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Social Media Use, Psychological Distress, and Body Dysmorphic Disorder Among Lebanese Dermatology Patients: A Multicenter Cross-Sectional Study

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Ethics Statement: All participants provided written informed consent prior to completing the study questionnaire, as described in the Procedure section.

Abstract:

Background: Body dysmorphic disorder (BDD) is a debilitating condition highly relevant in dermatology. Evidence suggests social media use contributes to body image disturbances, but the mechanisms remain poorly understood. This study examined associations between social media use dimensions, psychological distress, BDD diagnosis, and ABDDQ scores among dermatology patients in Lebanon.

Methods: This cross-sectional study recruited 669 adult patients from Lebanese dermatology clinics. Participants completed the Arabic Body Dysmorphic Disorder Questionnaire (ABDDQ), the Depression Anxiety Stress Scale-21 (DASS-21), and the Social Media Use Scale (SMUS). Regression models examined factors associated with ordered appearance-concern/BDD status and, among participants with appearance concerns, ABDDQ scores.

Results: Of 669 participants, 44 (6.6%) screened positive for BDD. These individuals were significantly younger, more frequently single, students, and reported higher psychiatric histories ($p < .05$). Depression, anxiety, and stress increased across the no-concern, subthreshold-concern, and BDD groups (all $p < .001$). Comparison-based and belief-based social media use also increased progressively across these groups ($p < .001$). Multivariable analysis identified younger age, female gender, higher depression scores, and greater comparison-based and belief-based social media use as factors independently associated with higher ordered appearance-concern/BDD status. Employment status, comparison-based use, depression, and stress were independently associated with ABDDQ scores.

Conclusions: BDD is associated with substantial psychological distress. Comparison-based and belief-based engagement were associated with higher ordered appearance-concern/BDD status, while comparison-based use was also associated with ABDDQ scores, suggesting that

associations may differ across dimensions of social media use. These findings support routine BDD screening in dermatology settings.

Keywords: Dermatology, Body dysmorphic disorder, Social Media Use Scale, Body Image, Social Media

Background:

Body dysmorphic disorder (BDD) is a psychiatric condition characterized by an excessive preoccupation with a perceived defect in physical appearance that is either unnoticeable or appears minimal to others [1]. This preoccupation compels individuals with BDD to engage in repetitive behaviors such as excessive mirror checking, grooming, or reassurance seeking, which can significantly impair daily functioning and quality of life [1]. Despite its severity and substantial psychological impact, BDD often remains unrecognized or undiagnosed for years, as affected individuals frequently seek dermatologic and cosmetic interventions rather than or prior to psychiatric care [2].

Patients with BDD often demonstrate poor insight into their condition [3–5]. Their limited awareness of the psychiatric or cognitive nature of their symptoms can hinder recognition of the disorder and delay appropriate psychological or psychiatric treatment [6]. Furthermore, BDD is commonly associated with psychiatric comorbidities, such as major depressive disorder, obsessive-compulsive disorder, social anxiety disorder, and suicidality, further complicating diagnosis and management [1,7]

The reported prevalence of BDD in dermatological patients ranges between 4.5% and 36% with variability being attributed to differences in countries where the study was conducted (excluding the Middle East and Arab countries), recruitment process clinical settings (cosmetic versus medical dermatology practice) and screening methods used [2,8–10]. A recent systematic review and meta-analysis reported a pooled prevalence of 12.65% among dermatology patients underscoring the clinical importance of this disorder in dermatologic practice [11]. Similarly, a recent multicentric study of 472 patients attending medical and cosmetic dermatology clinics in Lebanon found a BDD

prevalence of 7.6%, with a comparable, though non-significant, trend toward higher rates in cosmetic settings than in medical ones [12].

Recent evidence has highlighted the potential contribution of social media use to body image disturbances and BDD [13,14]. Social media platforms provide constant and repetitive exposure to filtered and appearance-focused content that may exacerbate appearance comparison and promote unrealistic beauty standards [15,16]. Beyond body image concerns, social media use has also been associated with a range of adverse mental health outcomes, including increased symptoms of depression, anxiety, psychological distress, loneliness, and reduced self-esteem, particularly among adolescents and young adults [17]. Recent literature further suggests that the psychological impact of social media depends not only on the amount of time spent using these platforms but also on the way users cognitively engage with and interpret the content displayed [15].

The Social Media Use Scale (SMUS), developed and validated by Tuck and Thompson, conceptualizes social media engagement across four dimensions: consumption-based use, image-based use, comparison-based use, and belief-based use [18]. Consumption-based use reflects engagement with social media content through consumption-oriented activities; image-based use comprises photo-centered activities including posting, viewing, or editing images; comparison-based use refers to comparing one's appearance to others online; and belief-based use reflects engagement with belief-related content, including negative or unsupportive interactions and engagement with content that conflicts with one's moral or ethical views. These dimensions may be differentially associated with body image dissatisfaction, appearance-related distress, and dysmorphic symptomatology, particularly among vulnerable individuals.

Although the prevalence of BDD among dermatology patients and the association between social media use and body image dissatisfaction have been increasingly investigated, significant gaps remain in the literature. The relationship between specific dimensions of social media use and BDD diagnosis, symptom severity, and subclinical dysmorphic concerns remains poorly categorized. Clarifying these associations is clinically relevant because individuals with BDD frequently seek dermatologic and cosmetic interventions, often with persistent dissatisfaction despite treatment. Consequently, they may undergo repeated, unnecessary, and often costly procedures, exposing themselves to potential medical risks while delaying appropriate psychiatric evaluation and management [2,19]. Early recognition of BDD within dermatologic settings is therefore essential to facilitate appropriate referral and optimize patient outcomes. Furthermore, a better understanding of the relationship between specific patterns of social media engagement and dysmorphic symptomatology may have broader public health implications. As concerns regarding the psychological effects of social media continue to increase, identifying potentially maladaptive patterns of use may inform preventive strategies, enhance digital literacy initiatives, and guide the development of evidence-based recommendations and policies aimed at promoting healthier engagement with social media platforms.

To address these gaps, the present study utilized the Arabic adaptation of the Body Dysmorphic Disorder Questionnaire (BDDQ), recently validated by Salameh et al. [20], to investigate the relationship between social media use and BDD among patients attending dermatology clinics in Lebanon. The primary objectives were to examine the associations between different dimensions of social media use and both BDD diagnosis and symptom severity, and to identify factors associated with BDD diagnosis in this population. The secondary objective was to evaluate the

associations between appearance concerns and social media use, as well as symptoms of depression, anxiety, and stress among dermatology patients.

Methods:

Ethical Considerations

This study was reviewed and approved by the Lebanese American University (LAU) Institutional Review Board (approval reference LAU.SOM.JO1.6/Jul/2023) and the American University of Beirut (AUB) Institutional Review Board (approval reference SBS-2024-0215). All participants provided written informed consent to participate in the study.

Participants

This multicenter, cross-sectional observational study was conducted between May 2024 and November 2025. The study recruited 669 patients from medical and cosmetic dermatology clinics across several sites in Lebanon, including three university-affiliated medical centers, affiliated dispensaries, and three private clinics. Eligible patients included those aged between 18 and 65 presenting for any dermatological complaint. Patients with a self-reported history of eating disorders were excluded.

Procedure

Data were collected by four postdoctoral research fellows and dermatologists. Prior to their dermatology consultation, participants signed a written consent form and then filled out a self-administered deidentified clinical research form via Google Forms.

Questionnaire

The online Clinical Research Form was structured into distinct sections. The first section included the reasons for consultation and various socio-economic and demographic factors such as nationality, age, and gender at birth, in addition to medical and psychiatric history. The questionnaire item asked about 'gender at birth' with response options Female/Male/Prefer not to say; this item is referred to as 'gender' throughout the Results and Tables, consistent with how it was collected rather than as a measure of self-identified gender. The second section comprised validated scales including the Arabic Body Dysmorphic Disorder Questionnaire (ABDDQ) [20], the Depression, Anxiety, and Stress Scale–21 (DASS-21) [21], and the Social Media Use Scale (SMUS) [18].

Scales Used

The SMUS is a tool that measures 4 different domains of social media use. The image-based subscale evaluates behaviors tied to self-presentation, such as monitoring engagement metrics or editing content to manage one's social image. The comparison-based subscale captures the tendency to judge one’s own appearance or life circumstances against those of others. Belief-based use reflects engagement with belief-related content, including negative or unsupportive interactions and engagement with content that conflicts with one’s moral or ethical views. Finally, the consumption-based subscale tracks general engagement, such as scrolling feeds, watching videos, or viewing stories without direct interaction. These sections were completed independently by participants without investigator intervention [18].

The ABDDQ scale is a 10-item self-report instrument used to screen for or diagnose BDD in dermatology patients, with a recommended cutoff score of 19 for diagnosis, yielding a sensitivity

of 83% and a specificity of 84% [20]. It begins with an inclusion question about a concern with physical appearance. Participants who deny such concerns do not continue the questionnaire. Questions 2-9 are graded from 1 to 5 and compounded to determine the score. The final item is the defect rating scale, which differentiates between objective clinical findings and BDD, allowing for the exclusion of clearly visible physical defects. Research fellows reviewed these scores and completed the defect ratings, consulting the attending dermatologist to reach a final consensus in cases of doubt. A diagnosis of BDD was established for patients who scored 19 or higher with a defect score of 1 or 2, provided their concern was unrelated to body weight [20].

The DASS-21 is a standard scale that measures depression, anxiety, and stress. The raw scores were doubled to align with the standardized scoring based on the original DASS-42, then categorized into five severity levels: normal, mild, moderate, severe, and extremely severe. This allows for interpretation of all three domains in a way that is in line with the original 42-item version [21].

Data management

Participants were divided into three distinct appearance concern groups to look for a gradient effect. Group 1, participants with no appearance concerns (n=380), group 2, those with appearance concerns but no BDD (n=245), and group 3, those with a BDD diagnosis (n=44). The participants in groups 2 and 3 both answered yes to the ABDDQ inclusion question about the presence of an appearance concern, while those in group 2 failed to meet the cutoff values for a diagnosis of BDD.

Declaration of Generative AI and AI-Assisted Technologies

During preparation of this work, the authors used Claude (Anthropic) and ChatGPT (OpenAI) to improve the wording and clarity of sentence structure. The authors reviewed and edited the content as needed and take full responsibility for the content of the publication.

Minimal sample size calculation

The minimum required sample size was estimated using G*Power software version 3.1.9.7 for Windows (Heinrich-Heine-Universität Düsseldorf, Düsseldorf, Germany). Multiple linear regression analyses using Generalized Linear Models were planned to identify the correlates of the study outcomes. The calculation was based on the omnibus test for multiple regression, assuming a small effect size ($f^2 = 0.05$), corresponding to an anticipated coefficient of determination ($R^2 = 0.05$) deviating from zero. With a two-sided alpha level of 0.05, a statistical power of 80%, and up to 12 predictors entered into the model, the minimum required sample size was estimated at 341 participants. To account for the design effect due to clustering and potential missing data or incomplete responses, the target sample size was conservatively doubled (n=682). Finally, after removing inadequately completed questionnaires, the final sample size was n=669.

Statistical Analysis

The collected data were analyzed using IBM SPSS Statistics version 30.0 (IBM Corp., Armonk, NY, USA). For the descriptive analysis, frequencies and percentages were reported for categorical variables, whereas means and standard deviations (SD) were used for continuous variables. The distribution of continuous variables was assessed through visual inspection of histograms, with skewness and kurtosis values below 2, which were considered compatible with approximate normality in samples exceeding 100 observations, according to established recommendations.

For the bivariate analysis of continuous outcomes, the Student's t-test was used to compare means between two groups, while one-way analysis of variance (ANOVA) was applied for comparisons across three or more groups, after verification of the homogeneity of variances using Levene's test. When the homogeneity assumption was violated, the Welch-corrected t-test and the Kruskal–Wallis test were used as appropriate. Following statistically significant ANOVA or Kruskal–Wallis results, post hoc pairwise comparisons with Bonferroni correction were performed. Associations between continuous variables were assessed using Pearson's or Spearman's correlation coefficients, depending on data distribution. For categorical variables, the Chi-square test was used, while Fisher's exact test was applied when expected cell counts were below 5. In all analyses, a two-sided p-value < 0.05 was considered statistically significant.

For ABDDQ score, a multivariable generalized linear model with a gamma distribution and log link was conducted among participants with appearance concerns who completed the ABDDQ. Results were expressed as beta coefficients (β), 95% confidence intervals (95% CI), and p-values. For the ordered three-category appearance-concern/BDD outcome, multivariable proportional-odds ordinal logistic regression with a cumulative-logit link was performed. Independent variables entered into multivariable models included those associated with the outcome at $p < 0.20$ in bivariate analyses, in addition to variables considered of clinical or theoretical relevance, while respecting the maximum number of predictors permitted by the sample size. Sociodemographic and other relevant covariates were introduced as appropriate.

Results:

Demographic Characteristics

The study sample consisted of 669 participants, most of whom were female (82.7%) and Lebanese (95.8%). The basic demographic characteristics of the study population are summarized in Table 1. Based on the ABDDQ, 44 patients out of 669 (6.6%) screened positive for BDD. Participants with BDD were significantly younger ($p < .001$), with a mean age of 28.27 ± 10.98 years (BDD negative mean= 36.98 ± 12.24 years). Marital status was also found to be significant with 72.7% of the BDD cases being single, compared to 42.7% of the unaffected participants ($p < .001$). Students comprised 43.2% of the BDD group, compared to 10.7% in the negative group ($p < .001$). A reported history of psychiatric illness was twice as common in BDD patients (22.7% vs 10.2%, $p = .021$). No significant difference was found in chronic illnesses ($p > .05$).

Table 1 - Study Population Demographics association with BDD diagnosis

Variable	**Total (N=669)**	**BDD Negative (n=625)**	**BDD Positive (n=44)**	**P-value**
Nationality				.420†
Lebanese	641 (95.8%)	600 (96.0%)	41 (93.2%)	
Other	28 (4.2%)	25 (4.0%)	3 (6.8%)	
Gender				.264†
Female	553 (82.7%)	513 (82.1%)	40 (90.9%)	
Male	115 (17.2%)	111 (17.8%)	4 (9.1%)	

Variable	Total (N=669)	BDD Negative (n=625)	BDD Positive (n=44)	P-value
Prefer not to say	1 (0.1%)	1 (0.2%)	0 (0.0%)	
Marital Status				<.001
Single	299 (44.7%)	267 (42.7%)	32 (72.7%)	
Married	338 (50.5%)	329 (52.6%)	9 (20.5%)	
Other (Divorced/Widowed)	32 (4.8%)	29 (4.6%)	3 (6.8%)	
Education Level				.855†
Intermediate or below	46 (6.9%)	44 (7.0%)	2 (4.5%)	
High school	77 (11.5%)	71 (11.4%)	6 (13.6%)	
Technical school	42 (6.3%)	40 (6.4%)	2 (4.5%)	
University degree	333 (49.8%)	308 (49.3%)	25 (56.8%)	
Graduate studies	171 (25.6%)	162 (25.9%)	9 (20.5%)	
Employment Status				<.001
Student	86 (12.9%)	67 (10.7%)	19 (43.2%)	

Variable	Total (N=669)	BDD Negative (n=625)	BDD Positive (n=44)	P-value
Employed (Full Time)	264 (39.5%)	247 (39.5%)	17 (38.6%)	
Employed (Part Time)	46 (6.9%)	45 (7.2%)	1 (2.3%)	
Self-employed	118 (17.6%)	116 (18.6%)	2 (4.5%)	
Unemployed (Economic)	69 (10.3%)	64 (10.2%)	5 (11.4%)	
Unemployed (Non-Econ)	69 (10.3%)	69 (11.0%)	0 (0.0%)	
Retired/Looking for job	17 (2.5%)	17 (2.7%)	0 (0.0%)	
History of Psychiatric Illness (Yes)	74 (11.1%)	64 (10.2%)	10 (22.7%)	.021†
Chronic Illness (Yes)	183 (27.4%)	173 (27.7%)	10 (22.7%)	.476
Medications (Yes)	243 (36.3%)	230 (36.8%)	13 (29.5%)	.333

Note: Data are presented as n (%). P-values were calculated using the Chi-square test, or Fisher's Exact Test (†) where expected cell counts were below 5.

Association with DASS-21 categories

The population-level score distribution for the DASS-21 severity categories, representing the total unstratified sample of 669 participants, is presented in Table 2.

Table 2. Population-Level Score Distribution for DASS-21 Severity Categories

Severity Level	Depression (n)	Anxiety (n)	Stress (n)
Normal	429 (64.1%)	346 (51.7%)	401 (59.9%)
Mild	77 (11.5%)	80 (12.0%)	83 (12.4%)
Moderate	99 (14.8%)	116 (17.3%)	92 (13.8%)
Severe	37 (5.5%)	47 (7.0%)	75 (11.2%)
Extremely Severe	27 (4.0%)	80 (12.0%)	18 (2.7%)

Note: total n=669

Participants were subsequently categorized based on a positive BDD screening diagnosis. The descriptive statistics for the doubled DASS-21 continuous scores, the SMUS subscales, and the ABDDQ sum scores across these two groups are detailed in Table 3.

304 Table 3. Descriptive Statistics for DASS-21, SMUS Subscales, and ABDDQ by
305 BDD Diagnosis

Variable	BDD Negative (n=625)	BDD Positive (n=44)	P-value
DASS Anxiety	8.25 ± 7.71	15.00 ± 8.79	<.001
DASS Depression	7.84 ± 8.21	17.00 ± 9.24	<.001
DASS Stress	13.35 ± 9.14	20.45 ± 9.33	<.001
SMUS Image Based	1.85 ± 0.84	2.47 ± 1.10	<.001
SMUS Comparison Based	2.22 ± 1.16	3.30 ± 1.43	<.001
SMUS Belief Based	2.53 ± 1.39	3.76 ± 1.74	<.001
SMUS Consumption Based	2.54 ± 1.26	3.01 ± 1.23	.002

ABDDQ Total Score (n=245)	14.90 ± 5.83*	24.48 ± 5.37	<.001

*Note: The sample size for the ABDDQ total score in the BDD Negative group is restricted to 245. Participants who reported no appearance concerns on the initial question bypassed the subsequent items and did not generate a total score.

Appearance-Concern Gradient

The four subscales of the SMUS were then analyzed individually. Comparison-based, image-based, and belief-based scores increased across the three groups, whereas consumption-based scores were similar in the first two groups and higher in the BDD group. Image-based usage rose steadily across the cohorts (1.78 ± 0.84 vs. 1.95 ± 0.85 vs. 2.47 ± 1.10, $p < .001$). Comparison-based usage followed a similar pattern (2.02 ± 1.09 vs. 2.53 ± 1.21 vs. 3.30 ± 1.43, $p < .001$). Belief-based usage also showed a sharp rise across the groups (2.17 ± 1.26 vs. 3.09 ± 1.40 vs. 3.76 ± 1.74, $p < .001$). Consumption-based usage remained stable between the first two groups but increased in the diagnosed group (2.54 ± 1.34 vs. 2.54 ± 1.13 vs. 3.01 ± 1.23, $p = .003$).

A three-group analysis was carried out to assess differences across the appearance-concern gradient. Going from group 1 to group 3, the mean age dropped progressively ($p < .001$). Conversely, clinical distress progressively increased, with mean scores for anxiety (7.33 ± 7.10 vs. 9.67 ± 8.41 vs. 15.00 ± 8.79, $p < .001$), depression (6.66 ± 7.81 vs. 9.67 ± 8.48 vs. 17.00 ± 9.24, $p < .001$), and stress (12.01 ± 9.09 vs. 15.43 ± 8.85 vs. 20.45 ± 9.33, $p < .001$) reaching their highest points in the diagnosed group. These differences are summarized in Table 4, and the corresponding mean DASS-21 scores are shown in Figure 1.

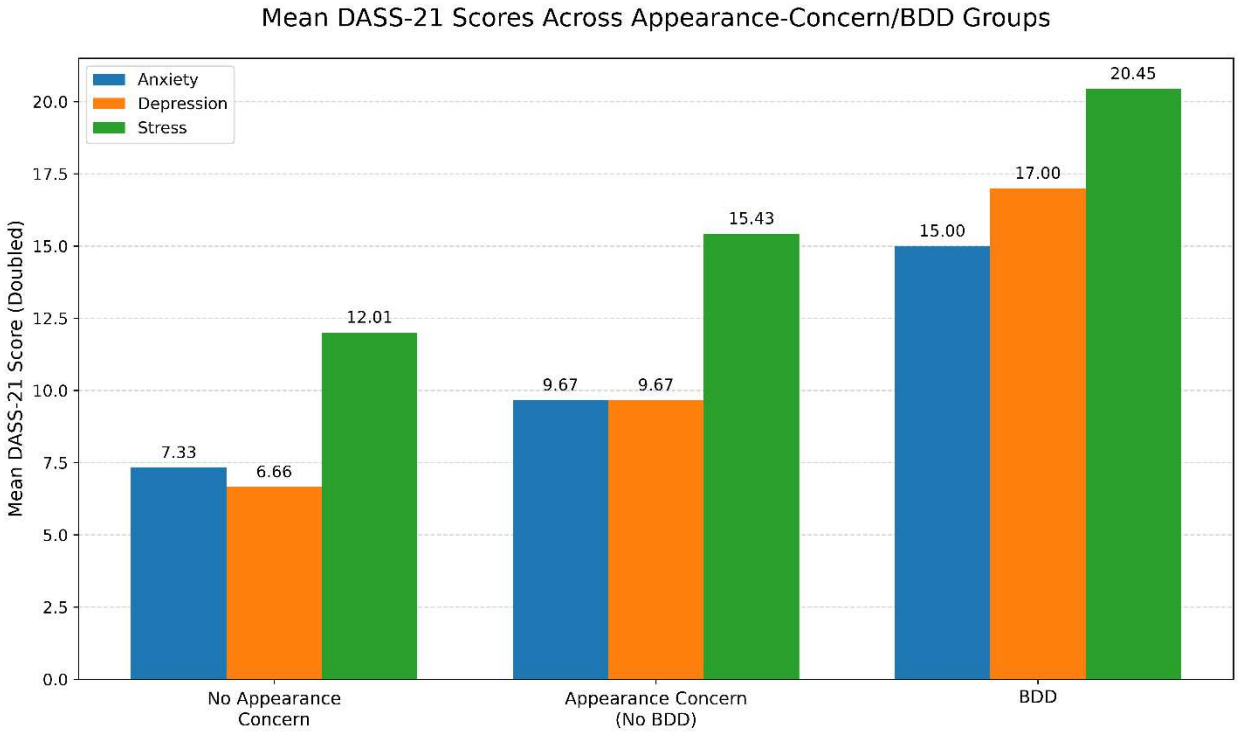
325 Table 4. Differences Across Appearance-Concern Groups

326

Variable	No appearance concern (n=380)	Appearance concern but No BDD (n=245)	Positive BDD diagnosis (n=44)	P-value
Age (Mean)	39.37 ± 12.15	33.27 ± 11.44	28.27 ± 10.98	<.001
DASS Anxiety	7.33 ± 7.10	9.67 ± 8.41	15.00 ± 8.79	<.001
DASS Depression	6.66 ± 7.81	9.67 ± 8.48	17.00 ± 9.24	<.001
DASS Stress	12.01 ± 9.09	15.43 ± 8.85	20.45 ± 9.33	<.001
SMUS Comparison Based	2.02 ± 1.09	2.53 ± 1.21	3.30 ± 1.43	<.001
SMUS Image Based	1.78 ± 0.84	1.95 ± 0.85	2.47 ± 1.10	<.001

SMUS Belief Based	2.17 ± 1.26	3.09 ± 1.40	3.76 ± 1.74	<.001
SMUS Consumption Based	2.54 ± 1.34	2.54 ± 1.13	3.01 ± 1.23	.003

Figure 1. Mean DASS-21 Scores Across Appearance-Concern and BDD-Screening Groups



Mean Depression Anxiety Stress Scale-21 (DASS-21) anxiety, depression, and stress scores across three groups: participants without appearance concerns (n = 380), participants with appearance concerns but a negative body dysmorphic disorder (BDD) screen (n = 245), and participants with a positive BDD screen (n = 44). Scores are presented using the doubled DASS-21 scoring convention. Values above the bars indicate group means.

Regression Analysis

A multivariable proportional-odds ordinal logistic regression model with a cumulative-logit link was used to examine factors associated with ordered appearance-concern/BDD status. The omnibus test indicated that the model significantly outperformed the threshold-only model ($p < .001$). Higher ordered appearance-concern/BDD status was independently associated with younger age ($p = .014$), female gender ($p = .001$), greater comparison-based social media use ($p = .010$), greater belief-based social media use ($p < .001$), and higher DASS depression scores ($p = .002$). The adjusted ordinal regression results are presented in Table 5.

Table 5. Multivariable Proportional-Odds Ordinal Logistic Regression of Appearance-Concern/BDD Status

Variable	B	Adjusted OR	95% CI	P-value
Age	-0.03	0.972	0.950–0.994	.014
Male gender*	-0.90	0.405	0.237–0.692	.001
SMUS comparison-based	0.25	1.282	1.062–1.548	.010
SMUS belief-based	0.34	1.408	1.208–1.645	<.001
DASS depression	0.05	1.048	1.017–1.080	.002

Note. The outcome was ordered from lower to higher appearance-concern/BDD status: no appearance concern, appearance concern without BDD, and BDD. Odds ratios are presented in the direction of increasing appearance-concern/BDD status. The original SPSS cumulative-logit model used the opposite cumulative direction; coefficients and odds ratios shown here are the mathematically equivalent inverse presentation of the same fitted model.

353 *Reference category: female.
354
355 A secondary generalized linear model (gamma distribution, log link) was conducted specifically
356 among individuals with appearance concerns to examine factors associated with ABDDQ score.
357 The model was statistically significant ($p < .001$). Factors independently associated with ABDDQ
358 score included employment status ($p = .005$), comparison-based social media use ($p < .001$), DASS
359 depression scores ($p < .001$), and DASS stress scores ($p = .013$); the adjusted stress coefficient was
360 negative. The adjusted ABDDQ-score model is presented in Table 6.

361 Table 6. Multivariable Generalized Linear Model of Factors Associated With
362 ABDDQ Score

Variable	Coeff. (B)	95% CI Lower	95% CI Upper	P-value
Comparison-Based SMUS	0.07	0.03	0.11	<.001
DASS Depression	0.02	0.01	0.03	<.001
DASS Anxiety	0.002	−0.004	0.008	.458
DASS Stress	−0.01	−0.01	0.00	.013

Unemployed, looking for job	-0.25	-0.48	-0.01	.042
Unemployed, not economic	-0.22	-0.39	-0.05	.010
Unemployed, economic	0.17	-0.03	0.37	.093
Self-employed	-0.14	-0.29	0.01	.069
Employed, part-time	-0.13	-0.30	0.04	.140
Employed, full-time	-0.08	-0.19	0.03	.141
Student	0.00	Ref.	Ref.	Ref.

Note. The model was a multivariable generalized linear model with gamma distribution and log link among participants with appearance concerns. The model simultaneously adjusted for age, nationality, gender, marital status, education, employment status, chronic illness, psychiatric history, medication use, all four SMUS subscales, and DASS anxiety, depression, and stress.

Discussion:

Our study identified several demographic, psychological, and social media variables that were independently associated with ordered appearance-concern/BDD status and ABDDQ score. At the demographic level, in our sample, individuals with BDD differed significantly from the rest across several variables. BDD-positive participants were younger, single, and students, consistent with previous literature showing that adolescence and early adulthood are periods of heightened vulnerability to appearance-related psychopathology [22]. In addition to being highly sensitive to peer evaluation and relying on external validation, people in this age group are also highly engaged with social media, so developmental vulnerability may coincide with greater digital exposure [23]. Besides, the higher prevalence of females compared to males in our sample is consistent with studies suggesting that healthcare in Dermatology clinics is mostly sought by females [24], while prior literature has suggested that men with body image pathology often seek treatment through alternative pathways such as fitness environments, hair restoration clinics, or plastic surgery rather than dermatology practices [25,26].

Notably, the pattern of findings suggests that associations with BDD differ across dimensions of social media use, with stronger associations observed for some dimensions than for consumption-based use. Specifically, the pattern of associations suggests that different dimensions of social media engagement may relate differently to appearance concerns and BDD-related outcomes, with stronger associations observed for comparison-based and belief-based use than for consumption-based use. These findings support contemporary cognitive-behavioral models of BDD, which consider that the disorder is not simply driven by environmental exposure alone but is a function of maladaptive appearance beliefs, attentional distortions, and repetitive comparison processes

[27]. The differing associations observed across SMUS subscales are broadly consistent with this distinction.

A clear gradient was observed across the appearance-concern groups for depression, anxiety, stress, and several SMUS dimensions, particularly comparison-based and belief-based use; consumption-based use did not show the same progressive pattern. An intermediary group including people with appearance concerns but not fitting the strict diagnosis of BDD was identified across this gradient. This pattern was particularly maintained for comparison-based and belief-based SMUS subscales. The subthreshold group demonstrated elevated belief-based scores intermediate between participants without appearance concerns and those with BDD. This cross-sectional pattern is consistent with a dimensional relationship between appearance-concern status, psychological distress, and dimensions of social media engagement.

Anxiety, depression, and stress all increased progressively across the three groups, with anxiety showing one of the sharpest gradients. These findings should not be interpreted simply as evidence that BDD causes depression or anxiety. Rather, they suggest that greater psychological distress is associated with increasing appearance-concern severity across the three groups. The particularly strong elevations in anxiety may reflect the role of fear of scrutiny, negative evaluation, and appearance-related shame in dysmorphic symptomatology. This aligns with the cognitive models of BDD which emphasize hypervigilance and exaggerated salience attribution toward perceived defects, mechanisms that are likely linked to anxiety [28]. Likewise, depression was independently associated with higher ordered appearance-concern/BDD status and with ABDDQ score in the adjusted models. The increase in depressive symptoms across the appearance-concern gradient suggests that depression is closely associated with greater appearance-concern severity and may reflect broader processes involving rumination, self-worth, and chronic dissatisfaction.

These findings are highly relevant clinically because they suggest that focusing only on patients meeting full BDD criteria may overlook a large group of individuals who warrant continued attention to psychological distress. Clinically, the intermediate group identified in our data may warrant particular attention because these individuals already demonstrate elevated psychological distress and maladaptive comparison behaviors without qualifying for BDD. Interventions addressing media literacy, social comparison, and appearance-related beliefs may be relevant for this group, although their effectiveness would need to be evaluated prospectively.

Belief-based SMUS was independently associated with higher ordered appearance-concern/BDD status, suggesting that this dimension of social media engagement may be relevant across the appearance-concern spectrum. This dimension may reflect a broader cognitive-affective style of engaging with social media content, although the specific mechanisms underlying its association with BDD remain unclear. Belief-based scores in the intermediate group fell between those of participants without appearance concerns and those with BDD, suggesting that this dimension of social media engagement is associated with appearance concerns even among participants who did not meet criteria for BDD.

Comparison-based SMUS showed a strong independent association with ABDDQ score in the adjusted regression analysis. This pattern suggests that belief-based and comparison-based social media engagement may relate differently to appearance-concern status and ABDDQ scores. Social comparison theory provides an explanatory framework for this pattern [16]. Social media platforms continuously expose users to idealized appearance standards with repeated upward comparison. For individuals with BDD, self-perception is already distorted; therefore, these comparisons may become especially damaging, reinforcing pre-existing beliefs regarding defectiveness or unattractiveness. This interpretation is consistent with DSM-5 descriptions of

poor insight in BDD, where individuals hold distorted appearance beliefs with varying degrees of conviction despite contradictory evidence [1]. Indeed, this finding is consistent with the findings from a previous study of Lebanese dermatology patients where nearly half of the patients diagnosed with BDD (47.2%, $n = 17$) fell into the poor insight category (scores 13–17), followed by 33.3% ($n = 12$) with fair insight (scores 8–12), and 13.9% ($n = 5$) had absent insight or delusional beliefs (scores ≥ 18) [12].

While image-based SMUS demonstrated comparatively weaker associations with both diagnosis and ABDDQ score, it increased across the appearance concern gradient and was particularly elevated among participants with appearance concerns, though with a narrower gradient compared with comparison-based and belief-based SMUS. Image-focused engagement may relate to appearance concerns through body surveillance, photo editing, and appearance validation, although these mechanisms were not directly assessed here. Prior studies have demonstrated that individuals with BDD symptoms engage in more selfie-taking, mirror checking, and appearance-focused posting behaviors than people with no BDD [13]. However, image-based SMUS did not remain independently associated with higher ordered appearance-concern/BDD status in the multivariable analysis, suggesting that its association may be weaker after accounting for other measured factors.

Consumption-based use showed weaker adjusted associations than comparison-based use. Although consumption-based scores differed across some unadjusted comparisons, consumption-based use did not remain independently associated with the outcomes in the primary adjusted analyses. These findings suggest that different dimensions of social media use may have distinct associations with appearance concerns and BDD.

Although conducted in Lebanese dermatology clinics, this study highlights the potential relevance of psychological distress and social media use to body image concerns in clinical dermatology. Our findings underscore the importance of recognizing symptoms of body dysmorphic disorder in patients presenting with appearance-related concerns and considering appropriate psychological assessment and referral. Further research across different clinical and cultural settings is needed to establish the generalizability of these associations.

Several limitations to our study exist. First, the cross-sectional design hinders the ability to establish the direction of causality. Whether maladaptive social media usage contributes to BDD development or arises because of pre-existing dysmorphic symptoms remains elusive. Second, the sample consists primarily of females, limiting generalizability to males who often seek plastic surgery clinics and gym training instead of dermatology clinics to address their appearance-related concerns. Third, the study did not assess which social media platforms were used, as these may differ considerably in visual intensity, editing, and algorithms associated with appearance-related content. Moreover, the self-reported answers may induce an information bias, mainly due to recall or social desirability issues, which is expected to drive some results towards the null hypothesis. Internal consistency of the SMUS subscales varied in this sample, with comparison-based use demonstrating lower internal consistency (Cronbach's $\alpha = .425$). Findings involving this subscale should therefore be interpreted with appropriate caution. Furthermore, residual confounding due to additional unmeasured confounders, such as related family support and childhood experiences, might also affect the study results. Future research should use longitudinal and platform-specific designs to clarify the temporal relationships between patterns of social media engagement, appearance concerns, and BDD.

Conclusions:

This study identified significant associations between appearance-concern/BDD status, psychological distress, and dimensions of social media use among dermatology patients. Anxiety, depression, stress, and several SMUS dimensions increased across the appearance-concern groups, a pattern consistent with a dimensional relationship rather than a purely categorical distinction. Comparison-based engagement was independently associated with both higher ordered appearance-concern/BDD status and ABDDQ score, whereas belief-based engagement was independently associated with higher ordered status but not ABDDQ score. These findings suggest that different dimensions of social media engagement may have distinct associations with appearance concerns and BDD.

Because many patients initially seek dermatologic treatment rather than psychiatric care, dermatologists are uniquely positioned to identify dysmorphic symptoms early and facilitate appropriate referral and multidisciplinary management through early screening. Future longitudinal studies are needed to clarify the temporal and potentially causal relationships between specific patterns of social media engagement, appearance concerns, and BDD.

List of Abbreviations

ABDDQ: Arabic Body Dysmorphic Disorder Questionnaire

ANOVA: Analysis of variance

BDD: Body dysmorphic disorder

CI: Confidence interval

DASS-21: Depression Anxiety Stress Scale-21

GLM: Generalized linear model

IRB: Institutional review board

OR: Odds ratio

SD: Standard deviation

SMUS: Social Media Use Scale

Declarations

Ethics approval and consent to participate

This study was reviewed and approved by the Lebanese American University (LAU) Institutional Review Board (approval reference LAU.SOM.JO1.6/Jul/2023) and the American University of Beirut (AUB) Institutional Review Board (approval reference SBS-2024-0215). The study was conducted in accordance with the principles of the Declaration of Helsinki. All participants provided written informed consent prior to completing the study questionnaire.

Consent for publication

Not applicable. The manuscript does not contain identifiable individual participant information.

Availability of data and materials

The datasets generated and/or analysed during the current study are available from the corresponding author on reasonable request.

Competing interests

The authors declare that they have no competing interests.

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