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The Effects of the Oral Health Education Program on Oral Health of Maladaptive School Children

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Abstract: This study investigated the effects of an oral health education on oral health of maladaptive school children. For this study, 20 fifth-grade students who were classified as being maladaptive were randomly assigned to the study group and 20 to the control group and oral health education was conducted for 5 weeks. Subsequently, the oral health knowledge oral health behaviors and dental plaque management index before and after oral health education were analyzed. After the 5 weeks oral health education program oral health knowledge oral health behaviors and dental plaque management index increased significantly more in the experimental group than in the control group ($p<0.01$) and the effects were maintained 4 weeks after the test was finished ($p<0.05$). In conclusion oral health education seems to be an effective method of improving oral health behaviors and dental plaque management index of maladaptive school children. Future, research will need to develop systematic and standardized oral health education.

Key words: Dental plaque, oral health behavior, oral health behavior, oral health knowledge, school maladjustme

INTRODUCTION

In this rapidly changing modern society, school maladjustment causes the loss of traditional familial functions and as more women are employed their children tend to form unstable attachment in early childhood. Thus, individuals develop insufficient capacity to respond to stressful environment (Bimstein *et al*., 2008).

The level of oral health varies depending on presence of Attention Deficit Hyperactivity Disorder (ADHD) and children with these symptoms are less likely to practice toothbrushing before sleep than those without the symptoms and the former also show worse oral health and Decayed-Missing-Filled-Teeth (DMFT) index than the latter (Chandra *et al*., 2009). Also, these children have a high percentage of toothache, bruxism, gum bleeding and dental trauma which leads to necessity of creating a detailed oral health education program for treatment and prevention of oral diseases (Han and Lee, 1994).

Most of the previous research either focused on general elementary school children and conducted oral health education programs for them 4 or investigated only the oral health without applying an oral health education program such as the research on oral health of children with ADHD (Chandra *et al*., 2009) comparison of DMFT between people with intellectual disability and non-disabled people (Yi and Ahn, 2010) research on eating habits of children with ADHD (Lee *et al*., 2004) and research on DMFT of children with cerebral palsy (Moon *et al*., 2015).

So far, there has been no research in which an oral health education program was applied to maladaptive school children. Therefore, in this study, an oral health education program based on use of videos and computer and individual instruction and repeated learning of tooth brushing by using disclosing solution was conducted to maladaptive school children for 5 weeks. And then, the effects of the program on maladaptive school children were analyzed based on oral health knowledge, perceived benefits oral health behavior and dental plaque management index of the experimental group and control group.

MATERIALS AND METHODS

The oral health education program for maladaptive school children was conducted between April 28 and July 11, 2015. For the study, a school adjustment inventory test was performed with the entire fifth grade students, 145 in total of an elementary school located in Iksan. Subsequently, the children were divided into the high score, mid-score and low score groups and based on advice of a child psychotherapy specialist, 42 children in the group who had low scores in the school adjustment

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inventory test were finally selected as maladaptive school children. After excluding two students who were disqualified, the remaining 40 children were randomly assigned to the experimental group and the control group with 20 subjects each.

The basic contents and structure of the program were based on the modified health promotion model of Pender (Lee *et al*., 1994) and the program draft was designed based on review and analysis of previous research (Kim *et al*., 2000; Jung and Woo, 2015; Han, 2012; Pender, 1996; Hwang, 2003). Validity of the program contents was reviewed and verified by relevant experts, i.e., a child psychotherapist, professor of preventive dentistry, dentist, dental hygienist, professor of oral health and school nurse. Also, a pilot study was conducted by randomly selecting five fifth-grade students from an elementary school that is unrelated to the subject school, in order to examine and resolve problems with applying the oral health education program to maladaptive school children. After modification and supplementation based on validity verification by using advice of experts and the pilot study, the final oral health education program was developed.

The oral health education program was provided once per week, for a total of 5 weeks. The oral health education program consisted of the following: in week 1, the children learned about function and importance of teeth in week 2, about the causes and prevention of dental caries in week 3, how to use dental floss and other dental care products in week 4, about fluorine to prevent dental caries and how to make teeth and in week 5, about foods that are beneficial and those that are harmful for teeth.

By using SPSS21.0, the data analysis was conducted in accordance of the purpose of this study as follows: before applying the oral health education program, a paired t-test was performed to examine difference in oral health knowledge oral health behavior, dental plaque management index, etc., between the experimental group and control group. After applying the program, a repeated measures analysis of variance was conducted to examine the difference between before and after the study.

RESULTS AND DISCUSSION

Table 1 shows difference in oral health knowledge scores of maladaptive school children between the experimental group and control group after oral health education. There was no significant difference between the two groups before application of the proposed program ($p>0.05$). However, after application of the program oral health knowledge of the experimental group, in comparison to that of the control group, significantly improved after the test and in the follow-up 4 weeks after the study ($p<0.01$; Table 1).

Table 2 shows difference in oral health behaviors of maladaptive school children between the control group and experimental group after the oral health education program. There was no significant difference between the two groups before application of the proposed program ($p>0.05$). However, after application of the program oral health behaviors of the experimental group, in comparison to that of the control group, significantly improved after the test and in the follow-up 4 weeks after the study ($p<0.01$; Table 2).

Table 3 shows difference in dental plaque management index of maladaptive school children between the control group and experimental group after the oral health education program. There was no significant difference between the two groups before application of the proposed program ($p>0.05$). However, after application of the program, dental plaque management index of the experimental group in comparison to that of the control group, significantly improved after the test and in the follow-up 4 weeks after the study ($p<0.01$; Table 3).

Table 1: Comparison of scores for oral health knowledge between two groups before, after and follow-up

	Mean±SD				
Variables	Before	After	Follow-up	F-values	p-values
Control (n = 20)	70.00±16.71	73.64±17.17	75.55±18.79	Time 60.3761	0.000***
				Group 3.861	0.057
Study (n = 20)	60.20±20.31	92.27±8.98$^{\#\#}$	92.27±8.48$^{\#\#}$	T×G 36.274	0.001***

Table 2: Comparison of scores for oral health behavior between two groups before, after and follow-up

	Mean±SD				
Variables	Before	After	Follow-up	F-values	p-values
Control (n = 20)	38.65±6.14	39.25±5.56	38.30±5.12	Time 46.671	0.000***
				Group 5.728	0.022*
Study (n = 20)	37.70±4.34	45.65±2.91$^{\#\#}$	42.90±3.34$^{\#\#}$	T×G 37.258	0.000***

The data were analysed by repeated measure ANOVA; *p<0.05; **p<0.01; ***p<0.001; $^{\#\#}$significant difference from control group at p<0.01

Table 3: Comparison of scores for O'leary index between two groups before, after and follow-up

	Mean±SD				
Variables	Before	After	Follow-up	F-values	p-values
Control (n =20)	58.46±18.88	56.00±17.42	54.24±16.47	Time 6.516	0.013*
				Group 7.670	0.009**
Study (n = 20)	59.05±20.33	74.77±11.56##	73.48±10.63##	T×G 15.277	0.000***

The data were analysed by repeated measure ANOVA; *p<0.05; **p<0.01; ***p<0.001; ##significant difference from control group at p<0.01

CONCLUSION

In this study, to examine the effects of an oral health education program on oral health of maladaptive school children, the subjects were divide into an experimental group and control group and received oral health education once per week for 5 weeks and their oral health knowledge oral health behaviors and dental plaque management index were analyzed.

There was no difference in general characteristics oral health knowledge oral health behaviors and dental plaque management index between the experimental group and control group (p>0.05). After the oral health education program was provided oral health knowledge significantly improved in the experimental group in comparison to the control group (p<0.05) and also significantly improved after the test and in the 4 weeks followup in comparison to before the test (p<0.001). After the oral health education program was provided oral health behaviors significantly improved in the experimental group in comparison to the control group (p<0.05) and also significantly improved after the test and in the 4 weeks followup in comparison to before the test (p<0.001). After the oral health education program was provided, dental plaque management index significantly improved in the experimental group in comparison to the control group (p<0.05) and also significantly improved after the test and in the 4 weeks followup in comparison to before the test (p<0.001).

In this study, applying an oral health education program to maladaptive school children was effective for improving oral health knowledge oral health behaviors and dental plaque management index of the children. The findings suggest that providingoral health education has positive effects on improving oral health of maladaptive school children.

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