

The Psychosocial Burden of Morphea in Adults: Associations Between Disease Severity, Body Image, Mental Health, and Quality of Life

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Background: Morphea is a chronic skin disorder which can cause persistent disfigurement and impair quality of life. The relationship between disease severity, body image and mental health with quality of life has been insufficiently explored.

Objective: To evaluate the psychosocial burden of morphea in adults and examine the association of disease activity and body image with depressive symptoms, anxiety and quality of life.

Methods: This is a cross-sectional study that included 83 adults with dermatologist-established morphea conducted between 2023 and 2025 at Pegasus Med Clinic and EB Dermatology Clinic in Tirana, Albania. A consecutive sampling method was used to recruit all patients. The modified localized scleroderma skin severity index and damage index (mLoSSI, LoSDI) was used to assess disease activity and damage. The cutaneous body image scale (CBIS) was used to assess body image, depressive symptoms and quality of life. Other questionnaires included patient health questionnaire- 9 (PHQ-9), generalized anxiety disorder-7

(GAD-7), and dermatology life quality index (DLQI). Correlations and multiple linear regression were performed to analyse all data.

Results: The mean age of the study population was 50.95 ± 17.45 years and 88.0% of all participants were females. Mean mLoSSI, LoSDI, CBIS, PHQ-9, GAD-7 and DLQI scores were 9.35 ± 7.96 , 10.84 ± 9.78 , 6.21 ± 1.22 , 6.63 ± 3.57 ,

7.90 ± 4.03 and 3.87 ± 3.99 , respectively. There was a positive correlation of DLQI with mLoSSI ($r=0.431$, $p<0.001$), PHQ-9 ($r=0.420$, $p<0.001$) and GAD-7 ($r=0.365$,

$p=0.001$). There was a negative correlation of CBIS with DLQI ($r=-0.257$, $p=0.019$). Regression analysis showed 40.5% of DLQI variance and found that mLoSSI and CBIS were independently associated with DLQI.

Conclusion: Psychosocial burden in morphea is associated with active disease and body-image disturbance. Assessment of psychosocial outcomes alongside clinical severity may support comprehensive and patient-focused management.

keywords: Morphea, Scleroderma, Quality of Life, Body Image, Mental Health

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Introduction

Morphea, also known as localised scleroderma, is a rare immune-mediated connective-tissue disorder characterised by inflammation, fibrosis and sclerosis of the skin. Depending on subtype, the deeper tissue such as subcutaneous, fascia, muscle, joints or bone also get affected, however visceral involvement is absent in systemic sclerosis.¹ The prevalence of morphea varies geographically in recent population-based studies. In Quebec, the average prevalence was 24.5 per 100,000 population,² while estimates from two United States databases showed age- and sex-standardised active prevalence rates of 4.08–6.58 per 10,000 persons younger than 65 years.³ There is no population-based data on the prevalence of morphea reported from Albania. The published indexed literature has mainly described individual clinical presentations, including a report of two patients with en coup de sabre.⁴ Based on Albania's 2023 census population of 241,499,431, extrapolation from the

international prevalence range suggested that approximately 59,000–159,000 individuals are expected to have morphea. This figure is not a national measured estimate and requires confirmation through local epidemiological.⁵ Selection of the treatment is based on disease activity, depth of tissue involvement and anatomical extent. Limited active disease can often be treated with medium- or high-potency topical corticosteroids, tacrolimus or calcipotriol. Ultraviolet phototherapy is used for more extensive superficial disease. Severe linear, generalised or deep disease commonly requires methotrexate (15–25 mg/week in adults), with systemic corticosteroids used to control the active inflammatory phase. Once the inflammatory activity has subsided, laser and reconstructive procedures may help to improve persistent dyspigmentation, sclerosis or contour defects.⁷ Controlling inflammation does not necessarily eliminate disfigurement, body-image dissatisfaction, psychological distress or impaired daily functioning. This study is focused on assessing the psychosocial

impacts of diseases from multidimensions alongside medical treatment rather than determining the efficacy of any particular therapeutic procedure. In the study of 42 adults with morphea and 42 matched controls, Dadras et al. found clinically significant anxiety in 16.67% and depression in 11.90% of patients. Although mean scores for anxiety and depression were not significantly different between the two groups.⁸ A systematic review of 13 studies and 690 patients showed little or no impairment using several quantitative quality-of-life measures, while qualitative studies highlights the experience of stress, reduced self-worth, perceived difference and bullying, pointing to the limitations of conventional instruments.⁹ The parent study by Szczęch et al. reported mean scores of 8.9 ± 9.6 for mLoSSI, 11.5 ± 10.3 for LoSDI and 3.7 ± 4.0 for DLQI. This study also demonstrated a significant correlation between mLoSSI and DLQI ($r=0.41$, $p=0.001$). This value of $r=0.41$ was specifically used as the effect size when calculating the sample-size for present study.¹⁰

Most existing evidence comes from outside South Asia, with few studies evaluating physician-assessed disease activity and damage together with cutaneous body image, depression, anxiety and dermatology-specific quality of life concurrently in adults. Examining these outcomes in Albania may provide a broad understanding of patients' psychosocial needs that are not reflected by clinical severity alone and support more patient-centred care. The aim of this study is to determine psychosocial burden of morphea in adults, and assess the associations of disease activity and damage with body image, depressive symptoms, anxiety symptoms and dermatology-specific quality of life.

Methodology

This cross-sectional study was conducted between 2023 and 2025 at Pegasus Med Clinic and EB Dermatology Clinic in Tirana, Albania. A written informed consent was taken from all participants. The sample size was calculated on

the basis of the correlation coefficient of 0.41 between the modified Localised Scleroderma Skin Severity Index (mLoSSI) and Dermatology Life Quality Index (DLQI) according to Szczęch et al. [10] A total of 72 participants were required based on a two-sided significance level of 5% and 95% statistical power. An addition of 15% participants was decided keeping in mind the dropout rate. The final sample size was 83 participants.

A non-probability consecutive sampling technique was used to enroll all patients. Eligibility criteria included adults aged ≥ 18 years, an established diagnosis of morphea by a consultant dermatologist. Participants with clinical subtypes of morphea were also included. Patients with systemic sclerosis, eosinophilic fasciitis and other scleroderma-like disorders were excluded. Patients with concomitant dermatological or severe systemic conditions impacting quality of life, cognitive impairment or acute psychiatric illness or incomplete clinical assessments or previous diagnosis of depression were also excluded.

The demographic and clinical characteristics such as age, gender, education, disease duration, morphea subtype and functional limitations were recorded. An 11 point numerical rating scale was used to assess severity of pain and pruritus ranging from 0-10 with high scores indicating greater symptoms. To assess disease activity and damage mLoSSI and loSDI were used. Greater disease activity and damage were represented by higher scores. The seven item cutaneous body image scale (CBIS) was used to evaluate body image with a mean score ranging from 0-9. Patient health questionnaire (PHQ-9) was used to assess depressive symptoms and for anxiety generalised anxiety disorder scale (GAD-7) was used.

IBM SPSS version 26 was used to analyse all data. The Shapiro Wilk test was used for distribution assessment of continuous variables. Results were reported as mean $\pm$ SD for normally distributed variables. Non

normally distributed variables were expressed using median and interquartile ranges. Frequencies and percentages were used to show categorical variables. An independent t test was used to compare normally distributed continuous variables and for non normal variables Mann Whitney U test was employed. A one way analysis of variance was used to compare the normally distributed variables which involved more than two morphea subtypes. The Kruskal–Wallis test was used for non-normally distributed variables. A Pearson chi-square test was used to determine the associations between categorical variables. Spearman rank order correlation was used to find association between LoSDI, CBIS, PHQ-9, GAD-7 and DLQI scores. The enter method was used to perform multiple linear regression analysis using DLQI as the dependent variable. The regression results were reported as unstandardised coefficients,

standard errors, standardised beta coefficients, 95% confidence intervals and p-values. A p-value

<0.05 was considered statistically significant. The study was conducted according to the principles of the Declaration of Helsinki and its subsequent amendments.

RESULTS

The mean age of the study participants was 50.95 ± 17.45 years and out of all 83 participants 73 (88%) were female. The most common subtype was plaque morphea and 34(41%) participants had visible site involvement and 15 (18.1%) were functionally limited. A detailed demographic and clinical characteristics of the participants is given in (Table I).

Table I: Demographic and clinical characteristics of the participants (n=83)

Characteristic	Result
Age, years	50.95 ± 17.45
Age range, years	18–82
Age group	
18–39 years	22 (26.5%)
40–59 years	36 (43.4%)
60–82 years	25 (30.1%)
Sex	
Female	73 (88.0%)
Male	10 (12.0%)
Residence	
Urban	56 (67.5%)
Rural	27 (32.5%)
Marital status	
Married/cohabiting	64 (77.1%)
Single	13 (15.7%)
Separated/widowed	6 (7.2%)
Educational level	

Primary	15 (18.1%)
Secondary	50 (60.2%)
Tertiary	18 (21.7%)
Employment status	
Employed	44 (53.0%)
Not employed	39 (47.0%)
Morphea subtype	
Limited/plaque	40 (48.2%)
Generalized	19 (22.9%)
Linear	7 (8.4%)
Atrophoderma of Pasini and Pierini	6 (7.2%)
Craniofacial	4 (4.8%)
Mixed	4 (4.8%)
Deep	3 (3.6%)
Disease duration, years	4.20 (IQR 6.00)
Disease duration range, years	0.30–18.50
Visible-site involvement	34 (41.0%)
Functional limitation	15 (18.1%)
mLoSSI score	7.00 (IQR 10.00)
LoSDI score	8.00 (IQR 9.00)
Pain NRS	1.00 (IQR 2.00)
Pruritus NRS	1.00 (IQR 2.00)

Values are presented as mean $\pm$ standard deviation, interquartile range, or percentage. NRS: Numerical Rating Scale; mLoSSI: modified Localized Scleroderma Skin Severity Index; LoSDI: Localized Scleroderma Skin Damage Index.

The mean scores of the involved questionnaires including CBIS, PHQ9, GAD-7 and DLQI were 6.21 ± 1.22 , 6.63 ± 3.57 , 7.90 ± 4.03 , and 3.87 ± 3.99 , respectively. A detail of disease symptoms, severity duration and relevant factors is given in (Table II).

Table II: Distribution and normality of continuous study variables (n=83)

Variable	Mean $\pm$ SD	Median	IQR	Minimum maximum	–Shapiro–Wilk	p-value
Age, years	50.95 $\pm$ 17.45	50	28	18.00–82.00	0.971	0.06

Disease duration, years	5.12 ± 4.65	4.2	6	0.30–18.50	0.867	<0.001
mLoSSI score	9.35 ± 7.96	7	10	0.00–45.00	0.848	<0.001
LoSDI score	10.84 ± 9.78	8	9	0.00–60.00	0.762	<0.001
Pain NRS	1.37 ± 1.39	1	2	0.00–6.00	0.856	<0.001
Pruritus NRS	1.13 ± 1.32	1	2	0.00–5.00	0.807	<0.001
CBIS mean score	6.21 ± 1.22	6.3	1.6	1.00–9.00	0.916	<0.001
PHQ-9 score	6.63 ± 3.57	6	6	0.00–18.00	0.971	0.061
GAD-7 score	7.90 ± 4.03	8	6	0.00–15.00	0.971	0.059
DLQI score	3.87 ± 3.99	2	4	0.00–21.00	0.806	<0.001

*SD: Standard deviation; IQR: Interquartile range; CBIS: Cutaneous Body Image Scale; PHQ-9: Patient Health Questionnaire-9; GAD-7: Generalized Anxiety Disorder-7; DLQI: Dermatology Life Quality Index.

There was a significant difference in mLoSSI and pruritus scores in terms of Gender differences ($p=0.037$ and $p=0.016$, respectively). There was no significant difference in DLQI in terms of gender and

morphea subtype. Functional limitations and subtypes were not associated with demographic characteristics. There was a positive correlation of DLQI with mLoSSI, PHQ-9 and GAD-7. The spearman correlation among variables is detailed in (Table III).

Table III: Spearman correlations among disease severity, body image, mental health, and quality of life ($n=83$)

Variabl	mLoSS	LoSDI	CBIS	PHQ-9	GAD-7	DLQI
mLoSSI	1.000	0.135 (0.223)	0.067 (0.549)	0.115 (0.301)	0.090 (0.421)	0.431 (<0.001)
LoSDI		1.000	-0.217 (0.049)	0.153 (0.168)	0.050 (0.652)	0.171 (0.123)
CBIS			1.000	-0.472 (<0.001)	-0.482 (<0.001)	-0.257 (0.019)

PHQ-9				1.000	0.846 (<0.001)	0.420 (<0.001)
GAD-7					1.000	0.365
DLQI						1.000

The 40.5% variance in DLQI scores ($p<0.001$) are explained via the multivariable model. There was an independent association of higher DLQI scores with higher mLoSSI and lower CBIS scores. Details are given in (Table IV).

Table IV: Multiple linear regression analysis of factors associated with DLQI (n=83)

Predictor	B	Standard error	Standardize d β	t-value	95% CI for B	p-value
Constant	6.316	3.262	—	1.936	-0.179 to 12.811	0.057
mLoSSI score	0.258	0.046	0.515	5.653	0.167 to 0.348	<0.00
LoSDI score	-0.01	0.042	-0.024	-0.23	-0.095 to	0.816
CBIS mean score	-0.94			-2.32	-1.757 to	
	7	0.407	-0.289	9	-0.137	0.022
PHQ-9 score	0.124	0.192	0.111	0.643	-0.259 to	0.522
GAD-7 score	0.039	0.163	0.04	0.242	-0.286 to	0.81

Dependent variable: DLQI. Model $R=0.637$, $R^2=0.405$, adjusted $R^2=0.367$, standard error of estimate=3.17246; $F(5,77)=10.504$, $p<0.001$.

Discussion

In this cross-sectional study of 83 adults with morphea, mean mLoSSI (9.35 ± 7.96) and LoSDI (10.84 ± 9.78) scores indicated generally mild-to-moderate residual disease activity and damage. Despite this one in five participants (18.1%) reported functional limitation and 41.0% had involvement of visible body sites, highlighting that even clinically mild disease can have a meaningful psychosocial impact. Szczech et al reported that the mean DLQI of 3.87 ± 3.99 was similar to this 3.7 ± 4.0 in Polish adults with morphea. In our finding mLoSSI correlated positively with DLQI ($r=0.431$, $p<0.001$) while LoSDI did not ($r=0.171$, $p=0.123$) directly replicates their observation that active disease, rather than residual damage, drives quality-of-life impairment. Similar findings across two geographical cohorts suggest that ongoing inflammatory activity may have greater psychological impact static disfigurement.

Our mean PHQ-9 (6.63 ± 3.57) and GAD-7 (7.90 ± 4.03) scores indicate a mild symptom range for both depression and anxiety. Similar findings have been reported in other visible dermatological conditions in the past five years. In the global VALIANT study of 3,541 adults with vitiligo, Bibeau et al., showed that substantial proportion of patients describe clinical symptoms of depression and anxiety, which are directly associated with disease visibility.(11) Rosmarin et al. found that vitiligo patients with more severe or facially located disease had higher Hospital Anxiety and Depression Scale scores than those with milder or less visible disease. This highlights the influence of lesion location on psychological burden.(12) Visible-site disease was present in 41.0% of our sample, suggesting that exposure-related distress may also contribute to psychological burden of morphea. As DLQI or PHQ-9 scores were not analysed according to anatomical site and this relationship should be

examined in future work.

In our study the PHQ-9 and GAD-7 are correlated ($r=0.846$, $p<0.001$) is, consistent with the overlap between depression and anxiety symptoms reported in chronic dermatological disease. Similarly Seetan et al., reported in a Jordanian case-control study that the patients with rosacea had significantly higher anxiety depression burden than matched healthy controls, even though rosacea causes limited physical morbidity.(13) The presence of overlap across unrelated visible skin conditions suggests a common psychological mechanism. This may be related to chronic self-consciousness and anticipated stigma rather than being specific to any single disease.

A notable finding of our study was negative correlation of CBIS and DLQI ($r=-0.257$, $p=0.019$), PHQ-9 ($r=-0.472$, $p<0.001$), and GAD-7 ($r=-0.482$,

$p<0.001$). The negative association between CBIS and DLQI remains significant in multivariable analysis ($\beta=-0.289$, $p=0.022$). These findings suggest that body image disturbance may influence the quality of life to a similar extent as physician-rated activity. This findings is similar with the work of Koumaki et al., who reported that over half of patients with hidradenitis suppurativa had moderate-to-severe body image dissatisfaction on the same Cutaneous Body Image Scale. Greater body image impairment was closely associated with DLQI, PHQ-9, and GAD-7 scores.(14) The relationship observed in hidradenitis suppurativa and morphea suggest that the body image may contribute to psychological distress across disfiguring skin disease. Despite their different pathophysiology, both conditions can cause permanent change to the skin.

Our regression model explained 40.5% of variance in DLQI, with mLoSSI and CBIS emerging as the only independent predictors. PHQ-9 and GAD-7 were no longer significant after adjustment of these variables. A similar pattern was reported by Fournier et al. in a systematic review of psychosocial outcomes among the patients with rare appearance-

altering genetic skin diseases. They found that self-perception and appearance-related distress had the greater influence on daily life impairment than global mood symptoms.(15) The systematic review of Tan and Jafferany highlighted the importance of self-esteem and body-image- in patients with alopecia areata. These factors explained quality-of-life impairment more strongly than depression symptoms alone among visibly affected patients.(16)

Fekete et al. reported a similarly pattern in patients with vitiligo. DLQI was more closely related to appearance-related distress than to generic psychiatric symptom burden.(17) Our findings showed the significant sex differences in mLoSSI and pruritus scores ($p=0.037$ and $p=0.016$) are broadly consistent with regional dermatology cohorts; In south asia population, Awal et al. and Sajan et al., reported higher symptoms and psychosocial burden among female patients with vitiligo. This is partly associated with sociocultural expectations around cosmetic appearance.(18,19) In our sample 88.0% of participants were female, sex-specific sociocultural pressures in Albania may further influence the biological factors associated with morphea severity, a hypothesis that qualitative research could usefully test.

The main limitations of this study include the cross-sectional design, single-country sampling, and absence of a healthy control group. These factors limit causal inference and generalisability of findings. Most of the participants in our study were female, the sample skewed heavily female, consistent with female predominance reported in morphea epidemiology by Lyakhovitsky et al.(20) Longitudinal multicentre studies are needed to assess whether body image can improve quality of life in adults with morphea rather than focusing disease activity alone.

Conclusion

There is a significant association of morphea with psychosocial burden with body image disturbances that ultimately affects quality of life. mLoSSI and CBIS were independently

associated with DLQI. The incorporation of psychosocial evaluation into routine morphea

care may support more comprehensive management of morphea patients.

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