

An Educational Program That Contributes to Improved Patient and Parental Understanding of Atopic Dermatitis

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Background: Providing an educational program as part of a health care program for the management of atopic dermatitis (AD) patients has rapidly become popular. AD educational programs can be of benefit in measured outcomes for both dermatology specialists and patients. **Objective:** To determine the effects of programmed education delivered by dermatology specialists on the management and knowledge of AD, we assessed the effectiveness of patient/parental education at improving AD knowledge, and determined the usefulness of the education. **Methods:** The program consisted of five, 20-minute sessions which were prepared, discussed, reviewed, and delivered by professors of dermatology. At the end of the program, AD knowledge was assessed using a standardized questionnaire. A total of 148 people were included. Fifty-eight patients/parents received the programmed education and the remaining 90 did not receive the programmed education. **Results:** The mean questionnaire scores from both groups were compared.

Mean knowledge scores were significantly higher for those who received the education ($p=0.00$). We analyzed the knowledge score according to factors such as gender, education level, marital status, and occupation. The data indicated that education level influences the subjects' knowledge level of AD, but gender, occupation, and marital status do not. **Conclusion:** An educational program can be an effective tool to improve patient quality of life and treatment compliance by providing psychological support to the patients and their parents. (*Ann Dermatol* 26(1) 66~72, 2014)

-Keywords-

Atopic dermatitis, Education, Questionnaires

INTRODUCTION

Atopic dermatitis (AD) is a chronic and inflammatory skin disease that is characterized by intense pruritus. It is influenced by immunological, genetic and environmental factors and is associated with other allergic diseases such as asthma and allergic rhinoconjunctivitis. Rates of AD are around 30% in the most developed nations and exceed 10% in many countries, resulting in a worldwide cumulative prevalence of 15% to 20%¹⁻⁴. The prevalence of AD increased dramatically in the last half of the 20th century and AD is a major public health problem in many countries⁵.

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Because AD is characterized by a chronic course of exacerbations and remissions, understanding of the disease and self-management are very important for the treatment of AD patients. Nevertheless, misunderstanding, lack of information, inadequate compliance with treatment, and poor self-management are major reasons for unsatisfactory treatment⁶⁻⁸. For example, an appreciable number of AD patients/parents believe that animal-derived proteins such as milk, meat and eggs, are aggravating factors and erroneously consider that these foods should be restricted in the diet⁹⁻¹². Furthermore, patients with AD and/or their parents commonly misunderstand the use of corticosteroids (corticosteroid phobia), especially for topical corticosteroids^{13,14}. Corticosteroid phobia frequently leads to the worsening of symptoms and prompts the consideration/use of unproven alternative medicines, such as Chinese herbal therapies¹⁵. Therefore, parental and patient education is critically important in the management of AD.

While individual education would be most effective, in the busy clinic setting, physicians often have insufficient time to educate patients adequately regarding the multiple factors that are important in managing AD. Rather, a formatted mass education by specialists may be effective, with expert advice supplementing (or refuting) on-line information acquired by patients and their parents.

In this study, we assessed the usefulness and effectiveness of an educational program for AD patients and determined the importance of education by specialized dermatologists. The half-day program provided a covered overview of AD. The evaluations relied on a comparison of the intervention group with the control group using an AD questionnaire.

MATERIALS AND METHODS

Study subjects

This study was approved and overseen by the Institutional Review Board of Incheon St. Mary's Hospital, the Catholic University of Korea. The clinical trials.gov registration number is OC11QISI0072. One hundred and forty-eight patients were asked to complete a 25-item questionnaire designed to assess their knowledge of AD. Of the 148 participants, 58 AD patients/parents attended a structured educational program and 90 did not participate in the program. All participants gave signed informed consent. For patients under 18 years of age, informed consent was provided by their parents and the parents completed the questionnaire. All 148 participants completed and returned the questionnaire.

Methods

The program consisted of five, 20-minute sessions. The program contents were prepared, discussed, reviewed, and delivered by professors of dermatology, each with at least 20 years lecture/study experience in AD. The contents of the sessions were based on previously reported work including dermatology textbooks and journals on AD. The program encompassed clinical manifestations, cause or triggering factors, laboratory examinations necessary for diagnosis, specific clinical features in childhood AD patients, treatment options, and skin care and environment management.

The study outcome measure was the participant's knowledge of AD and AD-related skin care, which was gauged by responses to a 25-item questionnaire. Each question was worth one point, for a total possible score of 25 points. The first part of the questionnaire was designed to obtain demographic data. The second part of the questionnaire consisted of 25 questions based on previous research and textbook entries including eight questions concerning clinical manifestations, three questions concerning causes/triggering factors, seven questions concerning treatment, one question concerning diagnosis, and six questions concerning skin care and environment management. Seven questions were related to common misunderstandings about AD treatment, such as components and physiologic actions of Chinese herbal therapies (two questions), systemic and topical corticosteroid use (three questions), and water softener and placenta injections (two questions). The six questions related to skin care and environment management included questions specifically about bathing, dietary restriction, breast feeding, exercise, and emollient use. At the end of the education program, participants were asked to complete the questionnaire.

Statistical analysis

Student's t-test was used to compare data between the two groups for AD knowledge scores and an ANOVA one-way test was used to compare the other data. χ^2 tests were performed for categorical variables. For all statistical analyses, $p < 0.05$ was considered statistically significant. All statistical analyses were conducted with SPSS software version 12.0 for Windows (SPSS Inc., Chicago, IL, USA).

RESULTS

Demographic characteristics

Differences in demographics and characteristics between the two groups are summarized in Table 1. Of the 90

Table 1. Patient characteristics and response rates to the questionnaire

Variable	Control group (n=90)	Intervention group (n=58)	p-value
Sex			0.810*
Female	78 (86.67)	49 (84.48)	
Male	12 (13.33)	9 (15.52)	
Age (yr)	42.89 ± 14.63	42.83 ± 15.27	0.940 [†]
Marital status			0.566*
Married	69 (76.67)	42 (72.41)	
Not married	21 (23.33)	16 (27.59)	
Highest education level completed			0.611 [‡]
Middle school graduates or lower	13 (14.44)	12 (20.69)	
High school graduates	49 (54.44)	29 (50.00)	
College graduates or higher	28 (31.11)	17 (29.31)	
Employment status			0.074 [‡]
Unemployed	54 (60.00)	44 (75.86)	
Employed	29 (32.23)	9 (15.52)	
Student	7 (7.77)	5 (8.62)	

Values are presented as number (%) or mean ± standard deviation. *Fisher exact test, [†]Student's t-test, [‡]χ² tests used to determine significance.

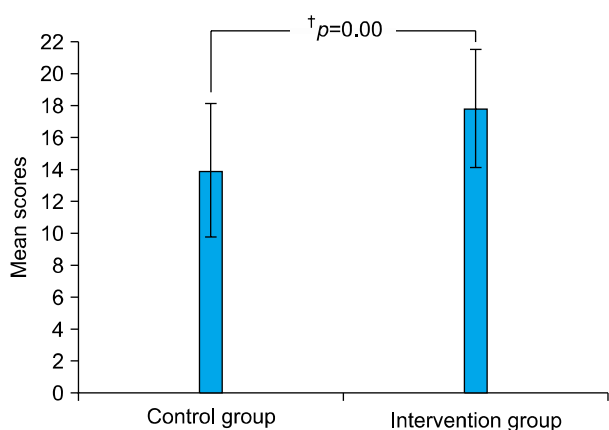


Fig. 1. The mean knowledge scores in the control and intervention groups ($p=0.00$). [†] $p<0.005$.

participants in the control group, 78 were female (86.67%) and 12 were male (13.33%). In the intervention group, 49 were female (84.48%) and nine were male (15.52%). The average age of the intervention group and control group was 42.83 ± 15.27 years and 42.89 ± 14.63 years, respectively. Sixty nine of the 90 participants were married (76.67%) and 21 were unmarried (23.33%) in the control group. In the intervention group, 42 were married (72.41%) and 16 were unmarried (27.59%). The unmarried category included participants who were single, widowed or divorced. According to education levels, 13 were middle school or lower graduates (14.44%), 49 were high school graduates (54.44%), and 28 were college graduates or higher (31.11%) in the control group. In the intervention group, 12 were middle school or gra-

duates (20.69%), 29 were high school graduates (50.00%) and 17 were college graduates or higher (29.31%). According to employment status, 54 were unemployed (60.00%), 29 were employed (32.23%) and seven were students (7.77%) in the control group. In the intervention group, 44 were unemployed (75.86%), 9 were employed (15.52%) and 5 were students (8.62%). No statistically significant differences were found in gender ratio, average age, marital status, education levels and employment status between the control group and the intervention group (Table 1).

AD knowledge scores

Mean knowledge scores significantly differed between the control group (13.94 ± 3.70) and the intervention group (17.78 ± 4.13) ($p=0.00$). Mean scores of participants in the intervention group were higher than that of participants in the control group (Fig. 1).

Comparison of AD knowledge scores between males and females in both groups did not show significant differences (control group: male 13.33 ± 3.96, female 14.04 ± 3.67, $p=0.541$; intervention group: male 17.44 ± 4.82, female 17.83 ± 4.04, $p=0.796$). On the other hand, mean knowledge scores of the intervention group were higher than those of the control group for both genders. The mean knowledge scores significantly differed between males in the intervention group (n=9, 17.44 ± 4.82) and control group (n=12, 13.33 ± 3.96) ($p=0.045$). In the same manner, mean scores significantly differed between females in the intervention group (n=49, 17.84 ± 4.04) and control group (n=78, 14.09 ± 3.67) ($p=0.00$) (Fig. 2).

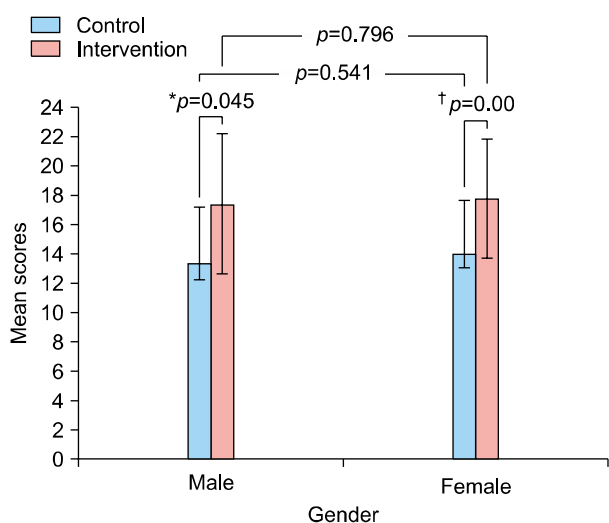


Fig. 2. The mean knowledge scores in the control and intervention groups according to gender. * $p < 0.05$, † $p < 0.005$.

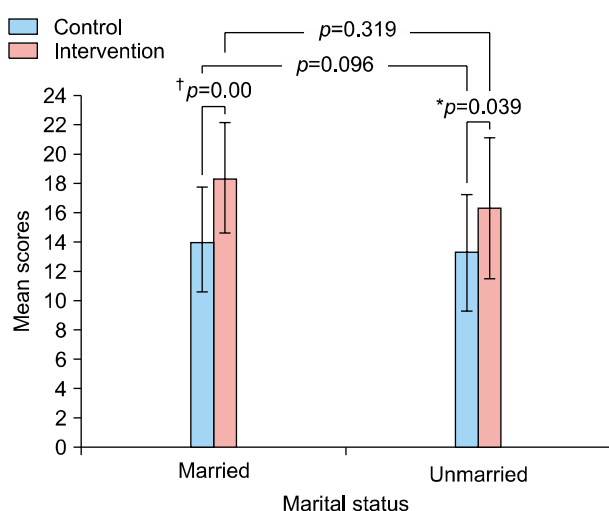


Fig. 3. The mean knowledge scores in the control and intervention groups according to marital status. * $p < 0.05$, † $p < 0.005$.

The discrepancy of AD knowledge scores seemed slightly greater in males than in females, but was not statistically significant.

A comparison of mean knowledge scores according to marital status revealed no significant differences between the married and unmarried participants in both groups (control group; $p = 0.096$, intervention group; $p = 0.319$). Nonetheless, the AD knowledge scores seemed to be higher in married participants than in unmarried participants. It is considered that married participants possibly take more interest in AD than do unmarried participants since they are more likely to have children, and so would be more directly concerned with AD. For both married

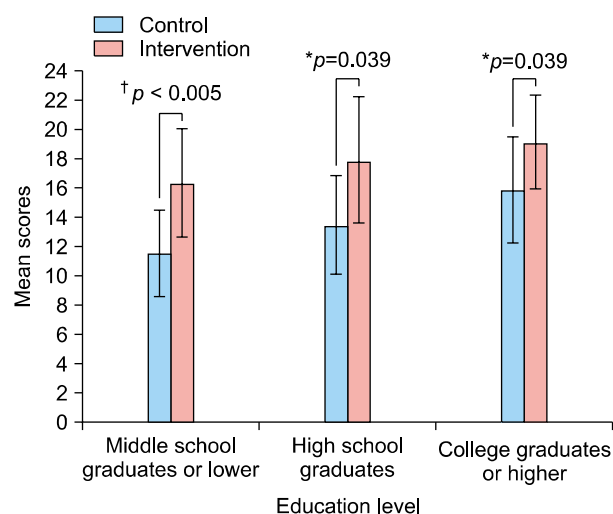


Fig. 4. The mean scores in the intervention group and control group according to education level. * $p < 0.05$, † $p < 0.005$.

and unmarried participants, those in the intervention group statistically differed from those in the control group (married group; $p = 0.00$, unmarried group; $p = 0.039$) (Fig. 3). According to the education level, the mean knowledge scores did not significantly differ among the three graduate groups (middle school or less, high school, college or higher) in the intervention group (middle school graduate or less: 16.33 ± 3.72 ; high school graduate: 17.93 ± 4.32 ; college graduate or more: 19.18 ± 3.18 , $p = 0.177$). On the other hand, the mean knowledge scores in the control group significantly differed between the three groups (middle school graduates or lower: 11.59 ± 2.96 , high school graduate 13.50 ± 3.40 , college graduate or higher: 15.89 ± 3.64 , $p = 0.001$). In all three education groups, the mean knowledge scores of the intervention group were higher than those of the control groups ($p < 0.05$) (Fig. 4). The discrepancy of AD knowledge scores seemed greater in those with middle school or less education and high school graduates than in those with a college degree or higher education. This data suggests that the programmed education for AD is more effective in those who have yet to graduate from college.

We also subdivided participants into three occupational groups (employed, unemployed, student). In the control group, a comparison of mean knowledge scores by occupation revealed statistically significant differences between the three groups (employed: 15.34 ± 3.67 , student: 13.43 ± 2.70 , unemployed: 13.26 ± 3.66 , $p = 0.044$). On the other hand, in the intervention group, there was no significant difference between the occupation groups (employed: 19.67 ± 3.16 , student: 17.20 ± 4.97 , unemployed: 17.45 ± 4.18 , $p = 0.330$). In terms of occupation, the

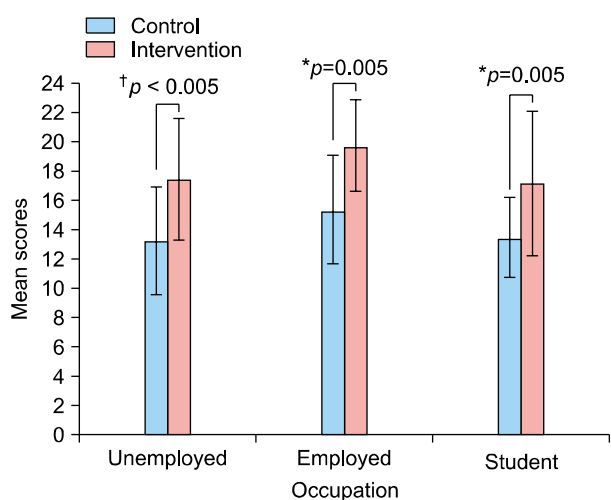


Fig. 5. The mean scores in the intervention group and control group according to occupation. * $p < 0.05$, † $p < 0.005$.

mean knowledge scores of the intervention group were higher than those of the control group ($p < 0.05$) (Fig. 5).

DISCUSSION

In AD, understanding the disease is as important as medical care, because many factors contribute to the pathogenesis of AD. Knowledge of AD of both patients and their parents, and compliance with AD management practices are important to improve clinical outcomes^{6,8,16,17}. Thus, AD patient/parental education by expert physicians in the clinic setting and through workshops, videos, and written pamphlets has been emphasized.

As the prevalence of AD is rising steadily, AD patients and parents are susceptible to an excessive amount of unsubstantiated and potentially erroneous information from the mass media, particularly the Internet¹⁸. This information may have harmful effects on those with AD. Assimilating the correct information from the wealth of information available is challenging, and can be promoted by the input of dermatologists, who should play a key role in patient education. The purpose of this study was to determine the effectiveness and usefulness of mass education by dermatology specialists, and to compare the AD knowledge between an intervention group and a control group with a standardized questionnaire carried out following the completion of the education sessions.

At the end of the education program, the knowledge score of the intervention group showed an average of 3.84 points higher than that of the control group (Fig. 1). The intervention group scored higher than the control group, not only in the total score but also in the scores of each questionnaire category. These findings support the results

of previous studies that show that patient education improves knowledge and clinical outcomes in AD patients^{16,17}. Armstrong et al.¹⁶ showed that educational interventions for adult AD patients, including online videos and pamphlets presented by dermatology specialists, improve clinical outcomes and AD skin care knowledge. Other studies have also demonstrated that education and workshops improve AD patients/parents' knowledge and clinical outcome^{6,7,19,20}. Patient knowledge about AD leads to behavioral changes and subsequent improved clinical outcomes.

We analyzed the knowledge score according to factors such as gender, education level, marital status, and occupation. While differences between the intervention group and the control group were significant for both males and females, no significant difference was observed between the two genders in the intervention group (Fig. 2). Similarly, no difference was observed in the score according to marital status within the intervention group, while a significant difference was observed between the two groups regardless of marital status (Fig. 3). Concerning education, a significant difference was observed among the three education subgroups in the control group, with the total score increasing with a higher education level ($p = 0.001$). However, in the intervention group, no statistically significant difference was observed among the three subgroups ($p = 0.177$). This result suggests that the control group was affected more by their education level (Fig. 4). In terms of occupation, the three subgroups in the intervention group did not show statistically significant differences ($p = 0.330$), while occupation-related differences were significant in those not receiving the education program ($p = 0.044$) (Fig. 5). This data indicates that education level is influential on subjects' knowledge level of AD, but gender, occupation, and marital status are not.

The questionnaire consisted of 25 questions on clinical manifestations, cause or triggering factor, diagnosis, treatment, and skin care and environment management. In our questionnaires, we aimed to confirm the current situations and positions of conventional dermatologic therapies and complementary medicines. To assess the common misunderstandings about AD, questions covered commonly used alternative medicines, including Chinese herbal therapies, and use of systemic and topical corticosteroid. Misunderstanding of AD and fear of corticosteroids appears to be closely linked to a preference for alternative and complementary medicines¹⁵. In addition, some people believe that alternative and complementary medicine, especially Chinese herbal therapies, are safer than conventional therapies such as corticosteroids and immunomodulators^{5,21}. The results of this study reinforce the view

that an appreciable proportion of AD patients/ parents think that the use of corticosteroids is dangerous and ineffective, compared to Chinese herbal therapies. Nearly half (48%) of the participants in the control group answered that the use of topical and systemic corticosteroid may cause skin cancer and use of systemic corticosteroid may aggravate symptoms of AD. Moreover, 63% of the participants in the control group thought that steroids should not be used regardless of their disease severity, and focused on possible side effects without considering the utility of steroids. This corticosteroid phobia is a major cause of low compliance and leads to treatment failure; inappropriate use of steroid can aggravate the disease course of AD^{13,14}. On the other hand, 36% of participants answered that Chinese herbal therapies can cure AD and are safe because they do not contain corticosteroid. However, Chinese herbal therapies may contain toxic substances such as heavy metals and drug components such as glucocorticosteroid, diazepam, phenylbutazone, paracetamol and thiamine²². They are not safe and may even be harmful, because their composition is unclear and they may have corticosteroid-like actions in some cases²². Presently, questions related to skin care and environment management related to dietary restrictions, emollient use, bathing and breast feeding. Forty percent of control participants answered that animal sources of protein, such as meat, eggs and cow's milk, can aggravate AD symptoms and so should not be consumed. Dietary restrictions in AD patients have been researched in many studies. The results have been conflicting. Dietary restrictions can result in nutritional deficiencies that may lead to adverse growth and development outcomes in AD patients²³. Jesen²⁴ reported that more than 20% of AD patients have attempted dietary restrictions or special health food preparations. However, only a small proportion of patients with AD will experience flares and remissions by food ingestions and food-related exacerbations of AD gradually disappear with age. Furthermore, because animal-derived proteins such as meat, fish, milk, and eggs provide the body with essential amino acids, they are necessary for optimal health. Therefore, indiscriminate dietary restrictions should be avoided. In addition, it is important to identify clinical relevance to food allergens by a detailed history, skin testing, and double-blind and placebo-controlled food challenges, so that appropriate dietary restrictions can be implemented^{25,26}. Almost half of the participants in the control group (46%) believed that those with AD should avoid frequent bathing, because bathing worsens AD symptoms. Both supplying and maintaining skin hydration is very important in the management of AD. Skin hydration is

most effectively performed using a tepid water bath and by applying emollients immediately after bathing.

In recent years, more people have been acquiring information about diseases from mass media sources, in particular from the internet, rather than from doctors or hospitals²⁷. The internet is easily accessible and provides a great deal of information that can be useful for chronic diseases and has rightly become an important source of health-related information²⁷. However, some of this information can be from unproved sources, and may be supplied purely with the intent of profit. This information may be inaccurate or exaggerated and, consequently, may cause incorrect perception of diseases and have adverse effects on treatment²⁸. This situation occurs more often in countries where alternative medicines are commonly used. This is the reason why the questionnaire used in the present study included not only common information about AD that is essential for AD patients, but is also incorrect information that is being disseminated through the mass media or is incorrect information concerning alternative medicines.

It is obvious that accurate knowledge about treatment and management of AD improves the prognosis. An education program can improve patient prognosis and treatment compliance by providing psychological support to the patients and their parents¹⁴.

In conclusion, the purpose of the present study was to confirm the importance of mass education by conducting an education program by experts and to compare the intervention group with a control group. The intervention group had a statistically significantly higher level of knowledge of AD than the control group. Education by experts can therefore be an effective tool to improve patient quality of life and enhance patient compliance.

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