

Original Article

## Demand Survey for Application of Environmental Therapy for Atopic Dermatitis

Chang-Gue Son

Liver and Immunology Research Center, Oriental Medical College in Daejeon University

**Objective:** This study aimed to investigate the demand for natural environment therapy among parents of patients with atopic dermatitis.

**Methods:** The questionnaire-based survey was conducted on the parents of 310 patients with atopic dermatitis (158 male and 152 female, median age 8 years, ranging from 2 to 21 years). The questionnaire consisted of 10 questions including demographic information, preference of environmental therapy and related choices.

**Results:** Regardless of illness severity or gender, parents agreed with the importance of environmental therapy in treatment for atopic dermatitis. 55.2% of parents had considered moving to the countryside for their children with atopic dermatitis. 74.5% of parents answered positively to the possibility of movement to an atopy-free village, and this rate was significantly higher in parents of patients with severe symptoms ( $p < 0.05$ ). Educational facilities and eco-environment were considered to be the most important factors in their decision. In addition, parents opted for organic food cooperatives, which was also felt necessary for their children suffering from atopic dermatitis.

**Conclusions:** This study is the first report suggesting the extent of demand for environmental therapies among patients with atopic dermatitis. This information will be helpful in developing therapeutics using the natural environment in Korean medicine.

**Key Words** : Atopic dermatitis; environmental therapy; forest therapy; Korean medicine

### Introduction

Atopic dermatitis is a chronic inflammation with a pruritic skin disorder, which seriously affects quality of life in patients as well as their families<sup>1</sup>. The prevalence rate of atopic dermatitis is 17.9% for children aged 6-7 years and 11.2% for children aged 13-14 years in Korea, and it is widely increasing worldwide<sup>2</sup>. The etiology is unclear, but genetic factors, frequent exposure to air pollutions, limited breast-feeding, and especially westernized lifestyle including food and housing have been

speculated to be contributing factors for the high incidence rate of atopic dermatitis<sup>3,4</sup>. The prevalence of atopic dermatitis is higher in urban areas than rural<sup>5,6</sup>.

At present, there are several managements; emollients, ultraviolet light exposure, and corticosteroids in severe cases<sup>7</sup>, but there is no radical and effective conventional therapy<sup>8</sup>. Accordingly, many patients adapted a complementary alternative medicine or various folk-remedies for the treatment of atopic dermatitis<sup>9</sup>. Some herbal drugs have shown positive effects by reducing the symptoms

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• Correspondence to : Chang-Gue Son

Liver and Immunology Research Center, Daejeon Oriental Hospital of Daejeon University, 22-5 Daehung-dong, Jung-gu, Daejeon, 301-724, Republic of Korea

Tel : +82-42-229-6807, Fax : +82-42-257-6398, Email : ckson@dju.ac.kr

**Table 1.** Question Lists

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1. How long your child has been suffering from atopic dermatitis?
  2. How does the atopic dermatitis affect the daily life of the patient?  
10-point scale; 1 indicates “not at all” while 10 “unbearably severe”
  3. How do you agree with the following quote “Nature-based environmental treatment is important for atopic dermatitis”  
10-point scale; 1 indicates “not at all” while 10 does “completely”
  4. Have you ever considered moving to the countryside for your patient with atopic dermatitis? Yes or No
  5. Would you move to a new rural area where an atopy free village is built? Yes or No
  6. Do you prefer to move to the countryside with the patient? Yes or No
  7. What is the most important consideration when you decide to move to an atopy-free village?  
1) Educational facilities 2) Housing facilities 3) Eco-environment 4) Medical services
  8. How long could you stay in an atopy-free village?  
1) < 3 months 2) 3 to 6 months 3) 6 to 12 months 4) > one year
  9. Do you agree that cooperative organic foods are necessary for patients with atopic dermatitis?  
Yes or No
  10. Do you prefer to buy products from an organic foods cooperative if it is present?  
Yes or No
- 

and improving the quality of life, but still those drugs haven't been approved as a standard therapeutics for atopic dermatitis<sup>10,11</sup>.

These facts strongly indicate that atopic dermatitis is a typical environmental disease for which we should consider the therapeutics using natural environmental factors. Recently, natural environment-based atopy camps organized by regional governments and some companies have received attention<sup>12-14</sup>. Moreover, some Oriental doctors showed the clinical effect of those atopy camps on reducing the atopic symptoms and blood parameters<sup>15,16</sup>. The natural environmental therapy would be valuable for patients with atopic dermatitis, which could be well adapted as a therapeutic of Korean medicine in the future.

This study aimed to investigate the demand for nature-based environmental therapy among patients with atopic dermatitis, to provide basic data helpful in the development of Korean medicine derived novel therapeutics.

## Subjects and methods

### 1. Subjects

310 mothers (median age 40 years, ranging from 29 to 56 years) of patients previously diagnosed with atopic dermatitis were enrolled. The children consisted of 158 male (median age 8 years, ranging from 2~21 years) and 152 female (median age 8 years, ranging from 2~19 years) who lived in Gyeonggi province.

### 2. Methods

The questionnaires with answers were obtained from the mothers who attended atopy-school held at borough offices in Gyeonggi province between October and December 2013. The questionnaire consisted of 10 questions including the preference of nature, environmental therapy, and the related choices (Table 1). From each parent consents were obtained before answering the questionnaire.

### 3. Statistical analysis

The data were analyzed whether the answers were different depending on the sex or symptom

severity of patients with  $\chi^2$  test or unpaired t-test using PASW Statistics 17 program. Statistical significance was considered when p value was less than 0.05.

## Results

### 1. Characteristics of patients

The average period suffered from atopic dermatitis was  $2.9 \pm 2.9$  years (male  $2.9 \pm 2.5$  and female  $2.9 \pm 3.3$  years). The average symptom severity justified by effect on patient's daily life (minimum 1 to maximum 10) was  $3.9 \pm 2.0$  (male  $3.8 \pm 2.0$  and female  $3.9 \pm 2.1$ ). No statistical difference between male and female was observed.

### 2. Agreement degree for the importance of environmental treatment

The average score of the agreement degree for the importance of environmental treatment was  $8.7 \pm 1.7$  (male  $8.7 \pm 1.7$  and female  $8.6 \pm 1.3$ ). Two groups of relatively mild or severe symptoms showed similar levels of scores ( $8.8 \pm 1.6$  vs.  $8.6 \pm 1.9$  in male, and  $8.6 \pm 1.8$  vs.  $8.8 \pm 1.7$  in female, Table 2).

### 3. Consideration of movement into the rural area and atopy-free village

55.2% of mothers had considered moving to the countryside for patients with atopic dermatitis (male 58.9% and female 51.3%). The group with severe symptoms showed higher preferences than the group with mild symptoms (62.0% vs. 58.1% in male, and 60.0% vs. 48.7% in female), while the differences were not statistically significant ( $p > 0.05$ ). Regarding the movement into an atopy-free village equipped by the local government, 74.5% of parents reported that they could move to the village (male 72.8% and female 76.3%). The group with severe symptoms showed higher preferences than the group with mild symptoms (69.8% vs. 86.2% in male,  $p > 0.05$ ; 71.8% vs. 91.4% in female,  $p < 0.05$ ; and 70.7% vs. 89.1% in total,  $p < 0.01$  respectively, Table 2).

### 4. Consideration factors in cases of movement to the atopy-free village

Regarding relocation to a country village, 94.2% of parents wanted to move there with patients, and this response pattern was the same regardless sex or symptom severity of patients (Table 2). They pointed out the educational facilities (male 50.0%

**Table 2.** Subject Characteristics and Preference for Environment Therapy

Sex	Number (%)	Median age (range)	Illness duration (year)	Illness severity
Male	158(51)	8 (2~21)	$2.9 \pm 2.5$	$3.8 \pm 2.0$
Female	152(49)	8 (2~19)	$2.9 \pm 3.3$	$3.9 \pm 2.1$
Total	310(100)	8 (2~21)	$2.9 \pm 2.9$	$3.9 \pm 2.0$

Sex	Symptom severity ( $\leq 5$ or $\geq 6$ )	Importance of environmental treatment	Movement to countryside	Movement to atopy-free village**	Movement with parents
Male	$\leq 5$ : 129	$8.8 \pm 1.6$	58.1%	69.8%	91.5%
	$\geq 6$ : 29	$8.6 \pm 1.9$	62.0%	86.2%	100%
	Sum: 158	$8.7 \pm 1.7$	58.9%	72.8%	93.0%
Female	$\leq 5$ : 117	$8.6 \pm 1.8$	48.7%	71.8%	94.9%
	$\geq 6$ : 35	$8.8 \pm 1.7$	60.0%	91.4%*	97.1%
	Sum: 152	$8.6 \pm 1.3$	51.3%	76.3%	95.4%
Total	310	$8.7 \pm 1.7$	55.2%	74.5%	94.2%

\* indicates  $p < 0.05$  between female  $\leq 5$  and  $\geq 6$ , and \*\* indicates  $p < 0.01$  between total  $\leq 5$  and  $\geq 6$  respectively.

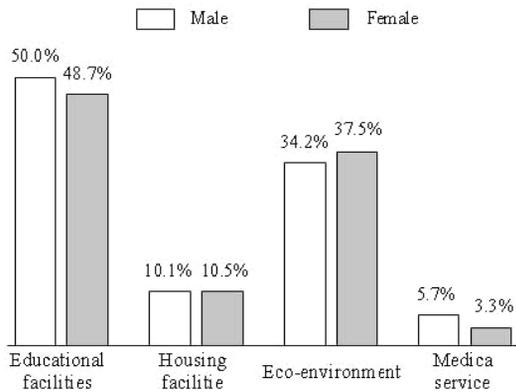


Fig. 1. Factors of consideration regarding movement to an atopy-free village.

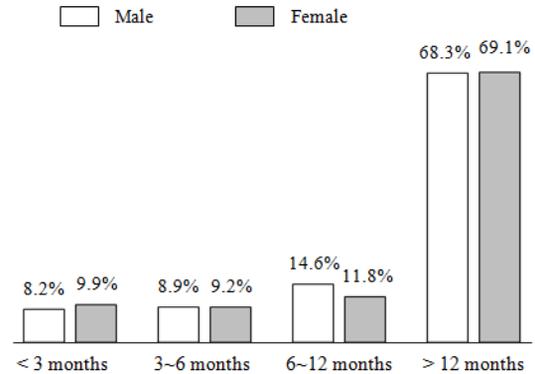


Fig. 2. Period for tenants' residence in an atopy-free village

and female 48.7%) and eco-environment (male 34.2% and female 37.5%) over housing facilities (male 10.1% and female 10.5%) and medical services (male 5.7% and female 3.3%) as the important factors in the decision of relocation to an atopy-free village (Fig 1). Around 70% of parents answered that they could stay in an atopy-free village for more than 1 year. No statistical difference was observed between males and females (Fig 2).

### 5. Need for cooperative union of organic foods

Over 90% of parents agreed with the necessity of a specialized store with organic foods for patients suffering from atopic dermatitis, and they were willing to use the store. No statistical differences were observed between males and females (Fig 3).

## Discussion

Atopic dermatitis has become a frequently-discussed medical issue due to its tenacious symptoms affecting daily life but lack of effective conventional therapies. Therapeutic methods using natural environments have been growing in the late

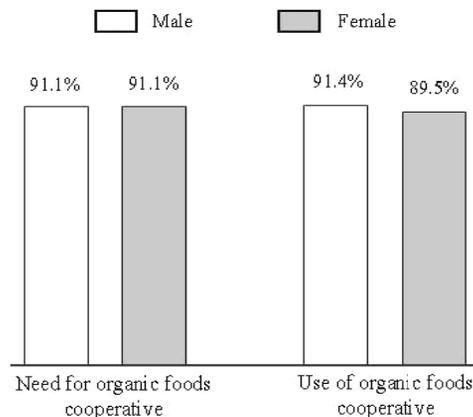


Fig. 3. Need of (left) and intention to use (right) organic foods cooperative

20th century owing to the exploration of linkages between modern urban life and various diseases<sup>17)</sup>. Several types of atopy camps featuring activities in forests have shown positive effects on both clinical symptoms of atopic dermatitis and immunomodulation<sup>18,19)</sup>. These environment-based atopy camps have drawn major attention; however there was no survey or study to reveal the general demand for those natural therapies for families with atopic dermatitis patients.

The current study surveyed the demand for environmental therapy from the parents of atopic dermatitis patients. All parents were mothers, and most of their children were elementary school students. Regardless the sex of patients or severity of symptoms, most mothers believed that natural therapy is crucial and helpful in treating atopic dermatitis. The complex etiology and lack of eradication treatment might have led them to be familiar with environmental therapies for atopic dermatitis. In fact, relatively nature-friendly therapies including Korean medicine are adapted for patients with atopic dermatitis<sup>20,21)</sup>.

In this survey, 55.2 % of parents had considered moving to a rural area, while 74.5% of parents showed the possibility of movement to an atopy-free village which is well found in public facilities. Atopic dermatitis is generally observed in children to impair their emotional and intellectual development<sup>22)</sup>. Severe symptoms impair the quality of life in children as well as their families<sup>23,24)</sup>. Accordingly, incurable atopic dermatitis of children must be very stressful to their parents, thus they would prefer to move to the countryside or an atopy-free village. In regard of shifting to a new rural region, educational facilities and eco-environment are more major factors than housing facilities or medical services. Some local governments have founded atopy-free villages in the countryside, or they have conducted forest-environment therapy programs<sup>25,26)</sup>. In the current survey, the preferential

tendency of parents for settlement in a rural area was higher if their children's disease status was severe, and approximately 70% of them were willing to stay there for more than one year. The severity of atopic dermatitis is generally calculated as SCORAD index by a doctor, however the information for children's symptom of this study was obtained from their mother using a 10-point numeric scale.

On the other hand, the relationship between diet and incidence of atopic dermatitis is well known<sup>27,28)</sup>. A study from the United Kingdom reported that 75% of parents who have children with atopic dermatitis opted for selective foods such as organic food<sup>29)</sup>. The current survey also showed similar results in that 90% of mothers were interested to use an organic foods cooperative.

Above findings indicate the high interest in environmental therapy among parents of children with atopic dermatitis. Some therapy programs using a forest environment have shown partially positive effectiveness in the management of depression in alcoholics and quality of life in elderly hypertensive patients<sup>30,31)</sup>. Two studies observed the reduction of pruritus in children with atopic dermatitis during their short stay in environment-based atopy camp or long halt in atopy free villages in the countryside<sup>15,32)</sup>. In order to develop environmental therapy as an effective treatment for atopic dermatitis, there are still many tasks to be done, including multiple scientific studies for better extended evidence for clinical effect as well as its limitations.

Taken together, this study for the first time presents basic information about the demand for environmental therapy among the parents of children affected with atopic dermatitis, and this report will be helpful in developing therapeutics using the natural environment in Korean medicine.

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