

## Original Article

# Comparative study of quality of life between psoriasis, vitiligo and autoimmune bullous disease

## 銀屑病、白癜風和自身免疫性大皰性疾病之間的生活質量比較研究

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**Background:** Psoriasis, vitiligo and autoimmune bullous disease are chronic relapsing dermatological diseases that affect patients' daily life and psychosocial well-being. Although the impact of these diseases on quality of life (QoL) has been reported respectively, the comparison of the QoL between psoriasis, vitiligo and autoimmune bullous disease patients has not been investigated in Korea. **Objective:** The purpose of this study was to compare the QoL between psoriasis, vitiligo and autoimmune bullous disease by using Dermatology Life Quality Index (DLQI), Medical Outcome Study Short Form 36 (SF-36) and Skindex-29 questionnaires. **Methods:** From June 2014 to August 2016, 150 patients were selected from outpatient clinic of Department of Dermatology of Hanyang University Seoul Hospital. **Results:** A total of 364 questionnaires were valid, of which 150 cases with the male to female ratio is 1:1.08. By comparing the scores of Skindex-29 between three groups, we found that autoimmune bullous disease was associated with lower QoL than psoriasis and vitiligo ( $p < 0.001$ ). The total score of DLQI was higher in psoriasis group (8.06) than in vitiligo group (4.49) and the scores of SF-36 items showed similar result, which detected a worse QoL in patients with psoriasis than in vitiligo. Significant correlations were found between DLQI, SF-36 and Skindex-29 scores in all disease groups ( $p < 0.01$ ). **Conclusion:** The results show that there is significant impairment of QoL in these three skin diseases. The high correlation between the instruments used in this study implies that any one of them might be useful to measure QoL.

**背景:** 銀屑病、白癜風和自體免疫性大皰性疾病是慢性的，反復發作性的皮膚病，嚴重影響了患者的日常生活和心理健康。儘管有一些研究致力於評價這些疾病對生活質量的影響，但在韓國還沒有將三個疾病造成的影響進行對比的研究出現。**目標:** 利用 Dermatology Life Quality Index (DLQI), Medical Outcome Study Short Form 36 (SF-36) 和 Skindex-29 三種生活質量量表來對比銀屑病、白癜風和自體免疫性大皰性疾病分別對患者生活質量的影響。**方法:** 2014年6月至2016年8月，共150名韓國漢陽大學首爾醫院的皮膚科門診患者完成了問卷調查。**結果:** 共有364份問卷被完

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成，150名患者的男女比例是1:1.08。通過三組疾病的Skindex-29問卷結果，我們發現自體免疫性大疱性疾病對患者生活質量的影響較其他兩組大( $p < 0.001$ )。銀屑病組的DLQI平均分數為8.06，比白癜風組的4.49高，而SF-36的平均分數也展示了相同結果，體現銀屑病患者的生活質量比白癜風低。在所有組的結果中，DLQI, SF-36和Skindex-29三個量表結果之間都展示了顯著性相關( $p < 0.01$ )。**結論：**結果表明，三種疾病的患者的生活質量都嚴重受到了影響。三種量表結果之間的高度相關意味著也許可以使用其中任意一種來測量三種疾病的生活質量。

**Keywords:** Autoimmune bullous disease, Korea, Psoriasis, Quality of Life, Vitiligo

**關鍵詞：**自體免疫性大疱性疾病、韓國、銀屑病、生活質量、白癜風

## Introduction

The vast majority of skin disease can affect the appearance and easily lead to emotional disorders such as anxiety, anger, depression and serious impact on the patients' quality of life (QoL).

Patients with extensive psoriasis may suffer from embarrassment, impaired relationships and social withdrawal.<sup>1</sup> According to previous controlled studies, the prevalence of depression in patients with psoriasis was up to 58%.<sup>2</sup> It has also been reported that the prevalence of psychological problems in patients with vitiligo was up to 30%.<sup>3,4</sup> In terms of autoimmune bullous disease, psychiatric comorbidities have occurred in 73.7% of patients with pemphigus vulgaris.<sup>5</sup> It has been reported that 80% of patients with epidermolysis bullosa experienced psychiatric symptoms.<sup>6</sup>

Although there are several studies evaluating the QoL of patients with the chronic skin diseases, the comparative study of QoL between psoriasis, vitiligo and autoimmune bullous disease has not been reported in Korea.<sup>7-12</sup> Moreover, most of the previous studies have utilised one of the scales including Dermatology Life Quality Index (DLQI), Medical Outcome Study Short Form 36 (SF-36) or Skindex-29 questionnaire.<sup>7,9,10,12</sup>

The objectives of the present study were to compare the QoL in three chronic dermatological diseases in Korea: psoriasis, vitiligo and autoimmune bullous disease by means of DLQI, SF-36 and Skindex-29 questionnaires.

Furthermore, the study for investigating correlation between those assessments was conducted.

## Materials and methods

### 1. Study population and data collection

A total of 150 patients included in this study were over 18 years of age, and selected from outpatient clinic of Department of Dermatology, Hanyang University Seoul Hospital, Seoul, Korea from June 1, 2014 to August 1, 2016. It included 70 patients with a diagnosis of psoriasis with or without psoriatic arthritis (PsA), 37 patients with vitiligo and 43 autoimmune bullous disease patients (15 with pemphigus vulgaris, 13 with pemphigus foliaceus, 12 with bullous pemphigoid, 3 with epidermolysis bullosa acquisita). The diagnosis of psoriasis, vitiligo and autoimmune bullous disease was based on the results of clinical manifestations and/or histopathological examination, with or without immunological tests. Patients with psoriasis were classified into groups with or without PsA. Exclusion criteria: cases complicated with other skin diseases, pregnancy or breastfeeding women, or had a history of psychiatric disorders before diagnosis of skin diseases.

The psoriasis and vitiligo patients were asked to complete the DLQI, SF-36 and Skindex-29 questionnaires at the same visit. The autoimmune bullous disease patients were asked to complete the Skindex-29 questionnaire only. Participation was voluntary and all the patients completed the questionnaires independently.

## 2. Questionnaires

Validated Korean translations of the DLQI,<sup>8</sup> SF-36<sup>13,14</sup> and Skindex-29<sup>15</sup> were used.

### Dermatology Life Quality Index (DLQI)

The DLQI is one of the most frequently used self-reported questionnaires developed by Fynlay and Khan in 1994 as a simplified instrument to be used in QoL assessment of patients with skin diseases.<sup>16,17</sup> It consists of 10 questions and is calculated by summing the score of each question resulting in a maximum of 30 and a minimum of 0. The higher the score, the more QoL is impaired. The questions are classified in the following subscales: symptoms and feelings (items 1 and 2), daily activities (items 3 and 4), leisure (items 5 and 6), work and school (item 7), personal relationships (items 8 and 9) and treatment (item 10).

### Short Form 36 (SF-36)

The SF-36 questionnaire is a widely used generic instrument developed by Ware and Sherbourne.<sup>18</sup> Furthermore, it has been translated into several languages, including Korean.<sup>13</sup> Its validity in the adult<sup>14</sup> and elderly<sup>19</sup> population of Korea has also been confirmed. It consists of 36 questions in 8 domains of QoL areas: physical functioning, role-physical, role-emotional, social functioning, bodily pain, mental health, vitality and general health perceptions. Each subscale is scored on a scale of 0 to 100, with higher scores representing less impairment in QoL.

### Skindex-29

The Skindex-29 is a self-administered instrument designed for measuring health-related QoL of patients with skin diseases developed by Chren in 1997.<sup>15</sup> It enquires about how often (Never, Rarely, Sometimes, Often, All the time) during the previous four weeks the patient experienced the effect described in each item. Seven items address the Symptoms domain, 10 items the Emotional domain, and 12 items the Functioning domain. All responses are transformed to a linear scale of 100, varying from 0 (no effect) to 100 (effect experienced all the time). The higher scores indicate the lower the QoL.

## 3. Statistical analyses

The outcomes of all included patients were evaluated and described. Statistical analyses were performed by using Statistical Product and Service Solutions (SPSS) version 22.0 for Windows (IBM, Armonk, NY, USA) to calculate the characteristics of the patients. The Kruskal-Wallis test and Mann-Whitney test were used to compare the scores between psoriasis, vitiligo and autoimmune bullous disease groups. Differences were defined as statistically significant at  $p < 0.05$ . The correlation coefficient between the DLQI score and other questionnaire scores was calculated with the Spearman's correlation coefficient.  $P$ -values  $< 0.05$  (two sided) were considered statistically significant.

## Results

### 1. Demographic characteristics

There were 150 adult subjects who met the inclusion criteria of this study (78 male and 72 female, mean age  $46.69 \pm 16.17$ ). The demographic characteristics of the three groups of patients are reported in Table 1. There was no significant difference among age ( $p = 0.270$ ) and sex ( $p = 0.483$ ) in the three groups.

### 2. Scores of questionnaires in different types of the disease

Table 2 shows total DLQI, SF-36 and Skindex-29 scores for each group. DLQI total score was higher in psoriasis group (8.06), and the difference was statistically significant ( $p < 0.05$ ). The significant differences in the scores of daily activities ( $p < 0.01$ ), leisure ( $p < 0.05$ ) and work and school ( $p < 0.05$ ) domains of DLQI were detected (Table 3).

Although no significant differences in the SF-36 total scores were observed between psoriasis group and vitiligo groups (62.00 vs 70.38), the role emotional (48.09) and mental health (65.50) scores in patients with psoriasis were significantly lower than in those with vitiligo (69.37 and 73.11, respectively,  $p < 0.05$ ) (Table 4).

Psoriasis group was subdivided according to the presence of PsA. The differences of DLQI scores between the two groups were not statistically significant. Patients without PsA showed a significant higher mean SF-36 score compared with those with PsA ( $p < 0.05$ ). The physical functioning ( $p < 0.05$ ), social functioning ( $p < 0.01$ ) and bodily pain ( $p < 0.05$ ) scores in patients without PsA were higher than in those with PsA, and the difference was statistically significant (Table 5). Although the Skindex-29 total score in psoriasis without PsA group was lower than in PsA group, the difference was not statistically significant ( $p = 0.07$ ). There was a significant difference in

function item between psoriasis only and PsA ( $p < 0.05$ ).

When comparing the Skindex-29 scores between psoriasis, vitiligo and autoimmune bullous disease groups, statistically significant difference was observed ( $p < 0.001$ ). The total Skindex-29 score in the autoimmune bullous disease group was 49.71, whereas in the psoriasis group and vitiligo group were 41.84 and 33.13, respectively. There were significant differences in the symptom, function and emotion items between those three diseases ( $p < 0.001$ , Table 6).

**Table 1.** Demographic characteristics of the patients

	<b>Psoriasis (70n)</b>	<b>Vitiligo (37n)</b>	<b>Autoimmune bullous disease (43n)</b>	<b>p-value</b>
Age (mean±SD)	44.53±15.35	48.22±17.85	48.88±15.47	0.270
Sex (M/F)	40/30	17/20	21/22	0.483

SD, standard deviation

**Table 2.** Scores of questionnaires in different types of the disease

<b>Questionnaire</b>	<b>Psoriasis</b>	<b>Vitiligo</b>	<b>Autoimmune bullous disease</b>	<b>p-value</b>
DLQI	8.06±7.07	4.49±3.97	–	0.024*
SF-36	62.00±22.20	70.38±15.28	–	0.054
Skindex-29	41.84±16.23	33.13±12.38	49.71±15.67	0.000***

\* $p < 0.05$ , \*\* $p < 0.01$ , \*\*\* $p < 0.001$

DLQI, dermatology life quality index; SF-36, medical outcome study short form 36

**Table 3.** Scores of Dermatology Life Quality Index in psoriasis and vitiligo

<b>Item</b>	<b>Psoriasis</b>	<b>Vitiligo</b>	<b>p-value</b>
Symptoms and feelings	2.11±1.68	1.54±1.08	0.137
Daily activities	1.66±1.69	0.78±1.14	0.008**
Leisure	1.81±1.91	0.89±1.27	0.015*
Work and school	0.57±0.95	0.16±0.37	0.030*
Personal relationships	1.03±1.49	0.46±0.83	0.051
Treatment	0.87±0.86	0.65±0.81	0.167
DLQI	8.06±7.07	4.49±3.97	0.024*

\* $p < 0.05$ , \*\* $p < 0.01$

DLQI, dermatology life quality index

**Table 4.** Scores of Medical Outcome Study Short Form 36 in psoriasis and vitiligo

<b>Item</b>	<b>Psoriasis</b>	<b>Vitiligo</b>	<b>p-value</b>
PF	83.36±22.91	87.57±15.05	0.997
RP	48.93±45.99	58.11±38.58	0.364
RE	48.09±48.68	69.37±37.47	0.049*
SF	76.36±21.33	81.91±19.27	0.164
BP	65.33±26.36	73.27±20.94	0.137
MH	65.50±17.67	73.11±15.78	0.032*
VT	55.80±23.03	59.63±15.49	0.412
GH	52.66±18.17	60.08±19.69	0.098
SF-36	62.00±22.20	70.38±15.28	0.054

\*p&lt;0.05

PF, physical functioning; RP, role-physical; RE, role-emotional; SF, social functioning; BP, bodily pain; MH, mental health; VT, vitality; GH, general health

**Table 5.** Scores of Medical Outcome Study Short Form 36 in psoriasis vulgaris and psoriatic arthritis

<b>Item</b>	<b>Psoriasis vulgaris</b>	<b>Psoriatic arthritis</b>	<b>p-value</b>
PF	87.41±19.99	69.69±26.54	0.019*
RP	53.24±46.41	34.38±41.34	0.201
RE	50.62±48.75	39.58±47.46	0.455
SF	80.67±19.03	61.81±22.22	0.004**
BP	69.91±22.87	49.88±31.05	0.017*
MH	67.04±17.04	60.31±18.75	0.322
VT	58.45±22.67	46.88±21.99	0.090
GH	54.46±17.98	46.56±17.47	0.139
SF-36	65.22±21.03	51.13±22.60	0.033*

\*p&lt;0.05, \*\*p&lt;0.01

PF, physical functioning; RP, role-physical; RE, role-emotional; SF, social functioning; BP, bodily pain; MH, mental health; VT, vitality; GH, general health

**Table 6.** Scores of Skindex-29 in psoriasis, vitiligo and autoimmune bullous disease

<b>Item</b>	<b>Psoriasis</b>	<b>Vitiligo</b>	<b>Autoimmune bullous disease</b>	<b>p-value</b>
Symptom	40.90±18.79	33.20±10.80	59.80±18.27	0.000***
Function	35.79±14.37	30.14±13.13	44.46±15.43	0.000***
Emotion	48.83±20.60	36.05±15.36	44.89±15.69	0.003**
Skindex-29	41.84±16.23	33.13±12.38	49.71±15.67	0.000***

\*p&lt;0.05, \*\*p&lt;0.01, \*\*\*p&lt;0.001

### 3. Correlation between questionnaires in different types of the disease

A correlation was found between the DLQI and SF-36 scores, between the DLQI and Skindex-29 scores and between the SF-36 and Skindex-29 scores in psoriasis group and vitiligo group. Spearman's correlation coefficients are shown in Table 7.

## Discussion

Because of the treatment and economic difficulties, the patients with chronic dermatological diseases have poor physical and mental health compared with the general population. Most of skin diseases often cause changes in the appearance of the patients which not only lead to difficulties of daily life but also mental illness.<sup>1-6</sup> Moreover, secondary depression and anxiety would happen and possibly exacerbate the disease itself.<sup>2</sup> Based on this background, recent researches not only focus on the treatment of chronic dermatological diseases but also increasingly on the QoL of the patients.

In the present study, the total DLQI score observed in psoriasis patients was higher than vitiligo group, and the significant higher scores of daily activities, leisure and work and school domains indicating poorer QoL in psoriasis. In a study performed by

Ongene et al, 162 psoriasis patients were compared with 119 vitiligo patients.<sup>20</sup> They found a mean DLQI score of 6.25 for psoriasis that was higher than the score obtained by vitiligo (4.95) and the result was in line with this study. In addition, our study revealed that the SF-36 total score in vitiligo was higher than psoriasis, even there was no significant difference has been observed. The significant effects on the QoL are reflected in role emotional and mental health scores, which suggest that there are more serious emotional and psychological problems in the patients with psoriasis than in those with vitiligo. In a survey performed by Fortune et al, 68% of the patients with psoriasis reported that the disease had negative consequences on their lives and 53.4% of them reported that their perception of themselves changed because of the disease.<sup>21</sup> Itching, burning, stinging, sensitivity and pain are associated physical symptoms of psoriasis. In addition, psoriasis is not limited to skin lesions, but can be associated with arthritis and systemic diseases including metabolic syndrome which cause negative effect on patients' QoL.

In 10%-25% of patients, psoriasis is accompanied by PsA, which limits physical function. Clinical features of PsA include peripheral and axial arthritis, enthesitis, dactylitis and tenosynovitis. Patients with PsA suffer more than psoriatic patients without PsA.<sup>22</sup> Extra-articular involvement in addition to skin and nail involvement may include conjunctivitis, uveitis and inflammatory bowel disease. These may limit physical functioning of the patient. Tezel et al<sup>23</sup> reported that psoriatic patients with PsA have poorer QoL and functional status than those without PsA. In the present study, significant difference in function item of Skindex-29 scores supported this statement. The effects on the QoL of patients with PsA were reflected in more detail in three domains of SF-36, which are physical functioning, social functioning and bodily pain, than the Skindex-29 scores.

In our study, the average Skindex-29 score of autoimmune bullous disease group was

**Table 7.** Correlation between Dermatology Life Quality Index (DLQI), Medical Outcome Study Short Form 36 (SF-36) and Skindex-29 scores in psoriasis patients and vitiligo patients

	DLQI	Skindex-29
Psoriasis		
DLQI	1.000	0.794**
SF-36	-0.703**	-0.696**
Vitiligo		
DLQI	1.000	0.677**
SF-36	-0.532**	-0.661**

\* $p < 0.05$ , \*\* $p < 0.01$

significantly higher than psoriasis group and vitiligo group. There are many negative factors, including the mucosal involvement, painful erosive cutaneous lesions, corticosteroid treatment and higher mortality which might be the reasons for the more impaired QoL in autoimmune bullous disease patients.<sup>24</sup> In a previous study to conduct a comparative study assessing the QoL in 30 pemphigus cases and 60 control cases through utilising SF-36 questionnaire, pemphigus group showed an impaired QoL compared with healthy controls, particularly in those with facial involvement and a large extent of lesions.<sup>25</sup> Our result demonstrated that the significant difference in symptom and function item of Skindex-29 scores embodies the serious effects on QoL in autoimmune bullous disease.

There are not many studies focused on the correlation between QoL instruments. In the present study, the Spearman's correlation coefficient of the questionnaires indicated that the mean values obtained in the DLQI, SF-36 and Skindex-29 were strongly correlated when evaluating the QoL of patients with psoriasis and vitiligo. The results suggest that DLQI, SF-36 and Skindex-29 may be sensitive to chronic relapsing skin diseases and the scores of those questionnaires showed a high degree of correlation together. It is interesting that Skindex-29 detected significant difference in function between psoriasis and vitiligo that SF-36 did not detect. In a study performed by Fernandez et al, Skindex-29 had better sensitivity to clinical severity and probably was more sensitive than other instruments.<sup>26</sup> In view of the result, it was agreed that it would be feasible to use only one of these questionnaires to evaluate the QoL of chronic skin diseases patients without any detriment. The combination of DLQI, SF-36 and Skindex-29 could cover main aspects of QoL and contribute to accurate estimation of QoL impairment.

There are several limitations of our study. First, the survey was cross-sectional and our results did

not show effect of treatment on QoL, and the environmental, occupational and demographic factors associated with these chronic relapsing skin diseases may influence QoL of the patients. Second, duration and severity of diseases had not been taken into account. Third, considering patients with autoimmune bullous disease generally have painful clinical symptoms, in order to minimise psychological pressure to the patients, we requested such patients only to fill out the Skindex-29 questionnaire. Therefore, the understanding of impact on QoL in patients with autoimmune bullous disease may not be conclusive.

Despite of these limitations, the results showed impaired QoL in patients with chronic skin diseases, especially significant impact on physiological and psychological status in autoimmune bullous disease and psoriasis patients. Furthermore, a significant correlation between these instruments was detected. Dermatologists should pay attention to the QoL issues in patients with chronic relapsing skin diseases through proper application of assessment tools in order to achieve the fully effective treatment.

In conclusion, with the transition of the modern medicine gradually from bio-medical model to bio-psycho-social medical model, people have gradually recognised that disease is caused by biological factors, psychological factors and the combined effect of social factors. The present study reveals that there is significant impact on QoL and impaired psychological status in chronic relapsing skin diseases. Therefore, in order to achieve the purpose of effective treatment of the disease, dermatologists should pay attention to the QoL of the patients. Specifically, in patients in whom QoL is reduced seriously, such as in psoriasis and autoimmune bullous disease, the necessary psychological counseling to improve their psychological health should be given.

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