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ORIGINAL RESEARCH

Body Dysmorphic Disorder, Psychiatric Symptoms, and Quality of Life in Female Dermatological Patients

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Ik-Seung Chee[1,2]
Hyun-Jin Kim[2]
Young Lee[3]
Jee Wook Kim[4,5]

[1]Department of Psychiatry, Chungnam National University Hospital, Daejeon, Republic of Korea; [2]Department of Psychiatry, Chungnam National University Sejong Hospital, Sejong, Republic of Korea; [3]Department of Dermatology, Chungnam National University Hospital, Daejeon, Republic of Korea; [4]Department of Neuropsychiatry, Hallym University Dongtan Sacred Heart Hospital, Hwaseong, Gyeonggi, Republic of Korea; [5]Department of Psychiatry, Hallym University College of Medicine, Chuncheon, Gangwan, Republic of Korea

Purpose: To examine the relationships of body dysmorphic disorder (BDD) with psychiatric symptoms and quality of life in dermatological patients.

Patients and Methods: A total of 154 female patients with dermatological disease underwent a comprehensive clinical assessment that included the Body Dysmorphic Disorder Examination-Self Report (BDDE-SR), Symptom Checklist 90-Revised (SCL-90-R), and Skindex-29. Dermatological disease was categorized as follows: inflammatory dermatoses (reference category), isolated lesions, and unclassified dermatoses. The BDDE-SR and SCL-90-R scores were used to evaluate BDD and psychiatric symptoms, respectively. Dermatological quality of life was measured with the Skindex-29.

Results: The BDDE-SR score was significantly associated with the SCL-90-R and Skindex-29 total and subscores, even after controlling for age, body mass index, and dermatological diagnosis. The variables that contributed most to the BDDE-SR score were the SCL-90-R depression score and Skindex-29 emotion scores. Additional analyses revealed that the BDDE-SR score was higher in participants with unclassified dermatoses, but neither the SCL-90-R score nor Skindex-29 score was related to any dermatological diagnosis.

Conclusion: The BDD symptoms were especially prominent in the unclassified dermatoses group and were highly related to psychiatric symptoms and a poor quality of life in our dermatological patients. Further research including studies involving psychiatric interviews to confirm the BDD diagnosis and symptoms will improve our understanding of BDD in dermatological patients.

Keywords: body dysmorphic disorder, psychiatric symptoms, quality of life: dermatological disease, unclassified dermatoses

Introduction

Body dysmorphic disorder (BDD) is a mental disorder characterized by an obsession with some aspect of one's own body or appearance perceived to be severely flawed, and therefore warranting exceptional measures to hide or fix.[1] The Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition (DSM-IV) defines BDD as a preoccupation with an imagined or trivial defect in appearance causing social or occupational dysfunction, and not better explained as another disorder.[2] The DSM-5 includes BDD in a new category (obsessive-compulsive spectrum) and adds operational criteria (such as repetitive behaviors or intrusive thoughts) and a new subtype of dysmorphia (muscle dysmorphia; belief that one's body is too small, or insufficiently muscular or lean).[3]

Correspondence: Jee Wook Kim
Department of Neuropsychiatry, Hallym University Dongtan Sacred Heart Hospital, 7 Keunjaebong-gil, Hwaseong-si, Gyeonggi-do 18450, Republic of Korea
Tel +82 31 8086 2340
Fax +82 31 8086 2029
Email kimakins@hanmail.net

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Most BDD patients seen in psychiatric settings have other mental disorders. Several studies have reported that major depressive disorder is the most common comorbid disorder, with the largest study reporting a current and lifetime rates of 58% and 76%, respectively.[4,5] Obsessive-compulsive disorder, substance use disorder, social phobia, and avoidant personality disorder also commonly co-occur with BDD.[4,5] BDD patients experience unusually high levels of perceived stress and a poor quality of life.[5–7] Health-related quality of life is a multi-dimensional construct reflecting overall wellbeing that includes aspects of physical and mental health and is self-defined according to the perceived ability to achieve and maintain a level of overall functioning that allows the patient to reach life goals.[8,9] In a study assessing health-related quality of life using the Short Form Health Survey, outpatients with BDD had worse scores in all mental health domains than the general population and patients with depression.[7] More severe BDD symptoms were associated with poorer mental health-related quality of life.[5]

Empirical studies suggest that the prevalence of BDD among dermatology and plastic surgery patients is higher than in the general population.[10,11] In total, 12% of dermatology patients screened positive for BDD,[10] compared to 7–8% of cosmetic surgery and in cosmetic surgery patients.[11] According to Phillips et al,[10] dermatologists may be the physicians most often seen by these patients. BDD seems to be more prevalent among dermatology and cosmetic surgery patients, thus showing the importance of professionals with knowledge of the clinical aspects of BDD.

We first aimed to examine the relationships of BDD with psychiatric symptoms and quality of life in dermatological patients. We secondly assessed the relationship between stratified dermatologic diagnosis and BDD, psychiatric symptoms, or quality of life.

Patients and Methods

Participants

A total of 154 female outpatients with a dermatological disease who visited to the dermatology outpatient clinic of a university hospital were enrolled in this study. The study protocol was approved by the Institutional Review Board of Chungnam National University Hospital, Daejeon, Republic of Korea. The study was conducted in accordance with the Declaration of Helsinki. All participants provided written informed consent.

Dermatological Diagnoses

All participants were diagnosed with a dermatological disease based on a clinical examination by a dermatologist. The dermatological disease categories were inflammatory dermatoses (reference category), isolated lesions, and unclassified dermatoses, as per previous studies.[12–14]

Assessments of BDD, Psychiatric Symptoms, and Quality of Life

All participants with dermatological disease underwent a comprehensive clinical assessment that included the Body Dysmorphic Disorder Examination-Self Report (BDDE-SR), Symptom Checklist-90-Revised (SCL-90-R), and Skindex-29; these instruments were used to evaluate BDD, psychiatric symptoms, and quality of life, respectively.

BDDE-SR

The BDDE-SR is a 30-item self-report questionnaire that determines the extent of dissatisfaction with body parts within the past month.[15,16] Each question (except for questions 16a and b, which are answered "yes" or "no") is answered on a 6-point Likert scale. The total score ranges from 0 to 168. Higher scores reflect more severe symptoms. The Korean version of the BDDE-SR has been tested in adolescents,[17] and college students.[18]

SCL-90-R

The SCL-90-R is a self-report instrument comprising 90 items that psychological distress and current psychiatric symptoms (somatization, obsessive-compulsive disorder, interpersonal sensitivity, depression, anxiety, hostility, phobic anxiety, paranoid ideation, and psychoticism).[19] Respondents provide answers based on the symptoms in the past week, including the day of the test, using a 5-point Likert scale. Higher scores mean higher level of symptoms. The Korean version of the SCL-90-R has been tested for reliability and validity.[20]

Skindex-29

The Skindex-29[21] is a 29-item self-administered questionnaire that assesses the health-related quality of life of patients with skin diseases. It covers three domains: degree of symptoms, psychosocial functioning, and emotional status.[22] The questions are answered using a 5-point Likert scale, and mean scores for all items and individual domains are calculated (total and domain score, respectively), and higher scores mean higher level of symptoms. The Korean version of the Skindex-29 has been tested for reliability and validity.[23]

BMI Assessment

Body mass index (BMI) was calculated as weight in kilograms divided by the height in meters squared. Research nurses measured the height and body weight of all participants and calculated the BMI. BMI was categorized underweight (<21 mg/kg^2), healthy weight (21–25 mg/kg^2) or overweight (>25 mg/kg^2) in accordance with a previous report.[24]

Statistical Analysis

Demographic and clinical variables were compared among groups using analysis of variance for continuous variables and the χ^2 test for categorical variables. To examine the relationship of BDD with psychiatric symptoms or quality of life, multiple linear regression analysis with BDDE-SR score as the independent variable and SCL-90-R and Skindex-29 scores as the dependent variables were performed, including an analysis stratified according to dermatological diagnosis using inflammatory dermatoses as the reference (inflammatory dermatoses vs isolated lesions and inflammatory dermatoses vs unclassified dermatoses). Three models were devised: the first included no covariates, the second included age as a covariate, and the third included age, BMI, and the dermatological diagnosis as covariates. Furthermore, to identify variables contributing to BDD, stepwise multiple linear regression analyses with the SCL-90-R and Skindex-29 subscores as independent variables and the BDDE-SR score as the dependent variable was conducted. Statistical analyses were performed using IBM SPSS Statistics software (ver. 24.0; IBM Corp., Armonk, NY, USA). A p-value <0.05 was considered significant.

Results

Participant Characteristics

The demographic and clinical characteristics of the participants are presented in Table 1. Among the total 154 female participants with a dermatological diagnosis, 96 had inflammatory dermatoses [acne, n = 38; atopic (eczematous) dermatitis, n = 22; allergic contact dermatitis, n = 12; urticaria, n = 6; seborrheic dermatitis, n = 5; psoriasis, n = 5; xeroderma, n = 2; Behçet's disease, n = 1; ringworm, n = 1; herpes zoster, n =1; candidiasis, n = 1; folliculitis, n = 1; mycosis fungoides, n = 1]; 28 had isolated lesions (melasma, n = 11; freckles, n = 5; warts, n = 3; blemishes, n = 3; solar lentigo, n = 2; syringoma, n = 1; dermatofibroma, n = 2; or spots, n =1), and 30 had unclassified dermatoses (alopecia, n = 23; vitiligo, n = 3; facial flushing, n =2; telogen effluvium, n = 1; trichotillomania, n = 1) (Table 1).

Table 1 Participant Characteristics by Stratified Dermatological Diagnoses (N = 154)

Characteristics	Overall	Inflammatory Dermatoses	Isolated Lesions	Unclassified Dermatoses	χ^2 or *F*	*P*
n, %	154	96 (62.3)	28 (18.2)	30 (19.5)		
Age, y	34.85 (9.2)	32.35 (8.0)	40.75 (8.5)	37.33 (10.4)	11.945	<0.001
BMI, kg/m^2	21.55 (2.6)	21.09 (2.5)	22.15 (2.6)	22.48 (2.6)	4.097	0.019
BDD global score	69.27 (23.9)	67.57 (23.3)	66.54 (20.6)	77.23 (27.2)	2.130	0.122
SCL-90-R						
Total score	437.61 (107.8)	433.76 (93.6)	430.64 (143.6)	456.43 (115.2)	0.574	0.565
Somatization score	43.06 (7.8)	43.15 (7.7)	42.04 (8.8)	43.77 (7.3)	0.366	0.694
Obsessive-compulsive score	43.41 (9.2)	43.49 (8.3)	41.46 (11.1)	44.97 (9.8)	1.067	0.347
Interpersonal sensitivity score	44.13 (9.9)	43.59 (9.0)	43.32 (11.4)	46.60 (11.0)	1.177	0.311
Depression score	42.71 (9.0)	42.59 (8.2)	41.36 (10.1)	44.33 (10.3)	0.806	0.449
Anxiety score	41.90 (7.4)	41.81 (7.2)	41.32 (7.8)	42.73 (7.8)	0.282	0.755
Hostility score	45.20 (8.7)	45.06 (7.9)	45.11 (11.0)	45.73 (8.8)	0.070	0.933
Phobia score	44.11 (7.5)	43.61 (6.1)	45.04 (10.9)	44.83 (7.6)	0.565	0.570
Paranoid score	43.64 (8.6)	43.07 (7.4)	44.61 (11.7)	44.57 (9.1)	0.555	0.575
Psychosis score	42.72 (7.4)	41.98 (5.5)	43.43 (11.0)	44.43 (8.6)	1.406	0.248
General symptom index score	46.72 (42.0)	45.40 (36.7)	44.96 (54.6)	54.47 (44.9)	0.669	0.514
Skindex-29						
Total score	57.72 (62.1)	56.31 (61.0)	50.37 (65.3)	69.11 (63.0)	0.724	0.487
Symptom score	19.85 (20.6)	19.11 (21.0)	17.63 (21.6)	24.27 (18.1)	0.914	0.403
Function score	13.91 (19.7)	12.96 (18.6)	13.99 (22.3)	16.88 (20.7)	0.452	0.638
Emotion score	23.97 (26.0)	24.25 (26.0)	18.75 (23.4)	27.96 (28.3)	0.923	0.400

Note: Unless otherwise indicated, data are expressed as mean (standard deviation).
Abbreviations: BMI, body mass index; BDD, body dysmorphic disorder; SCL-90-R, Symptom Checklist 90-Revised.

Table 2 Results of Multiple Linear Regression Analyses for Assessing the Relationship Between BDD-SR and SCL-90-R Scores in Dermatological Patients

	B	95% CI	P
SCL-90-R total score			
Model 1	2.245	1.585 to 2.906	<0.001
Model 2	2.266	1.602 to 2.930	<0.001
Model 3	2.249	1.563 to 2.935	<0.001
SCL-90-R somatization score			
Model 1	0.115	0.064 to 0.166	<0.001
Model 2	0.119	0.068 to 0.170	<0.001
Model 3	0.122	0.070 to 0.175	<0.001
SCL-90-R obsessive-compulsive score			
Model 1	0.183	0.126 to 0.241	<0.001
Model 2	0.182	0.124 to 0.239	<0.001
Model 3	0.181	0.122 to 0.241	<0.001
SCL-90-R interpersonal sensitivity score			
Model 1	0.200	0.141 to 0.260	<0.001
Model 2	0.203	0.143 to 0.262	<0.001
Model 3	0.193	0.133 to 0.254	<0.001
SCL-90-R depression score			
Model 1	0.193	0.138 to 0.248	<0.001
Model 2	0.194	0.138 to 0.250	<0.001
Model 3	0.191	0.133 to 0.248	<0.001
SCL-90-R anxiety score			
Model 1	0.121	0.073 to 0.169	<0.001
Model 2	0.125	0.077 to 0.172	<0.001
Model 3	0.132	0.083 to 0.181	<0.001
SCL-90-R hostility score			
Model 1	0.161	0.106 to 0.216	<0.001
Model 2	0.160	0.105 to 0.215	<0.001
Model 3	0.156	0.100 to 0.212	<0.001
SCL-90-R phobia score			
Model 1	0.120	0.071 to 0.169	<0.001
Model 2	0.125	0.077 to 0.173	<0.001
Model 3	0.128	0.078 to 0.178	<0.001
SCL-90-R paranoid score			
Model 1	0.146	0.092 to 0.200	<0.001
Model 2	0.144	0.090 to 0.199	<0.001
Model 3	0.139	0.083 to 0.196	<0.001
SCL-90-R psychosis score			
Model 1	0.126	0.079 to 0.174	<0.001
Model 2	0.128	0.080 to 0.175	<0.001
Model 3	0.125	0.075 to 0.174	<0.001
SCL-90-R general symptom index score			
Model 1	0.880	0.622 to 1.137	<0.001
Model 2	0.887	0.629 to 1.146	<0.001
Model 3	0.882	0.615 to 1.149	<0.001

Note: Model 1 did not include any covariates, model 2 included age as covariate, and model 3 included all potential covariates, including age, body mass index, and dermatologic diagnosis.

Abbreviations: BDD-SR, Body Dysmorphic Disorder Examination-Self Report; SCL-90-R, Symptom Checklist 90-Revised; CI, confidence interval.

Association Between BDD and Psychiatric Symptoms

The BDDE-SR score was significantly associated with the SCL-90-R total and subscores after adjusting for all potential covariates (Table 2).

Association Between BDD and Quality of Life

The BDDE-SR score was significantly associated with the Skindex-29 total and subscores after adjusting for all potential covariates (Table 3).

Table 3 Results of Multiple Linear Regression Analyses for Assessing the Relationship Between BDD-SR Score and Skindex-29 Score in Dermatological Patients

	B	95% CI	P
Skindex-29 total score			
Model 1	1.249	0.866 to 1.631	<0.001
Model 2	1.269	0.886 to 1.652	<0.001
Model 3	1.278	0.883 to 1.673	<0.001
Skindex-29 symptom score			
Model 1	0.347	0.214 to 0.479	<0.001
Model 2	0.352	0.219 to 0.485	<0.001
Model 3	0.343	0.206 to 0.479	<0.001
Skindex-29 function score			
Model 1	0.385	0.265 to 0.506	<0.001
Model 2	0.395	0.275 to 0.514	<0.001
Model 3	0.403	0.279 to 0.527	<0.001
Skindex-29 emotion score			
Model 1	0.517	0.356 to 0.678	<0.001
Model 2	0.522	0.361 to 0.684	<0.001
Model 3	0.532	0.365 to 0.699	<0.001

Note: Model 1 did not include any covariates, model 2 included age as covariate, and model 3 included all potential covariates, including age, body mass index, and dermatologic diagnosis.

Abbreviations: BDD-SR, Body Dysmorphic Disorder Examination-Self Report; CI, confidence interval.

Table 4 Results of Stepwise Multiple Linear Regression Analyses for Assessing Variables Contribute to BDD-SR Score in Dermatological Patients

	B	SE	95% CI	P	R^2
Model 1					0.251
SCL-90-R depression score	1.324	0.186	0.958 to 1.691	<0.001	
Model 2					0.321
SCL-90-R depression score	0.928	0.204	0.525 to 1.330	<0.001	
Skindex-29 emotion score	0.279	0.071	0.139 to 0.419	<0.001	

Abbreviations: BDD-SR, Body Dysmorphic Disorder Examination-Self Report; SCL-90-R, Symptom Checklist 90-Revised; CI, confidence interval.

Variables Contributing to BDD

The variables that contributed most to the BDDE-SR score were the SCL-90-R depression score and Skindex-29 emotion score (Table 4 and Figure 1).

Association Among BDD, Psychiatric Symptoms, and Quality of Life Stratified by Dermatological Diagnosis

The BDD-SR scores were highest in the unclassified dermatoses group, but neither the SCL-90-R nor Skindex-29 score were related to any dermatological diagnosis after adjusting for the covariates (Table 5 and Figure 2).

Discussion

The results of this study showed that BDD was associated with psychiatric symptoms and low quality of life in adult females with a dermatological disease. Furthermore, BDD symptoms were more severe in the unclassified dermatoses group, but neither psychiatric symptoms nor a low quality of life was related to any dermatologic diagnosis. To our knowledge, this is the first study to investigate the relationships among BDD, global psychiatric symptoms, and quality of life via analyses stratified by dermatological diagnosis.

Our findings were consistent with previous studies regarding the relationships of BDD with depression and quality of life.[7,25] One study reported that participants with skin diseases had more severe BDD score and depression, while those with a skin disease and severe BDD had high depression scores.[25] In another study, BDD was frequently accompanied by major depression, earlier-onset depression and longer-duration depressive episodes, and also tended to co-occur with atypical depression.[26] Another study on the relationship between BDD and quality of life showed that the BDD severity was correlated with quality of life even after adjusting for the severity of depression.[7]

Within our unclassified dermatoses group, and particularly among the patients with hair-related concerns, BDDE-SR scores were higher than those of the inflammatory dermatoses group, although neither psychiatric symptoms nor the quality of life was related to any dermatological diagnosis. One study reported that the incidence of BDD was about 10 times higher

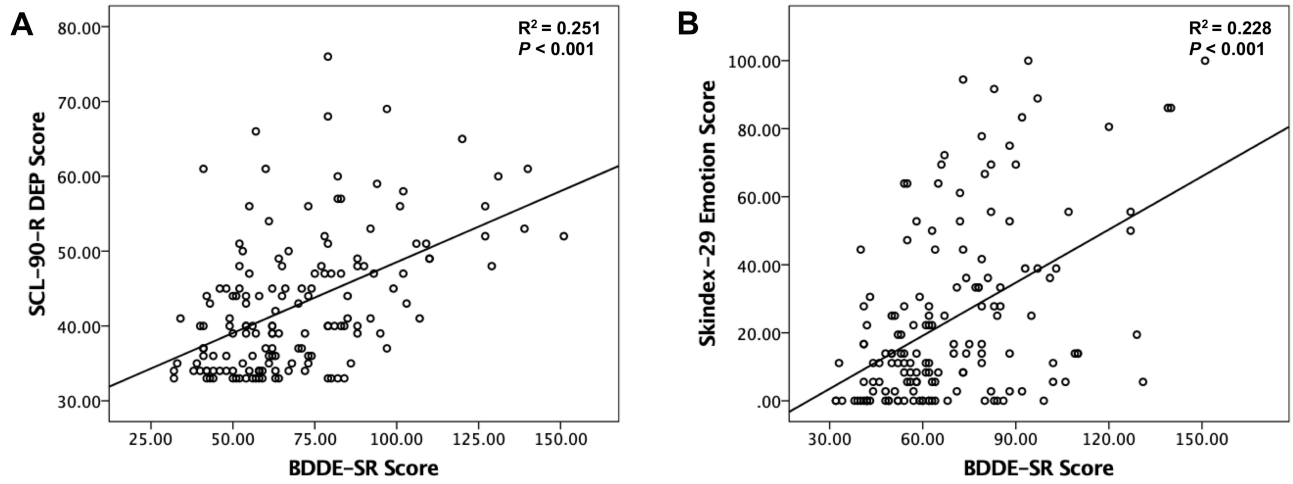

Figure 1 Scatter plots of the relationships of the BDDE-SR score with (**A**) the SCL-90-R depression score and (**B**) Skindex-29 emotion score.

Table 5 Results of Multiple Linear Regression Analyses for Assessing the Relationship Between Stratified Dermatological Diagnoses and BDD-SR, SCL-90-R, or Skindex-29 Scores in Dermatological Patients

	Stratified Dermatological Diagnoses				
	Inflammatory Dermatoses	Isolated Lesions		Unclassified Dermatoses	
		B (95% CI)	p	B (95% CI)	P
BDD-SR score					
Model 1	Reference	−0.519 (−10.610 to 9.571)	0.919	10.762 (0.812 to 20.713)	0.034
Model 2	Reference	1.901 (−8.765 to 12.567)	0.725	12.338 (2.152 to 22.524)	0.018
Model 3	Reference	1.490 (−9.097 to 12.078)	0.781	10.440 (0.134 to 20.745)	0.047
SCL-90-R score					
Model 1	Reference	−8.453 (−55.612 to 38.707)	0.724	18.595 (−27.909 to 65.099)	0.431
Model 2	Reference	−10.173 (−60.331 to 39.985)	0.689	17.475 (−30.427 to 65.377)	0.472
Model 3	Reference	−12.029 (−61.863 to 37.805)	0.634	8.890 (−39.618 to 57.399)	0.718
Skindex-29 score					
Model 1	Reference	−7.786 (−34.813 to 19.241)	0.570	9.612 (−17.039 to 36.263)	0.477
Model 2	Reference	−11.701 (−40.384 to 16.982)	0.421	7.063 (−20.330 to 34.456)	0.611
Model 3	Reference	−12.617 (−41.195 to 15.961)	0.384	2.827 (−24.991 to 30.644)	0.841

Note: Model 1 did not include any covariates, model 2 included age as covariate, and model 3 included all potential covariates, including age, body mass index, and dermatologic diagnosis.

Abbreviations: BDD-SR, Body Dysmorphic Disorder Examination-Self Report; SCL-90-R, Symptom Checklist 90-Revised; CI, confidence interval.

in patients complaining of hair loss compared to general dermatology patients.[27] That study emphasized that awareness of BDD and referral of selected patients to mental health professionals are crucial. Furthermore, many studies have reported that hair-related concern, and especially hair loss, is the most common BDD symptom.[28–30]

Among BDD patients receiving surgical and non-psychiatric medical treatment, treatment outcomes are

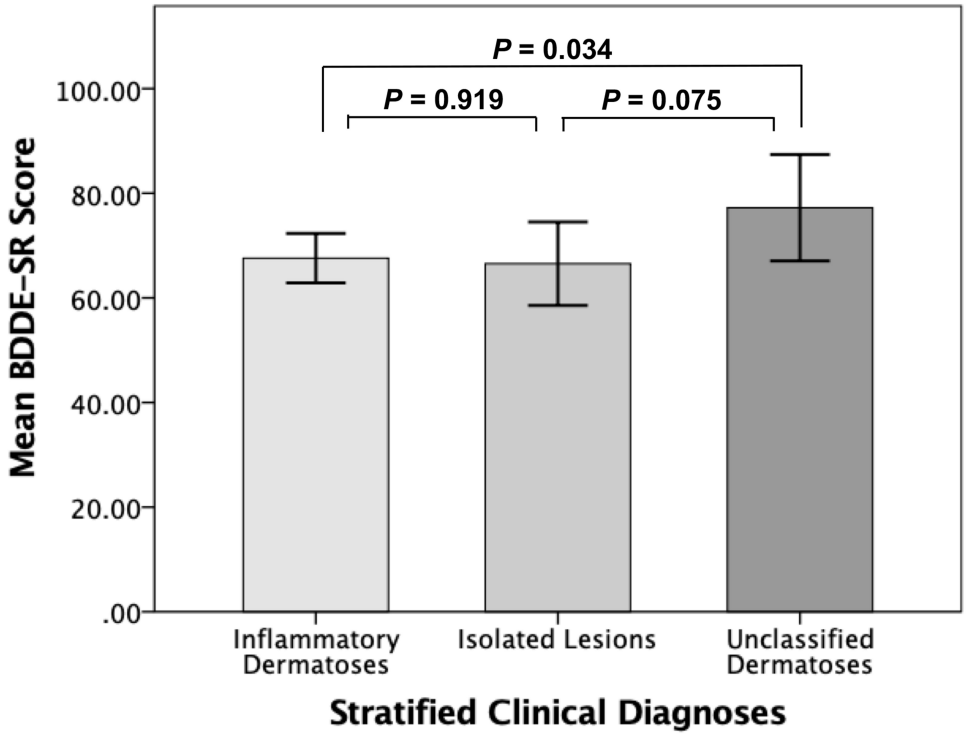

Figure 2 Bar plots of the relationships of BDDE-SR score with stratified dermatological diagnoses.

rarely satisfactory (although they may be successful from a physician's point of view) because the treatments do not alleviate BDD symptoms.[31,32] In a survey of cosmetic surgeons, 84% reported that they had operated on BDD patients, but only 1% of the cases resulted in complete remission of symptoms.[33] Moreover, 40% of the respondents stated that BDD patients had threatened them with legal action, and/or physically.[33] These findings suggest assessment for BDD may be needed before surgical and non-psychiatric medical treatments are provided.

The present study had several limitations. First, as this was a cross-sectional study, we could not make inferences regarding causality with respect to BDD symptoms, psychiatric symptoms, and quality of life. Further long-term follow-up studies are thus required. Second, this study was conducted in a dermatology clinic in South Korea, and the findings may not be generalizable to other clinical settings or countries. Last, we used self-report questionnaires for assessing BDD, psychiatric symptoms, and quality of life, rather than clinical diagnoses or interviews by psychiatrists. However, the Korean questionnaires used have high reliability and validity.

Conclusions

BDD symptoms were especially prominent in the unclassified dermatoses group and were highly related to psychiatric symptoms and low quality of life in our dermatological patients. Studies including psychiatric interviews to confirm the BDD diagnosis and symptoms will improve our understanding of BDD in dermatology patients.

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Disclosure

The authors report no conflicts of interest in this work.

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