

## Effects of Camping Programs on Self-efficacy and Sick-role Behavioral Compliance in Juvenile Diabetes Mellitus Patient

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### I. Introduction

Chronic illness has become a leading health problem today. One of the greatest challenges facing the nurse is how to best support the adaptive behaviors of people living with the consequences of chronic illness, such as diabetes mellitus. Juvenile diabetes specially poses considerable stress for children and adolescents because there is no cure. Thus, helping people learn to cope with the consequences of diabetes becomes an important aspect of care.

A lot of juvenile diabetes know well how to manage self-care, but they are much less

successful with sick-role behavioral compliance of diabetes because of low confidence in their self-management (Hildreth et al, 1987).

Self-efficacy (Bandura, 1977) is a person's confidence of their ability to cope effectively in a situation.

Increased self-efficacy has been linked with adherence to exercise regimen for those with chronic obstructive pulmonary disease (Kaplan et al, 1984), activity following cardiac rehabilitation (Ewart et al, 1984), compliance with a diabetes regimen (McCaull et al, 1987) and control of chronic pain (Connors et al, 1986).

Self-efficacy beliefs are generated from four sources : performance accomplishment, vicarious experience, verbal persuasion, and emotional arousal (Bandura, 1977).

These days there is increasing interest of therapeutic camps using information from these four sources.

A camp may affect self-efficacy beliefs because of increasing socialization and providing motional support to others with the same chronic illness (Lorig et al., 1985).

Research was conducted into the effect of self-help programs on juvenile diabetes mellitus. The overall goal of the research was to further document the influence of Diabetes Camping Programs on selected variables.

Its specific objectives were to measure the effectiveness of Camping Programs on juvenile diabetes patients by how it first, changed their self-efficacy, and changed their sick-role behavioral compliance.

## II. Methodology

### Subjects

The subjects for this study were 41 people with the following characteristics :

- (1) a diagnosis of insulin dependence diabetes mellitus,
- (2) under the age of 18 years,
- (3) not currently experiencing an episode

of an acute or chronic illness other than diabetes.

19 subjects in the experimental group were recruited from three hospitals in Taegu city and 22 subjects of control group from another hospital in Pusan City in order to prevent the diffusion of the effectiveness of Programs.

To calculate the sample size for this study, Cohen's (1977) approach to power analysis was used.

A moderate effect size was selected and the result was  $\text{power}=0.728$ .

### Instrumentation

#### Dependent Variables

**Self-efficacy Scale.** This instrument, developed by Hurley, consists of 28 items and three subscales which measures people's perceived self-efficacy to cope with the consequences of diabetes mellitus (Hurley, 1989).

The authors noted that "the behavior specific nature of self-efficacy made it necessary to develop an instrument specific for its measurement in people who have diabetes mellitus" (Hurley, 1989).

The 28-item scale includes three subscales : six general items, seven diet items, eleven insulin items. Reliability was reported as Cronbach's  $\alpha=.96$ . Each of the 20 questions is followed by 5-point likert scale.

Responses are marked on the horizontal line anchored at each end by "very uncertain" (1) and "very certain" (5).

The items are summed for a total score, ranging from 28 to 140, with a higher score indicating higher levels of perceived self-efficacy.

**Sick-role Behavioral Compliance Scale.** This questionnaire was developed by Bark in 1984 and revised in 1986 (Bark, 1986). The 15-item scale, 5-point likert scale can be rated from "strongly agree" (5) to "strongly disagree" (1).

Reliability was reported as Cronbach's  $\alpha = .86$ . The items are summed for a total score, ranging from 15 to 75, with a higher score indicating higher levels of sick-role behavioral compliance.

#### Independent Variable

**Camping Programs.** The programs contains six sessions with detailed instructions for conducting the experimental group.

The purpose of each session is to facilitate behavior change, not just transmit information.

Leaders are encouraged to balance presentation of information with opportunities for debate and discussion, sharing member experiences, outside exercise, and most actively involving group members by ensuring that the learning environment is physically and psychologically comfortable.

The experiential activities of Camping

Programs were designed to influence the cognitive-behavioral change associated with active rather than passive participation of the participants.

The purpose of each session is outlined:

1. Session 1-Information on Camping Programs ; information about general principles of camp ; introduction of group members ; basic information about juvenile diabetes mellitus.
2. Session 2-Presentation of strategies for diet control, principle of diet control ; opportunity for practicing diet.
3. Session 3-Presentation of strategies for exercise ; instruction on strengthening and endurance exercise ; opportunity for practicing exercise.
4. Session 4-Information about types of medication ; opportunity for sharing of problem experience related to diabetes ; development of group problem solving.
5. Session 5-Information about glucose test ; opportunity for practicing glucose test ; opportunity for sharing deeply of problem experience related to diabetes ; development of group problem solving.
6. Session 6-Information about general management of diabetes ; review of a problem solving process ; opportunity to solve problems related to everyday activities ; encourage development of an active role in managing diabetes.

Procedure

The period of data collection was from August 10 to December 12 in 1996.

The study incorporated a nonequivalent control group pretest-posttest design(Fig 1).

〈Fig. 1〉 Nonequivalent control group pretest-posttest design for the study.

Group	Pretest	Programs	Posttest
Experimental	O <sub>1</sub>	X <sub>1</sub> -X <sub>6</sub>	O <sub>2</sub>
Control	O <sub>1</sub>	-	O <sub>2</sub>

O<sub>1</sub> : Self-efficacy scale

Sick-role behavioral compliance scale

X<sub>1</sub>-X<sub>6</sub> : Camping Programs

O<sub>2</sub> : The same O<sub>1</sub>

The independent variable, Camping Programs, was the treatment Programs. The dependent variables, self-efficacy and sick-role behavioral compliance, were measured pre-programs and post-programs. Camping Programs for the experimental group was carried out over 6 days and the control group did not participate in the Programs.

### III. Analysis

Data analysis was performed using the SPSS computer program.

Of that sample, 41 fully completed questionnaires were included in the analysis.

The characteristics of the study sample were reported using descriptive statistics (frequencies and percentages). Chi-square tests and t-tests were conducted for each

variable (alpha level .05) to determine if there were any differences in the experimental and control group at pretest. ANCOVA of the posttest scores for self-efficacy scale and sick-role behavioral compliance scale, were used to examine the difference between the experimental and control group. The relationship between self-efficacy scale and sick-role behavioral compliance scale were estimated with a Pearson correlation coefficient.

### IV. Results

#### 1. Descriptive Information and Homogeneity test.

There were 19 subjects in experimental group and 22 in the control group.

Of the total group, 39.0% (n=16) were male and 61.0% (n=25) were female.

Participants in the total group ranged in age from 9 to 18 years, 97.6% (n=40) reported having had previous hospitalization for diabetes and 78.0% (n=32) reported previous diabetes education. The mean duration of diabetes was 6.8 years. Of the 41 subjects, 36.6%(n=15) reported being exposed to diabetes among the family members.

There were no significant differences in socio-demographic variables between the experimental and the control group. There

were also no significant differences in the self-efficacy scores and sick-role behavioral compliance scores between the experimental and the control group (Table 1).

Thus, the two groups are represented the homogeneity.

Tabel. 1 Homogeneity test of self-efficacy and sick-role behavioral compliance between experimental and control group in pretest

	Experimental		Control		t	p
	M	SD	M	SD		
Self-efficacy	3.11	0.94	3.22	0.60	-1.67	0.11
Sick-role behavioral compliance	3.07	0.70	3.18	0.70	-0.66	0.53

**2. The effects fo Camping Programs**

Self-efficacy scores for Camping Programs had a mean of 3.11 for the pretest and 3.86 for the posttest ; whereas, the pretest mean for the control group was 3.22 with a mean posttest of 3.39(Table 2-1).

Self-efficacy scores reported by Camping Programs group were significantly higher than for non-participants (F=18.93, P<.001) (Table 2-2).

Tabel. 2-1 Mean, SD and mean difference of self-efficacy scores in experimental and control group

Group	Pretest		Posttest		Difference
	M	SD	M	SD	
Experimental	3.11	0.94	3.78	0.63	0.75
Control	3.22	0.60	3.37	3.37	-0.17

Tabel. 2-2 ANCOVA of posttest self-efficacy scores in experimental and control group

Source	SS	DF	MS	F	p
Covariate pre compliance	6.297	1	6.426	27.098	0.000
Main effect Programs	4.960	1	4.086	18.932	0.000
Error	8.623	38	0.209		
Total	17.028	40	0.492		

Sick-role behavioral compliance scores for Camping Programs had a mean of 3.07 for the pretest and 3.80 for the posttest ; whereas, the pretest mean for the control group was 3.18 with a mean posttest of 3.51 (Table 3-1).

Sick-role behavioral compliance scores reported by Camping Programs group were significantly higher than for non-participants (F=2.84, P<.05) (Table 3-2).

Tabel. 3-1 Mean, SD and mean difference of role behavioral compliance scores in experimental and control group

Group	Pretest		Posttest		Difference
	M	SD	M	SD	
Experimental	3.07	0.73	3.80	0.49	0.73
Control	3.18	0.70	3.51	0.46	0.33

Tabel. 3-2 ANCOVA of posttest sick-role behavioral compliance scores in experimental and control group

Source	SS	DF	MS	F	p
Covariate pre compliance	1.864	1	1.826	10.319	0.004
Main effect Programs	0.219	1	0.539	2.843	0.042
Error	6.967	38	0.141		
Total	10.371	40	0.282		

3. Correlation between self-efficacy and sick-role behavioral compliance

The self-efficacy scores were correlated significantly with the sick-role behavioral compliance in  $r=0.68$  ( $p<.001$ ) for the pretest and  $r=0.80$ ( $p<.001$ ) for the posttest (Table 4).

Tabel 4. Correlation between self-efficacy and sick-role behavioral compliance scores

		Sick-role behavioral compliance	
		r	p
Self-efficacy	Pretest (N=41)	0.682	0.000
	Posttest (N=41)	0.804	0.000

## V. Discussion

Camping Programs, in which 19 people with diabetes participated, significantly increased their perception of self-efficacy and sick-role behavioral compliance relative to a control group.

Self-efficacy was increased through the practice of specific techniques, such as diet, exercise, medication, glucose testing, and general management of diabetes.

These results are congruent with the findings of Mitchell(1984), Condiotte and Lichtenstein (1981), Lorig, Chastain et al. (1989), O'Leary et al(1988), and Thacher (1978).

The work of exploring the link between self-efficacy and weight control was done by

Mitchell(1984) with a sample of 68 students and nonstudent volunteers. They found that, by increasing perceptions of self-efficacy for weight loss through a behaviorally based treatment program, subjects lost more weight than the comparison group.

Condiotte and Lichtenstein (1981) designed a program to increase self-efficacy expectations for controlling smoking behavior in 78 experimental subjects. They found that subjects with lower self-efficacy expectations for quitting smoking at the end of the treatment program were more likely to relapse back to smoking behavior than high self-efficacy subjects.

In the Lorig, Chastain et al(1989) study, during analysis of the Arthritis Self-Management Program at Stanford and in a 4-year follow-up, self-efficacy for pain management and other symptoms increased and were maintained.

O'Leary et al. (1988) tested a cognitive behavioral rheumatoid arthritis program using techniques to increase the skills of the participants to manage stress, pain, and other symptoms of arthritis. Results indicated that the average pain experienced by patients who received treatment was reduced by 28%, while the control group showed no significant reductions in pain.

In the Thacher(1978) study, during analysis of the effect of a two week camping experience on the self-concept of physically

handicapped children, self-concept increased and influenced the stimuli to increase the socio-psychological adaptation.

A significant relationship was found between self-efficacy and sick-role behavioral compliance in all of these subjects.

Littlefield et al. (1992) found that there was a strong positive correlation between self-efficacy and compliance of treatment regimens with diabetes.

Sick-role behavioral compliance prescribed by community health nurse is a serious problem in roughly one-half of all clients with chronic illness (Esptein and Cluss, 1982). There is empirical support for the use of self-efficacy information in increasing sick-role behavioral compliance.

The findings lend support to Camping Programs as an important strategy in helping diabetes patients learn self-management techniques through experiential activities.

## VI. Conclusions

Based on the findings of this study, the following conclusion are drawn :

1. Camping Programs was effective in increasing the scores of self-efficacy for juvenile diabetes mellitus patients.
2. Camping Programs was effective in increasing the scores of sick-role behavioral compliance for juvenile diabetes mellitus patients.

3. The more self-efficacy increased, the more sick-role behavioral compliance increased.

It can be concluded that Camping Programs is a useful health intervention for juvenile diabetes mellitus patients.

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## 〈국문요약〉

## 소아 당뇨 환자의 캠프 프로그램이 자기효능과 환자 역할 행위이행에 미치는 영향

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당뇨병은 고혈당을 조절 안할 경우에는 돌이킬 수 없는 신체적 합병증은 물론 정신적 손상까지 받지만, 고혈당은 노력만 하면 조절이 가능하며, 정상에 가까울 정도로 조절되면 정상인과 같은 삶을 영위할 수 있다. 그러나 보건의료 전문가의 인슐린 주사 요법, 식사 및 운동요법 등의 일방적인 처방만으로 성공적인 당조절을 기대하기에는 어려움이 있다.

그래서 당뇨병 환자에게 당뇨병이라는 것이 무엇이며, 어떻게 이 병을 스스로 조절할 수 있게 만드는가가 더욱 중요한 것이다. 따라서 우리나라에서도 당뇨병에 대한 관심이 높아짐에 따라 각 지역과 의료기관마다 다양한 당뇨병 교육 프로그램이 실시되고 있다.

특히 소아 당뇨병 환자는 이러한 전통적인 당뇨병에 관한 교육을 통해서 당뇨병에 관한 지식은 많이 가지고 있지만, 당뇨병 자가 조절을 위한 환자 역할 행위(sick-role behavior)를 변화시키는데는 그다지 성공적이라 할 수 없다.

Bandura(1977)는 자기 효능은 '할 수 있다는 자신감'으로 수행 성취, 대리 경험, 언어적 설득, 정서적 각성에 관한 정보에 의해 결정된다고 하였다. 따라서 이러한 정보들은 자기 효능을 증진시키기 위한 중재의 방향을 제시해 준다.

오늘날 이러한 정보를 활용한 중재 프로그램 중에서 가정과 학교를 떠나 자연 환경 속에서의 집단 활동을 통하여 사회 학습 경험을 하는 캠프 프로그램에 대한 관심이 높아지고 있다. 캠프에 참여한 당뇨병 아이들은 캠프 활동속에서 다른 동료 아이들이 자신이 갖고 있는 문제들을 성공적으로 해결해 나가는 것을 관찰하여 대리 경험하게 될 때 희망을 가지게 되며, 당뇨병을 가진 다른 동료들과 공통의 경험을 공유할 수 있는 기회를 갖게 되어 그들은 자신이 더 이상 혼자가 아니며 남과 '다르지'도 않다는 것을 깨닫게 되어 점차 자신감을 가지고 살아갈 수 있게 된다.

본 연구는 캠프 프로그램이 소아 당뇨병의 자기 효능을 증진시키고, 당뇨병 환자 역할 행위 이행 정도를 높여주는지를 규명해 봄으로써, 소아 당뇨병 환자를 위한 효과적인 간호 중재 방안을 제시하고자 비동등성 대조군 전후 실험 설계의 유사 실험 연구를 시도하였다.

1996년 8월 10일 부터 12월 12일까지 종합병원에서 추후 관리하고 있는 소아 당뇨병 환자중 선정 기준에 맞는 환자 41명을 연구대상으로 하였으며, 그 중 19명은 실험군으로 Bandura의 자기 효능 증진을 위한 정보원을 활용한 캠프 프로그램을 5박 6일간에 걸쳐 실시하였고, 다음 22명은 대조군으로 캠프 프로그램을 실시하지 않았다.

자료수집은 자기 효능 척도와 환자 행위 역할 이행 척도를 캠프 프로그램을 실시하기 전에 사전 조사를 하고 중재 후 4주째 사후 조사를 하였다.

수집된 자료는 SPSS/PC+로 Chi-square test, t-test, ANCOVA, Pearson correlation을 이용하여 분석하였으며, 그 결과는 다음과 같다.

캠프 프로그램은 소아 당뇨병 환자의 자기 효능을 증진시키고 환자 역할 행위 이행을 높여주는데 효과적이었다.

소아 당뇨병 환자의 자기 효능은 환자 역할 행위 이행과 순 상관 관계가 있어, 자기 효능이 증진될 수록 환자 역할 행위 이행 정도가 높아졌다.