

# The Quality of Life and Depressive Mood among Korean Patients with Hand Eczema

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**Background:** Hand eczema is a disease frequently observed in dermatological practice. This condition has negative emotional, social, and psychological effects due to its impact on daily life and morphological appearance. Due to its considerable effect on the quality of life, this disease can lead to depression. However, not many studies have been performed on the quality of life and depression in hand eczema patients. **Objective:** The purpose of this study is to investigate the association between the quality of life, depression, and disease severity in hand eczema patients in South Korea. **Methods:** A total of 138 patients with hand eczema participated in this study. The patients' quality of life was assessed by a self-administered questionnaire using the Dermatology Life Quality Index (DLQI). Data on patients suffering from depression was obtained using the Beck's Depression Inventory (BDI-II). The disease severity was determined during the clinical examination, according to the Hand Eczema Severity Index (HECSI). **Results:** We found positive associations between DLQI and HECSI scores ( $p < 0.05$ ). BDI-II scores had also statistically positive correlations with HECSI scores ( $p < 0.05$ ). DLQI and BDI-II scores both increased with disease severity. **Conclusion:** Hand eczema negatively affected the quality of life and mood of patients relative to the disease severity. Therefore, we suggest that quality of life modification and emotional support should be included as a part of treatment for hand

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## -Keywords-

Depression, Eczema of hand, Quality of life

## INTRODUCTION

Hand eczema is a disease frequently observed in dermatological practice. The lifetime prevalence of hand eczema is about 15% with point prevalence up to 4%<sup>1</sup>. Various etiologic factors have a role in the chronic course of hand eczema. Thus far, the exact pathophysiologic mechanisms have not been clarified. The progression of hand eczema is characterized by recurrent aggravation after temporary improvement, and is usually resistant to conventional treatment. In a Swedish study, examining the consequences of hand eczema, it was reported that 81% of hand eczema patients experienced disturbances of daily life associated with the disease<sup>2</sup>. The majority of these patients (69%) consulted a doctor for treatment and 54% experienced frequent itching<sup>2</sup>.

Chronic hand eczema causes a number of negative emotional, social, and psychological effects, due to its impact on daily life and morphological features<sup>3</sup>. This disease is also associated with an economic burden<sup>4</sup>. Overall, hand eczema has a considerable impact on the quality of life and can cause anxiety or depression<sup>5</sup>.

Recent studies reported that the quality of life of patients with severe hand eczema is impaired to a degree similar to that of patients with atopic dermatitis and psoriasis<sup>5,6</sup>. However, hand eczema treatment primarily focuses on the severity of external skin lesions. Most physicians do not consider the impact of hand eczema on a patient's quality of life or emotional well-being.

There is inadequate information about the quality of life of hand eczema patients. Additionally, the influence of hand

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**Table 1.** Comparison of basic demographics between hand eczema patients and the control group

Variable		Patient (n=138)	Control (n=66)	p-value
Age		43.5 (29.25~53.00)	41 (27.25~51.00)	0.343
Gender	Male	64 (46.38)	29 (43.94)	0.744
	Female	74 (53.62)	37 (56.06)	

Values are presented as median (range, 25~75 percentiles) or number (%).

eczema on depression has not been studied in Korean patients. The present study is the first to investigate the associations between the quality of life, depression, and disease severity in Korean patients with hand eczema. Understanding this association will help improve the management of hand eczema patients.

## MATERIALS AND METHODS

### Subjects and methods

This study was designed as a cross-sectional study, and was performed at the Eulji General Hospital of Eulji University. Among the patients who visited our hospital from April to September 2010, we selected 138 hand eczema patients as the subjects for this study. Patients who have hand eczema, including allergic contact dermatitis, irritant contact dermatitis, atopic hand dermatitis and idiopathic hand dermatitis were enrolled. And patients who have psoriasis or infectious disease, such as tinea manuum, were excluded. There were 64 males and 74 females. All participants were 18 years of age or older. All patients underwent a clinical examination and responded to the self-questionnaire. Information regarding the patients' age, gender, profession, and disease duration was obtained by the self-questionnaires. The patients' professions were classified into three groups. The first group was a 'manual group' and included people who performed manual labor, such as industrial workers and hairdressers. The second one was a 'non-manual group', which included office workers. The remaining participants were assigned to the 'others group'.

Hand eczema was categorized into four morphological types, as described in a previous Korean study<sup>7</sup>: (1) vesicular, (2) hyperkeratotic, (3) fissured, and (4) mixed. This classification method was rapid and easy to perform in the outpatient clinic by a simple visual inspection. Conditions, such as allergic contact dermatitis or irritant contact dermatitis can be diagnosed when allergic or irritant reactions were identified. However, it was difficult to perform a patch test on all patients in the outpatient clinic. Thus, hand eczema was classified into the four

subgroups, based on macroscopic observation.

The severity of hand eczema was assessed using the Hand Eczema Severity Index (HECSI) scoring system described by Held et al.<sup>8</sup> in 2005. The HECSI scoring system measures erythema, infiltration/population, vesicles, fissures, scaling, edema, and extent of the lesions. For each location on the hands, a score from 0 to 4 was assigned to describe the extent of involvement, and 0 to 3 according to the severity of symptoms. Finally, the scores indicating the extent of the involved area were multiplied by the sum of the intensity scores for clinical features<sup>8-10</sup>.

We used the Dermatology Life Quality Index (DLQI) to evaluate the impact of hand eczema on patient quality of life. The DLQI is a dermatology-specific self-questionnaire, which consists of 10 items that reflect six aspects of life quality<sup>11,12</sup>. The six aspects include symptoms and feelings, daily activities, leisure, work and school, personal relationships, and treatment. DLQI scores range from 0 to 30. Depression was evaluated using Beck's Depression Inventory (BDI-II) scoring system<sup>13</sup>. BDI-II is a 21-item self-questionnaire with scores ranging from 0 to 63. The patients were divided into four groups based on the BDI-II scores: no or minimal depression (0~9), mild depression (10~15), moderate depression (16~23), and severe depression (24~63). We selected 66 individuals who did not have hand eczema as the control group to compare the BDI-II scores. People in the control group were recruited from the hospital staff and their family members who were physically and mentally healthy. Table 1 shows the demographic characteristics of patients and the control group. The two groups had similar age and gender distributions.

### Statistical analysis

A Mann-Whitney test was used to compare HECSI, DLQI, and BDI-II scores between the groups. When we compared more than two groups, we used a Kruskal-Wallis test. Spearman correlation was used for correlation studies. Statistical analyses were performed using SPSS version 14.0 (SPSS Inc., Chicago, IL, USA).  $p < 0.05$  was considered to be statistically significant.

## RESULTS

A total of 138 patients were included in this study. The median age was 42.5 years (range, 18~73). Hand eczema predominantly affected individuals in their 40s and 50s. There were 74 females and 64 males; the gender ratio was 1 : 1.16 (Fig. 1). The mean duration of the disease was 5.91 years (Fig. 2). The highest frequency of male patients suffered from hand eczema for 1 to 2 years, while the highest frequency of female patients had the disease for more than 10 years. The highest prevalence of hand eczema was observed among housewives, followed by office workers and students (Table 2). The vesicular type was seen in 38% of the patients, 28% had the hyperkeratotic type, and 20% had the fissured type. The vesicular type was predominant among both genders (Fig. 3). HECSI, DLQI, and BDI-II scores are shown in Table 3. The median HECSI score was 27, the median DLQI score was 7, and the median BDI-II score was 8. No significant gender-related differences were found with any scoring

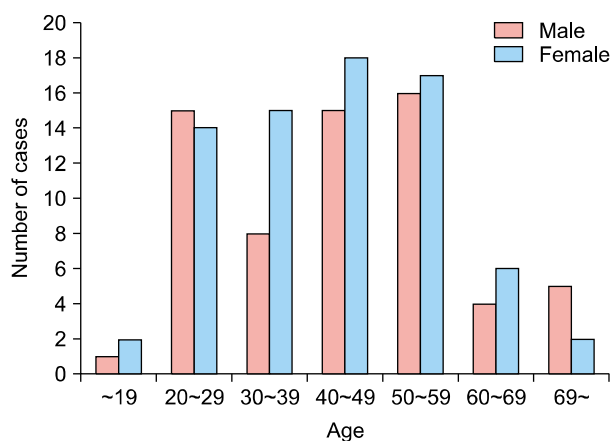


Fig. 1. Distribution of age for hand eczema patients.

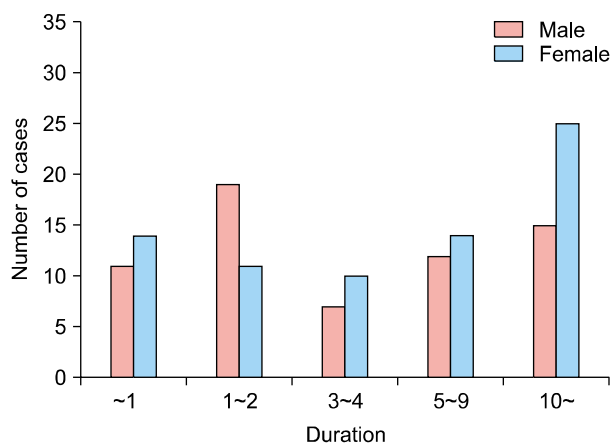


Fig. 2. Distribution of disease duration for hand eczema patients.

system.

The average of HECSI scores of all patients was 31.57. HECSI scores for age, disease duration, patients' professions, and morphological subtypes are presented in Table 4. Gender-related differences were not found in any categories. However, male patients in the non-manual group were found to have significantly higher HECSI scores than male patients in the manual group. Between these two groups, there were no differences other than HECSI scores (Table 5). HECSI scores increased with increasing disease duration.

The DLQI scores for the different subgroups are shown in Table 6; the average DLQI score for all patients was 8.39. We found no statistically significant differences according to age, disease duration, profession, or morphological subtype. No differences were found in any category between male and female patients. Among the six quality of life aspects, symptoms and feelings were most strongly affected by hand eczema, followed by daily activities, leisure, and treatment. Female patients had higher scores than male patients for daily activities and personal relationships. However, no statistical differences were found

Table 2. Distribution of professions among patients with hand eczema

Profession	Number (%)
Housewives	35 (25.4)
Office workers	22 (15.9)
Students	16 (11.6)
Industrial workers	15 (10.9)
Teachers	6 (4.4)
Hair dressers	4 (2.9)
Medical staff	3 (2.2)
Farmer	2 (1.4)
Cleaning man	2 (1.4)
Gardner	2 (1.4)
Other	31 (22.5)
Total	138 (100)

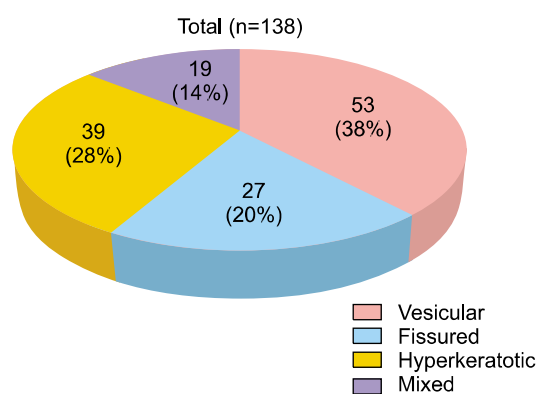


Fig. 3. Morphological subtype of hand eczema.

**Table 3.** Median (25~75 percentiles) HECSI, DLQI, and BDI-II scores of hand eczema patients

	Total	Males	Females	p-value
HECSI	27 (14.00~42.75)	28 (15.00~41.00)	26 (14.00~47.50)	0.991
DLQI	7 (4.00~11.00)	6.5 (3.00~9.00)	8 (4.00~12.00)	0.062
BDI-II	8 (5.00~16.00)	5 (8.00~18.25)	9 (5.00~15.75)	0.528

HECSI: Hand Eczema Severity Index, DLQI: Dermatology Life Quality Index, BDI-II: Beck's Depression Inventory.

**Table 4.** The average HECSI scores according to age, gender, disease duration, profession, and morphological subtypes

Variable	Males	p-value	Females	p-value	Total	p-value
Age (yr)		0.454		0.207		0.159
0~39	31.04		30.16		30.56	
≥40	32.43		32.26		32.34	
Duration (yr)		0.208		0.311		0.202
<2	25.83		29.82		28.03	
2~10	35.1		29.52		32.5	
≥10	32.33		34.68		33.8	
Profession		0.040*		0.603		0.189
Non-manual	40.59		26.67		36.55	
Manual	30.19		37		33.51	
Others	25.22		29.05		28.05	
Eczema subtype		0.167		0.11		0.69
Vesicular	27.89		39.68		33.45	
Fissured	30.89		27.88		28.89	
Hyperkeratotic	35.74		26.8		31.15	
Mixed	37.5		26.36		31.05	
Total	31.84		31.35		31.57	0.991

HECSI: Hand Eczema Severity Index. \* $p < 0.05$ .

**Table 5.** Details of manual and non-manual group of male patients including profession, eczema subtype, average disease duration, average HECSI scores

Profession		Number of cases	Eczema subtype	Average disease duration (yr)	Average HECSI score
Manual	Industrial worker	13	Vesicular type dominant (35.29%)	6.22	30.19
	Hair dresser	2			
	Medical staff	2			
	Farmer	2			
	Cleaning man	2			
	Gardner	2			
Non-manual	Office worker	19	Vesicular type dominant (36.36%)	5.51	40.59
	Student	11			
	Teacher	3			
Others	Others	8	Vesicular type dominant (28.57%)	5.84	25.22
Total		64		5.76	31.84

HECSI: Hand Eczema Severity Index.

between the scores for male and female patients measuring the six aspects of depression (Table 7).

The average BDI-II score was 11.27; compared to the control group, the BDI-II scores of the patients were significantly higher ( $p < 0.05$ ) (Table 8). Depressive mood, indicated by BDI-II scores higher than 10, was identified

in about 40% of the patients. Among these, 18% of patients had mild depressive mood with BDI-II scores ranging from 10 to 15. A total of 13% of patients had moderate depressive mood with BDI-II scores ranging from 16 to 23, and 12% of patients were found to have severe depressive mood with BDI-II scores higher than 24.

**Table 6.** The average DLQI scores of the hand eczema patients according to age, gender, disease duration, profession, and morphological subtypes

Variable	Males	<i>p</i> -value	Females	<i>p</i> -value	Total	<i>p</i> -value
Age (yr)		0.595		0.848		0.647
0~39	7.7		9.28		8.56	
≥40	7.24		9.19		8.28	
Duration (yr)		0.817		0.645		0.876
<2	7.44		8.59		8.08	
2~10	7.58		8.75		8.12	
≥10	7.13		10.32		9.13	
Profession		0.831		0.786		0.871
Non-manual	8.27		8.44		8.32	
Manual	7.14		8.8		7.95	
Others	6.83		8.09		8.71	
Eczema subtype		0.2		0.754		0.706
Vesicular	6.29		10.36		8.21	
Fissured	6.89		8.39		7.89	
Hyperkeratotic	8.79		7.85		8.31	
Mixed	8.88		10.55		9.84	
Total	7.43		9.22		8.39	0.062

DLQI: Dermatology Life Quality Index.

**Table 7.** Scores for the six life quality aspects according to gender

DLQI score item	Males	Females	<i>p</i> -value
Symptoms and feelings	3 (2.00~4.00)	3 (2.00~4.00)	0.086
Daily activities	1 (0.00~2.00)	2 (0.00~2.75)	0.164
Leisure	1 (0.00~2.00)	1 (0.00~2.75)	0.132
Treatment	1 (0.00~1.00)	1 (1.00~2.00)	0.053
Personal relationships	0 (0.00~1.00)	1 (0.00~2.00)	0.19
Work and study	0 (0.00~1.00)	0 (0.00~1.00)	0.44
Total	6 (3.00~9.00)	8 (4.00~12.00)	0.062

Values are presented as median (% , 25~75 percentiles). DLQI: Dermatology Life Quality Index.

**Table 8.** Comparison of BDI-II scores between the patient and control groups

	Patients	Control	<i>p</i> -value
BDI II	8 (5.00~16.00)	7 (4.00~9.00)	0.011*

Values are presented as median (% , 25~75 percentiles). \**p* < 0.05. BDI-II: Beck's Depression Inventory.

No significant associations between BDI-II scores and age, disease duration, profession, or morphological subtypes were found (Table 9). Additionally, no differences were observed between male and female patients.

When examining the relationship between the quality of life and hand eczema severity, we found a statistically positive correlation between DLQI and HECSI scores (*p* < 0.05). As illustrated in Fig. 4, DLQI scores increased with disease severity. BDI-II scores also had a positive correlation with HECSI scores as shown in Fig. 5 (*p* < 0.05). as well as with DLQI score (*p* < 0.05).

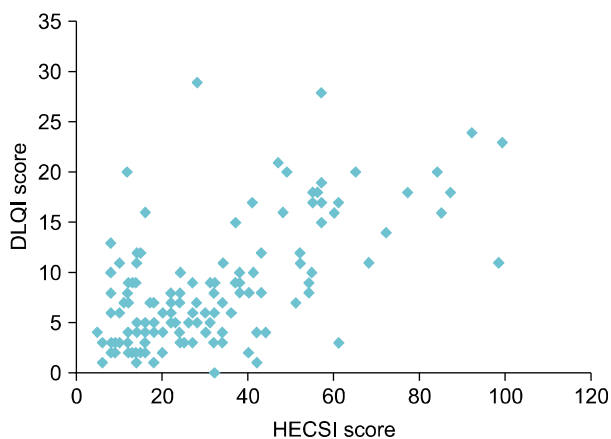
## DISCUSSION

The basic patient demographics in the present study were similar to those from a previous Korean study which investigated the clinical symptoms of hand eczema in 189 patients<sup>7</sup>. Patients were predominantly in their 40s and 50s with a median age of 42.5 years. Hand eczema was more common among females. The average disease duration was 5.91 years. The largest proportion of hand eczema patients were housewives. Jobs, in which the hands were frequently exposed to water, may have been an important factor for this result<sup>14</sup>. However, male patients in the non-manual group had significantly higher HECSI scores than male patients in the manual group. The reason of this result seemed that hand eczema is affected by not only exogenous, but also endogenous factors, such as immunologic factors or metabolic defects<sup>15</sup>. The vesicular type was the most common morphological subtype with hyperkeratotic and fissured the second and

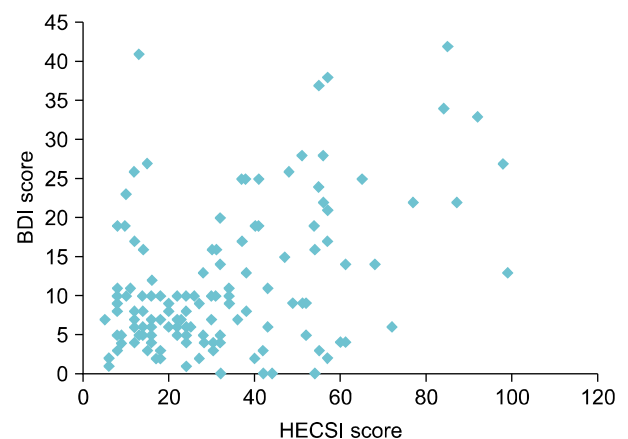
**Table 9.** The average BDI-II scores according to age, gender, disease duration, profession, and morphological subtypes

Variable	Males	p-value	Females	p-value	Total	p-value
Age (yr)		0.531		0.955		0.647
0~39	11.74		11.72		11	
≥40	10.46		11.38		10.66	
Duration (yr)		0.428		0.331		0.562
<2	9.28		10.32		9.85	
2~10	12.03		10.58		11.17	
≥10	10.93		9.5		12.3	
Profession		0.205		0.843		0.44
Non-manual	13.45		9.78		12.39	
Manual	9.76		13.4		11.54	
Others	9.56		10.45		10.26	
Eczema subtype		0.565		0.117		0.882
Vesicular	9.21		12.96		10.98	
Fissured	10.11		13.56		12.41	
Hyperkeratotic	13.58		10.32		11.64	
Mixed	12.13		6.6		8.58	
Total	11.0		11.52		11.27	0.528

BDI-II: Beck's Depression Inventory.



**Fig. 4.** Correlation of DLQI (Dermatology Life Quality Index) with HECSI (Hand Eczema Severity Index) for hand eczema patients.



**Fig. 5.** Correlation of BDI (Beck's Depression Inventory) score with HECSI (Hand Eczema Severity Index) for hand eczema patients.

third most common.

Although it has long been recognized that the patients with hand eczema experience decreased in the quality of life and depression, due to disease severity, a few studies thoroughly examined these associations. A study conducted by Cvetkovski et al.<sup>5</sup> in Denmark enrolled 758 patients and investigated the impact of hand eczema on the quality of life and depression. The DLQI scoring system was used to evaluate the quality of life, the BDI-II score was chosen to identify cases of depressive mood, and disease severity was determined with the DNBII scoring system<sup>5</sup>. The mean DLQI score was 5.5 and a strong association between hand eczema severity and quality of life was observed<sup>5</sup>. In our study, the average

DLQI score was 8.4. Compared to the Danish study, this score is higher than the 5.5 average score for Danish patients, and it is similar as the 7.8 average score for Danish patients with severe hand eczema<sup>5</sup>. When we reviewed previous studies using DLQI to measure the quality of life of patients with other skin diseases, the average DLQI score of our hand eczema patients was similar to that of acne patients (8.55), and higher than those patients with rosacea (6.93) and uremic xerosis (5.06)<sup>16-18</sup>.

In the Danish study, the mean BDI-II score was 7.1, and 9% of patients had moderate to severe depression, as shown by BDI-II scores greater than 205. This study also demonstrated that the quality of life declined as BDI-II

scores increased<sup>5</sup>. It was also found that BDI-II scores have no statistical association with the severity of hand eczema. However, this finding was contrary to the results of our study in that the BDI-II score had a positive correlation with the HECSI score. The average BDI-II score of patients with hand eczema in our study was 11.3; this was much higher than that of Danish study (7.1) and was statistically higher than the healthy control group in the present study. When we compared our results to ones from the previous studies, the average BDI-II score in our study was similar to that of patients with Behcet's disease (11.69) and higher than for patients with psoriasis (9.11)<sup>19,20</sup>.

In a multicenter study of hand eczema patients in Europe, 416 patients were enrolled from 10 European patch test clinics<sup>21</sup>. This study showed that the quality of life, as measured by the DLQI, had a significant correlation with hand eczema severity, measured by the HECSI scoring system<sup>21</sup>. Significant differences in the quality of life between male and female patients were not found, but it was noted that the quality of life of female patients was more easily affected by the disease<sup>21</sup>. We also found no differences in the DLQI scores, according to age, gender, disease duration, profession, or morphological subgroups. However, among the six quality of life aspects, symptoms and feelings were most strongly affected by hand eczema, followed by daily activities and leisure.

We found out that Korean hand eczema patients tended to have higher HECSI, DLQI, and BDI-II scores than European patients. This may be due to the fact that the sample size of our study was relatively small and selection bias could have existed. In the Danish study, patients who had been diagnosed with hand eczema responded to the self-questionnaires through the mail; as such, some patients no longer had active disease when they responded. We only selected patients who visited a dermatology clinic for treatment. Therefore, our study may have included patients with more severe cases of hand eczema.

The primary limitation of this study was that we did not classify hand eczema subtypes, according to disease etiology. We chose to use a classification system based on the morphology of the involved hands. Because a standard system for classifying cases of hand eczema has not been established and the patch test, which is performed in actual outpatient dermatology clinics, does not account for all possible allergens<sup>22</sup>.

In conclusion, our results suggest that hand eczema negatively affected the quality of life and mood of the patients. This is the first study performed in Korea to assess the life quality and emotional state of hand eczema patients. We found a significant positive correlation between low quality of life, depressive mood, and hand eczema severity.

Our results indicate that medical attention is needed to address the psychosocial impact of hand eczema. Quality of life modification and emotional support should be provided along with the standard medical care to treat patients with hand eczema.

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