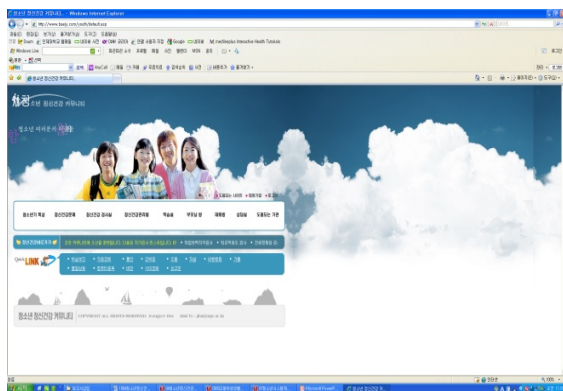


Fig. 1 Main menu page of mental health information service system

2.4 Measurement

The main outcome measures were adolescent characteristics including self-report anxiety, depression, self concept and school adjustment scores and change measures these scores. Anxiety and depression were measured using the SCL-90-R [6], self concept was measured by the Park and Oh's self-concept scale for

adolescents [7], and school adjustment was measured by Sim and Kim's students' school adjustment scale [8].

Depression was assessed using 13 items from SCL-90-R, a 90-item tool developed by Derogatis and Govi, which was later translated into Korean by Kim, Kim, and Won. It is a 5-point Likert scale ranging from 0 (strongly disagree) to 4 (strongly agree) including statements like 'I often cry.' and 'My mood is always bad.' The higher the total score for this tool means the more depressed. Cronbach's alpha coefficient for this study was .94.

Anxiety was assessed using 10 items from SCL-90-R. The higher the total score for this tool means the more anxious. Cronbach's alpha coefficient for this study was .90.

Self-concept Scale derived 30 items from Park and Oh's 48-item Self-concept Scale for Adolescents. This tool assessed students' self-concept in terms of self-acceptance, self-respect and self trust. Answers for the items were given on a 4-point Likert scale ranging from 1 (strongly disagree) to 4 (strongly agree). Example items included 'I am proud of myself.' and 'I will be successful in the future.' The higher the score means higher positive self-concept. Cronbach's alpha coefficient showed a satisfactory internal consistency of .81.

School adjustment was assessed using Sim and Kim's developed questionnaire measuring students' school attachment, adaptation and adjustment. 10 items were derived from this 4-point Likert scale tool ranging from 1 (strongly disagree) to 4 (strongly agree), which included items like 'I study hard and do my best in school.' A high score is equivalent to a high adjustment. Cronbach's alpha was .65.

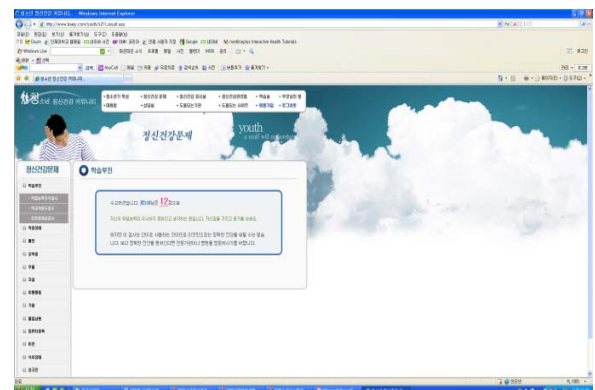


Fig. 2 Self-examination page

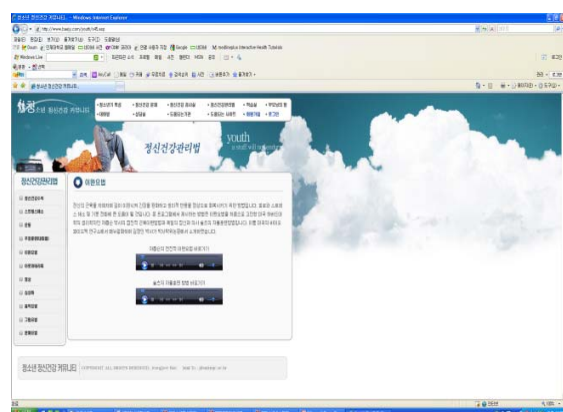


Fig. 3 Relaxation method

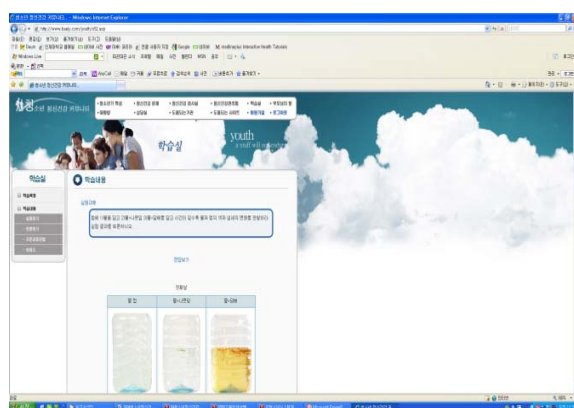


Fig. 4 Study room

2.5 Statistical analysis

Data were analyzed with SPSS/WIN 14.0. Independent t-test determined the homogeneity of baseline characteristics and outcome characteristics between the experimental group and the control group. Paired t-test compared group differences on study outcomes during the pre-test and post-test measures.

3. Results

3.1 Subjects' baseline and outcome characteristics

In Table 1 outcome characteristics showed that the mean anxiety scores of the pre-test were 16.00 ± 7.77 for the experimental group and 16.56 ± 8.24 for the control group. As for depression scores, pre-test means were 26.05 ± 9.23 (experimental) and 26.13 ± 8.84 (control). Pre-test self concept scores were 75.08 ± 6.36 (experimental) and 73.75 ± 11.09 (control). And Pre-test School adjustment scores were 25.56 ± 3.67 (experimental) and

26.39 ± 4.01 (control). Moreover, there were no significant differences between the experimental and control groups with regard to anxiety ($t=0.24$, $p=.625$), depression ($t=0.23$, $p=.064$), self concept ($t=2.53$, $p=.116$) and school adjustment ($t=0.39$, $p=.533$).

Table 1 Outcome characteristic

Variables	Experimental Group	Control Group	t	p
	Mean \pm SD	Mean \pm SD		
Anxiety	16.00 ± 7.77	16.56 ± 8.24	0.24	.625
Depression	26.05 ± 9.23	26.13 ± 8.84	0.23	.064
Self concept	75.08 ± 6.36	73.75 ± 11.09	2.53	.116
School Adjustment	25.56 ± 3.67	26.39 ± 4.01	0.39	.533

3.2 Effects on depressive symptoms

After the 8-week period of intervention, participants showed a significant decrease in their anxiety, depression and improved school adjustment. The anxiety scores of the experimental group and the control group after undertaking the program were 12.78 ± 3.11 and 17.48 ± 8.72 , respectively. There was a 3.21 point decrease after application of the intervention in the experimental group. On the other hand, in the control group, there was 0.91 point increase. The depression scores of the experimental group and the control group after undertaking the program were 21.59 ± 6.37 and 26.73 ± 8.34 , respectively. There was a 4.45 point decrease after application of the intervention in the experimental group. On the other hand, in the control group, there was 1.15 point increase. Seemingly, the web-based intervention was proven to be effective in managing anxiety and depression. The school adjustment scores of the experimental group and the control group after undertaking the program were 29.67 ± 3.18 and 27.55 ± 3.27 , respectively. There was a 4.10 point increase after application of the intervention in the experimental group. On the other hand, in the control group, there was only a 1.15 point increase. One the other hand, there is no significant differences were observed between the two groups as to self concept (Table 2)

Table 2.Comparison of scores between the experimental and control group.

Variables	Group	Pre-test	Post-test	Difference	t	p
		Mean±SD	Mean±SD			
Anxiety	Experimental	16.00±7.77	12.78±3.11	3.21±7.04	8.24	.005*
	Control	16.56±8.24	17.48±8.72	-0.91±4.43		
Depression	Experimental	26.05±9.23	21.59±6.37	4.45±8.70	9.00	.004*
	Control	26.13±8.84	26.73±8.34	-1.15±3.08		
Self concept	Experimental	75.08±6.36	79.86±8.25	-4.78±7.38	0.70	.404
	Control	73.75±11.09	76.94±11.00	-3.16±6.98		
School Adjustment	Experimental	25.56±3.67	29.67±3.18	-4.10±3.85	6.62	.012*
	Control	26.39±4.01	27.55±3.27	-1.15±3.08		

4. Conclusion

According to the International Telecommunication Union (ITU), Korea has the highest rate of computer usage within homes worldwide (78.7%) [9]. Therefore, this study suggests that a web-based mental health service system can become a powerful intervention on virtually adolescents and mental health concerns. This system will go through individual data and will be utilized to screen those who have mental health problems. In addition, this system includes intervention programs to relieve mental health problems such as education, exercise, relaxation, deep breathing, visualization, music therapy, family therapy and counseling with researcher or psychiatrist. And it could be adequately applied to assessing mental health problems and as an intervention strategy for not only adolescents who have mental health problems but also normal adolescents.

Many Korean adolescents can utilize this website since it has been submitted for indexing to NAVER, yahoo, one of Korea's top ten search engines. At present, a total of about 100,000 people had visited and accessed the site. The strength of this project lies on the continuous open-service that it provides the public. This program can also be used as a basis or resource material by health educators who are in need of a program inclined to promote adolescents' mental health.

Its increasing popularity and tested effectiveness contribute not only to promote mental health, but also to aid future studies that could be developed in other mental health areas. The end result was a web based mental health

management system for adolescents with a high degree of usability with an evidence-based intervention.

It is expected that this management system will contribute to the mental health promotion as well as community for the mental health related researchers, professionals and experts to share information on the adolescents' mental health. The author believes that web-based mental health interventions in the future have true potential in helping Koreans who are suffering, or at risk, for mental health problems, particularly because of the stigma related to psychiatric therapy in Korea.

Acknowledgments

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