

Body-Image Shame and Body-Image Disturbance in Relation to Probable Body Dysmorphic Disorder among Adult Dermatology Outpatients in Kano, Nigeria: A Cross-Sectional Study

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Abstract

Background: Body dysmorphic disorder (BDD) is a debilitating psychiatric condition characterised by excessive preoccupation with perceived appearance defects, often presenting in dermatology settings. Body-image shame and body-image disturbance are hypothesised to contribute significantly, yet their associations remain underexplored in African contexts, including Nigeria.

Objective: The study determined the prevalence of probable BDD and examined the associations of body-image shame and image disturbance with probable BDD among patients attending a dermatology clinic in Kano, Nigeria.

Methods: A cross-sectional study was conducted with 375 participants (response rate 93.75%) recruited via systematic random sampling from the Dermatology Outpatient Clinic at Aminu Kano Teaching Hospital. Data were collected with a sociodemographic and clinical questionnaire, the 14-item Body Image Shame Scale (BISS), the 10-item Body Image Scale (BIS), and the 4-item Body Dysmorphic Disorder Questionnaire (BDDQ). Analyses included descriptive statistics, independent-samples t-tests, Mann-Whitney U tests, and binary logistic regression of BISS and BIS scores (SPSS v25; $p < 0.05$). Multi-variable models were restricted by the small number of screen-positive cases.

Results: The prevalence of probable BDD was 8.3% (31/375). Mean (SD) BISS and BIS scores were 28.46 (13.05) and 13.08 (5.62), respectively. Scores were higher among screen-positive than screen-negative participants for both shame

(37.77 [11.32] vs 27.62 [12.89]; $p < 0.001$) and disturbance (17.23 [6.42] vs 12.70 [5.40]; $p = 0.001$). In univariable logistic regression, each 1-point increase in BISS (OR 1.07, 95% CI 1.03 - 1.10) and BIS (OR 1.15, 95% CI 1.08 - 1.24) was associated with probable BDD. After mutual adjustment and further adjustment for age and sex, both associations remained (BISS aOR 1.04, 95% CI 1.00 - 1.08; BIS aOR 1.09, 95% CI 1.00 - 1.19). **Conclusion:** Probable BDD was identified by screening in 8.3% of adult dermatology outpatients. Higher body-image shame and body-image disturbance scores were associated with screen-positive status in unadjusted and limited adjusted analyses. These findings support attention to body-image concerns in dermatological care. Diagnostic, longitudinal, and culturally validated studies are needed.

Keywords

Body Dysmorphic Disorder, BDDQ, Body-Image Shame, Body-Image Disturbance, Dermatology, Nigeria, Prevalence

1. Introduction

The skin plays a central role in psychological well-being through its involvement in self-image, emotional expression, and social interaction. Its close relationship with the brain, arising from their shared ectodermal origin and interaction via the neuro-immuno-cutaneous system, provides a biological basis for the frequent co-occurrence of dermatological and psychiatric disorders [1] [2]. Patients with visible skin conditions are therefore particularly vulnerable to appearance-related psychological distress.

Shame has long been considered a core affective feature of body dysmorphic disorder (BDD), which was historically described as an “obsession with shame of the body” [3]. Body perception reflects how individuals cognitively and emotionally evaluate their appearance and may be distorted by sociocultural pressures and illness-related changes. Negative body perception is central to the development and persistence of BDD [4].

Body dysmorphic disorder is characterised by excessive preoccupation with perceived appearance defects, accompanied by distress, functional impairment, and fear of negative evaluation [5]. Individuals with BDD frequently seek care in dermatology settings rather than psychiatric services, leading to under recognition and delayed treatment [6] [7]. BDD is associated with poor quality of life, functional impairment, and increased suicidal risk [5].

Although body-image disturbance is well established in BDD, empirical evidence on the role of body-image shame remains limited, particularly in African populations [3]. These relationships have been well investigated in Western populations; evidence from African countries remains limited. In Nigeria, data on the prevalence of BDD and its relationship with body-image shame and body image disturbance among dermatology patients are scarce, especially in northern re-

gions.

This study aimed to determine the prevalence of probable BDD, as well as the associations between body-image shame, body-image disturbance, and BDD among patients attending a dermatology clinic in Kano, Nigeria. This understanding may facilitate earlier identification of at-risk patients and promote integrated dermatological and psychiatric care.

2. Methods

2.1. Study Design and Setting

This was a hospital-based cross-sectional study design conducted at the Dermatology Outpatient Clinic of Aminu Kano Teaching Hospital (AKTH), Kano, Nigeria, one of the tertiary referrals centre serving northern Nigeria. Data were collected over three months, from June to August 2025, during routine clinic days.

2.2. Participants and Sampling

Adult patients (≥ 18 years) with dermatologist-diagnosed skin conditions who provided informed consent were eligible. Patients with severe cognitive impairment, acute medical illness, unstable psychiatric conditions, or inability to complete the questionnaire were excluded.

The minimum sample size ($n = 354$) was calculated using a prevalence of 36.0% from a previous Nigerian study [8], with a 95% confidence level and 5% precision, and adjusted for 10% non-response to 400. Systematic random sampling was employed, with every fourth eligible patient recruited until the sample size was achieved.

2.3. Data Collection and Instruments

Data were collected with a semi-structured, self-administered questionnaire, which was translated in a reiterative system into Hausa language. The predominant language in north western Nigeria. The questionnaire captured sociodemographic characteristics and clinical information, including dermatological diagnosis, body sites affected, duration of illness, and treatment received.

Body-image shame was assessed with the 14-item Body Image Shame Scale (BISS) [9]. The BISS measures shame related to physical appearance and comprises externalized and internalized dimensions. Items are summed to yield a total score ranging from 0 to 56, with higher scores indicating greater body-image shame. The scale has shown good psychometric properties in women and men [9] [10].

Body-image disturbance was assessed with the 10-item Body Image Scale (BIS) developed by Hopwood and colleagues [11]. The BIS was originally developed for patients with cancer to capture appearance-related distress, perceived loss of attractiveness, self-consciousness, and avoidance. Items are rated on a 4-point scale from 0 (not at all) to 3 (very much), giving a total score of 0 - 30; higher scores indicate greater body-image disturbance. Although first validated in oncology, the BIS assesses constructs that are also relevant to other medical conditions that alter appearance or bodily integrity and has subsequently been applied in non-cancer

clinical populations with visible or body-altering disease [12]. On this basis it was considered suitable for use among dermatology outpatients in the present study. In previous validation studies, both scales have shown high internal consistency (BISS, Cronbach's $\alpha \approx 0.90 - 0.96$; BIS, Cronbach's $\alpha = 0.93$) [9] [11]. In the present sample, internal consistency was $\alpha = 0.87$ for the BISS and $\alpha = 0.73$ for the BIS.

Probable BDD was screened with the 4-item Body Dysmorphic Disorder Questionnaire (BDDQ), a brief self-report instrument previously validated in clinical samples, including psychiatric populations [13]. The BDDQ assesses preoccupation with perceived appearance flaws and is intended to identify individuals who may meet criteria for BDD [14] [15]. Because it is short and self-administered, it can be used as a screening measure in dermatology and other routine clinical settings.

The questionnaire opens with two items on appearance concern and preoccupation (BDDQ1). Respondents who answer "No" to either item do not complete the remaining questions. Those who answer "Yes" to both continue to items on concern that the perceived defect is solely related to weight or fatness (BDDQ2), emotional distress, impairment in social activities or relationships, occupational or academic impairment, avoidance (BDDQ3), and time spent thinking about appearance (BDDQ4: <1 hour, 1 - 3 hours, or >3 hours per day). A positive screen for probable BDD required all of the following: "Yes" to both parts of BDDQ1; "Yes" to at least one of the four impairment items (BDDQ3); and at least one hour per day spent thinking about appearance (BDDQ4).

2.4. Data Analysis

Data were analysed using IBM SPSS Statistics version 25. Descriptive statistics were used to summarise participant characteristics and scale scores. Mean BISS and BIS scores were compared between participants with and without probable BDD using independent-samples t-tests. Where Levene's test indicated unequal variances, the Welch t-test was reported. Although Shapiro-Wilk tests indicated some departure from normality, skewness was modest and mean and median values were similar; given the sample size, the sampling distribution of the mean was considered approximately normal by the central limit theorem. Mann-Whitney U tests were used as a sensitivity analysis.

Univariable and multivariable binary logistic regression models were used to examine associations of body-image shame and body-image disturbance, entered as continuous scores, with probable BDD. All models used the Enter method. Because only 31 participants screened positive, covariate adjustment followed the conventional criterion of at least 10 events per variable. The primary multivariable model therefore included BISS score, BIS score, age, and sex. A fully adjusted model including educational level, socioeconomic status, dermatologic diagnosis, disease duration, and lesion location was not used as the main analysis, as this would have exceeded the events-per-variable limit and risked unstable estimates.

All tests were two-tailed, and statistical significance was set at $p < 0.05$. Multi-variable estimates should be interpreted with caution because of the small number of screen-positive cases.

2.5. Ethical Considerations

Ethical approval was obtained from the Research Ethics Committee of Aminu Kano Teaching Hospital (reference number: AKTH/MAC/SUB/12A/P-3/VI/3979). The study was conducted in accordance with the Declaration of Helsinki. Written informed consent was obtained from all participants. Participants were informed that they could withdraw at any time without penalty. Any participant identified as needing additional mental-health assessment was referred to the psychiatry department of the hospital for further evaluation. Confidentiality and anonymity were maintained throughout the study.

3. Results and Discussions

3.1. Results

All statistical analyses were conducted using IBM SPSS Statistics version 25. A total of 375 participants completed the study questionnaires, yielding a response rate of 93.75% from 400 approached patients attending the dermatology clinic in Kano, Nigeria.

3.1.1. Sociodemographic and Clinical Characteristics

The mean age of the participants was 35.39 years (SD = 12.61, range = 18 - 61). The majority were female ($n = 255$, 68.0%), while 32.0% ($n = 120$) were male. In terms of marital status, 44.8% ($n = 168$) were single, 39.5% ($n = 148$) were married, 8.8% ($n = 33$) were separated or divorced, and 6.9% ($n = 26$) were widowed. A total of 61.6% ($n = 231$) had ≤ 12 years of education, while 38.4% ($n = 144$) had > 12 years. Regarding employment, 44.8% ($n = 168$) were unemployed, 29.6% ($n = 111$) were students, and 25.6% ($n = 96$) were employed (self-employed, part-time, or full-time). Monthly income was $\leq$ the national minimum wage for 72.8% ($n = 273$) and $>$ the national minimum wage for 27.2% ($n = 102$). Summarised in **Table 1**.

Table 1. Sociodemographic characteristics of the respondents (N = 375).

Variable	Category	Frequency n (%)
Age M (SD) 35.39 (12.61)	Young Adults	150 (40.0)
	Early Middle Age	120 (32.0)
	Late Middle Age	96 (25.6)
	Older Adults	9 (2.4)
Sex	Male	120 (32.0)
	Female	255 (68.0)

Continued

Marital Status	Single	168 (44.8)
	Married	148 (39.5)
	Separated/Divorced	33 (8.8)
	Widowed	26 (6.9)
Years of Education	≤12	231 (61.6)
	>12	144 (38.4)
Employment Status	Student	111 (29.6)
	Unemployed	168 (44.8)
	Employed (Self/Part-time/Full-time)	96 (25.6)
Monthly Income	≤National MW	273 (72.8)
	>National MW	102 (27.2)

M= Mean; SD= Standard Deviation; MW= Minimum Wage.

The clinical characteristics of the respondents were summarised in **Table 2** below.

Dermatological diagnoses were retrievable for 363 respondents, with missing documentation in 12 cases. The most frequent dermatological diagnoses were dermatitis (33.3%, $n = 120$) and infectious skin illnesses (28.9%, $n = 105$), followed by pre-neoplastic/neoplastic illnesses (15.4%, $n = 56$), others (11.1%, $n = 40$), acneiform disorders (7.2%, $n = 26$), and keratinic diseases (4.3%, $n = 16$). Body parts affected were widespread in 36.8% ($n = 138$), face/head/neck in 30.4% ($n = 114$), unspecified/combination in 10.4% ($n = 39$), trunk in 6.7% ($n = 25$), upper limb in 6.1% ($n = 23$), lower limb in 5.3% ($n = 20$), and other specified parts in 4.3% ($n = 16$). Duration of diagnosis was ≤1 month for 37.6% ($n = 141$), >1 month to <1 year for 34.9% ($n = 131$), and >1 year for 27.5% ($n = 103$). Treatment modalities included topical medications (85.6%, $n = 321$), oral medications (88.8%, $n = 333$), combination therapy (86.4%, $n = 324$), and others (e.g., surgery, light therapy; 5.6%, $n = 21$).

Table 2. Clinical characteristics of respondents (N = 375).

Variable	Category	Frequency n (%)
Dermatological Diagnoses (n = 363)	Dermatitis	120 (33.1)
	Infectious Skin Illnesses	105 (28.9)
	Acneiform disorders	26 (7.2)
	Keratinic disorders	16 (4.4)
	Pre-neoplastic/Neoplastic	56 (15.4)
	Others	40 (11.0)

Continued

Body Parts Affected	Widespread	138 (36.8)
	Face/Head/Neck	114 (30.4)
	Trunk	25 (6.7)
	Upper Limb	23 (6.1)
	Lower Limb	20 (5.3)
	Unspecified/Combination	39 (10.4)
	Other Specified Parts	16 (4.3)
Duration of Diagnosis	≤1 month	141 (37.6)
	>1 month to <1 year	131 (34.9)
	>1 year	103 (27.5)
Treatment Received* (n = 375)	Topical	321 (85.6)
	Oral Medications	333 (88.8)
	Combination Therapy	324 (86.4)
	Others (e.g., Surgery, Light therapy)	21 (5.6)

*= Multiple response.

3.1.2. Prevalence of Probable Body Dysmorphic Disorder

The prevalence of probable body dysmorphic disorder is presented in **Table 3**. Probable BDD, defined as a positive BDDQ screen, was identified in 8.3% (31/375) of participants. A positive screen required “Yes” responses to both appearance concern and preoccupation, “Yes” to at least one distress or impairment item, and at least one hour per day spent thinking about appearance.

Table 3. Prevalence of probable body dysmorphic disorder among respondents (N = 375).

Body Dysmorphic Disorder	Frequency (n)	Percentage (%)
No	344	91.7
Yes	31	8.3

3.1.3. Levels of Body-Image Shame and Body-Image Disturbance

The mean (SD) Body Image Shame Scale (BISS) score was 28.46 (13.05) (possible range 0 - 56; observed range 0 - 56). The mean (SD) Body Image Scale (BIS) score was 13.08 (5.62) (possible range 0 - 30; observed range 1 - 28). Continuous BISS and BIS scores were used in the association and regression analyses.

For descriptive purposes only, BISS and BIS scores were grouped into tertiles (lower, middle, and upper thirds). On this basis, body-image shame was classified as low in 25.9% (n = 97), moderate in 46.9% (n = 176), and high in 27.2% (n = 102). Body-image disturbance was classified as minimal/none in 33.9% (n = 127), moderate in 47.2% (n = 177), and severe in 18.9% (n = 71) (**Table 4**).

Table 4. Levels of body-image shame and body-image disturbance among the respondents (N = 375).

Variable	Category	Frequency (n)	Percentage (%)
Body-Image Shame Levels	Low shame	97	25.9
	Moderate shame	176	46.9
	High shame	102	27.2
Body Image Disturbance Levels	Minimal/No disturbance	127	33.9
	Moderate disturbance	177	47.2
	Severe disturbance	71	18.9

Note: BISS score range, 0 - 56; higher scores indicate greater body-image shame. BIS score range, 0 - 30; higher scores indicate greater body-image disturbance. Categories are based on tertiles of the observed scores and are presented for description only.

3.1.4. Association of Body Image-Related Shame and Body-Image Disturbance with Probable BDD

Participants who screened positive for probable BDD had higher body-image shame scores than those who screened negative (mean [SD], 37.77 [11.32] vs 27.62 [12.89]). The mean difference was 10.15 points (95% CI 5.45 - 14.86), corresponding to a large effect (Cohen's $d = 0.80$; $t(373) = -4.24$, $p < 0.001$). A Mann-Whitney U test, used as a sensitivity analysis, produced the same conclusion ($U = 3009.00$, $Z = -4.02$, $p < 0.001$).

Body-image disturbance scores showed a similar pattern. Mean BIS scores were higher in the screen-positive group than in the screen-negative group (17.23 [6.42] vs 12.70 [5.40]), with a mean difference of 4.52 points (95% CI 2.11 - 6.94) and a large effect size (Cohen's $d = 0.83$). Because Levene's test indicated unequal variances, Welch's t-test was reported ($t(33.93) = -3.80$, $p = 0.001$). The Mann-Whitney U test again confirmed the difference ($U = 3215.50$, $Z = -3.67$, $p < 0.001$).

Taken together, both body-image shame and body-image disturbance were significantly higher among participants with a positive BDD screen. Details of the comparisons of BISS and BIS scores by probable-BDD status are presented in **Table 5**.

Table 5. Comparison of body-image shame and body-image disturbance scores by probable BDD status (N = 375).

Variable	Probable BDD		Mean difference (95% CI)	Test statistic	p-value	Effect size
Variable	No (n = 344) Mean (SD)	Yes (n = 31) Mean (SD)		t-test/Welch's		
BISS Score	27.62(12.89)	37.77(11.32)	10.15 (5.45 - 14.86)	$t(373) = -4.24$	<0.001	0.80
BIS Score	12.70 (5.40)	17.23 (6.42)	4.52 (2.11 - 6.94)	$t(33.93) = -3.80^*$	0.001	0.83

Note: * = Welch's t-test; BISS = Body Image Shame Scale (range 0 - 56); BIS = Body Image Scale (range 0 - 30). Higher scores indicate greater shame or disturbance. For BISS, equal variances were assumed (Levene's $p = 0.526$). For BIS, equal variances were not assumed (Levene's $p = 0.022$). Mann-Whitney U tests were consistent with the t-tests for BISS ($U = 3009.00$, $Z = -4.02$, $p < 0.001$) and BIS ($U = 3215.50$, $Z = -3.67$, $p < 0.001$); $p < 0.05$ indicates statistical significance.

3.1.5. Univariable Logistic Regression: Associations of Body-Image Shame and Body-Image Disturbance with Probable BDD

Univariable associations of continuous BISS and BIS scores with probable BDD are presented in **Table 6**. Each unit increase in BISS score (body-image shame) was associated with higher odds of a positive BDD screen (OR 1.07, 95% CI 1.03 - 1.10, $p < 0.001$). Each unit increase in BIS score (body-image disturbance) was similarly associated (OR 1.15, 95% CI 1.08 - 1.24, $p < 0.001$).

Table 6. Univariable logistic regression of probable BDD on body-image shame and body-image disturbance (N = 375).

Variable	B	SE	Wald	OR	95% CI	p-value
Body-image shame (BISS), per 1-point increase	0.063	0.016	15.81	1.07	1.03 - 1.10	<0.001
Body-image disturbance (BIS), per 1-point increase	0.142	0.035	16.66	1.15	1.08 - 1.24	<0.001

Note: OR = odds ratio; CI = confidence interval; $p < 0.05$ indicates statistical significance. Each predictor was entered in a separate model.

3.1.6. Multivariable Logistic Regression of Body-Image Shame and Body-Image Disturbance with Probable BDD

Multivariable models are shown in **Table 7**. When BISS and BIS scores were entered together (Model 1), both remained independently associated with probable BDD (BISS: aOR 1.04, 95% CI 1.00 - 1.08, $p = 0.029$; BIS: aOR 1.10, 95% CI 1.01 - 1.19, $p = 0.023$). After further adjustment for age and sex (Model 2), these associations were essentially unchanged (BISS: aOR 1.04, 95% CI 1.00 - 1.08, $p = 0.030$; BIS: aOR 1.09, 95% CI 1.00 - 1.19, $p = 0.044$). Age and sex were not associated with probable BDD.

In an exploratory model that additionally included lesion location, the association with BISS persisted (aOR 1.04, 95% CI 1.00 - 1.08, $p = 0.034$), whereas the association with BIS was attenuated and no longer statistically significant (aOR 1.08, 95% CI 0.99 - 1.18, $p = 0.074$). Lesion location itself was not associated with probable BDD. However, this exploratory model was not retained as the primary analysis (**Table 7**) because it exceeded the events-per-variable limit.

Table 7. Multivariable logistic regression of body-image shame and body-image disturbance with probable BDD (N = 375).

Variable	Model 1 (BISS and BIS)			Model 2 (BISS, BIS, Age, and Sex)		
	aOR	95% CI	p-value	aOR	95% CI	p-value
BISS score, per 1-point increase	1.04	1.00 - 1.08	0.029	1.04	1.00 - 1.08	0.030
BIS score, per 1-point increase	1.10	1.01 - 1.19	0.023	1.09	1.00 - 1.19	0.044
Age, per year	—	—		1.01	0.98 - 1.04	0.717
Male vs female	—	—		0.79	0.30 - 2.03	0.617

Note: aOR = adjusted odds ratio; CI = confidence interval; $p < 0.05$ indicates statistical significance. Model 2 is the primary adjusted model.

3.2. Discussion

This cross-sectional study found that 8.3% of adult dermatology outpatients in Kano screened positive for probable body dysmorphic disorder (BDD). Body-image related shame and body-image disturbance scores were higher among screen-positive participants in bivariate analyses. In logistic regression, both continuous scores were associated with probable BDD in univariable models and after mutual adjustment. These associations remained after further adjustment for age and sex.

The observed probable prevalence of 8.3% falls within the range reported in dermatology settings globally (4.52% - 35.16%) [8]. It is also close to the rate obtained when full BDDQ screening criteria were applied in a recent Ethiopian dermatology study by Tilahun *et al.* In that study of 399 patients, 70 (17.5%) reported appearance concern and preoccupation on the first two BDDQ items, which the authors presented as the prevalence of BDD. However, only 40 of these 70 participants met the remaining BDDQ requirements for distress or impairment and time occupied by appearance concerns, giving a full-criteria positive-screen rate of 10.0% (40/399) [9]. That estimate is comparable to the 8.3% found in the present sample, which used the same instrument and a similar operational definition. By contrast, the current prevalence is lower than the 36.0% reported in an earlier Nigerian study of 114 dermatology patients in Ogbomoso [8]. Differences in assessment methods, instruments, sample composition, and local context may help explain this discrepancy. In the present study, the BDDQ was used as a brief screening questionnaire and was self-administered, with assistance when needed. The Ogbomoso study used a clinician-administered instrument, the Yale-Brown Obsessive-Compulsive Scale modified for BDD (BDD-YBOCS), which is a severity measure rather than a screening or diagnostic tool. These approaches are therefore not directly comparable and may yield different case rates. The earlier Nigerian sample was also smaller and contained a higher proportion of facial disorders, which have been linked to a greater BDD burden in previous work. Sociodemographic differences between clinic populations may have contributed further. Cultural factors in Kano, such as differing emphasis on appearance or stigma around mental-health disclosure, may have influenced reporting; these remain hypotheses because they were not measured directly in this study [1] [2] [16] [17].

Mean BISS and BIS scores indicated a substantial body-image burden in this clinic sample (28.46 and 13.08, respectively). Visible or widespread skin disease may intensify shame and disturbance by increasing self-criticism [1]-[3]. The higher mean scores among participants with a positive BDD screen are consistent with literature identifying shame and appearance preoccupation as core features of BDD [3] [18]-[21].

In univariable logistic regression, each 1-point increase in BISS and BIS score was associated with higher odds of a positive screen (OR 1.07 and 1.15, respectively). After mutual adjustment, both associations remained (aOR 1.04 and 1.10). Further adjustment for age and sex did not materially change these estimates (BISS aOR 1.04, 95% CI 1.00 - 1.08; BIS aOR 1.09, 95% CI 1.00 - 1.19). Age and

sex were not associated with probable BDD. In an exploratory model that also included lesion location, the BISS association persisted, whereas the BIS association was attenuated and no longer statistically significant. Lesion location itself was not associated with probable BDD. That exploratory model should be interpreted cautiously because it exceeded the conventional events-per-variable limit [15].

Shared method variance and conceptual overlap among the BISS, BIS, and BDDQ may have contributed to the observed associations, as all three instruments rely on self-reported appearance concern and distress. The findings therefore support a relationship between body-image difficulties and screen-positive BDD status, but they do not establish that shame or disturbance independently causes BDD.

These results suggest that attention to body-image concerns in dermatology clinics may be clinically reasonable. The study did not, however, evaluate a screening programme, referral pathway, or treatment outcome. Future work using diagnostic interviews, longitudinal designs, and culturally validated measures is needed to clarify independent relationships and to guide clinical responses [5] [6] [22].

3.3. Strengths and Limitations

This study adds data on probable BDD from an underrepresented African dermatology population. The sample ($N = 375$) and response rate (93.75%) were adequate for the primary descriptive and univariable analyses. Brief screening tools (BDDQ, BISS, and BIS) were feasible in a busy clinic and allowed comparison with previous Nigerian work that reported a higher prevalence but used a different assessment method [8].

The design was cross-sectional, so causal inferences cannot be made. Probable BDD was identified by BDDQ screening rather than a structured diagnostic interview, and screening measures may over- or under-estimate true diagnostic prevalence. BISS and BIS scores were analysed as continuous variables; tertile categories were used for description only. Internal consistency in this sample (BISS $\alpha \approx 0.73$; BIS $\alpha = 0.87$); previous validations found high reliability (BISS $\alpha \approx 0.90 - 0.96$; BIS $\alpha = 0.93$) [9] [11]. The study was conducted in a single tertiary clinic in Kano, so findings should not be generalised to other levels of care, other Nigerian regions, or community populations. Stigma-related underreporting is possible.

Only 31 participants screened positive. In keeping with the criterion of at least 10 events per variable, the primary multivariable model was limited to BISS, BIS, age, and sex. Complete adjustment for education, socioeconomic status, diagnosis, duration, and lesion location was not adopted as the main analysis because it would have risked unstable estimates. Residual confounding therefore remains possible.

4. Conclusion

This cross-sectional study identified probable BDD by screening in 8.3% of adult

dermatology outpatients in Kano, Nigeria. Higher body-image shame and body-image disturbance scores were associated with screen-positive status in unadjusted analyses and after limited adjustment for one another, age, and sex. A more comprehensive adjusted model was not appropriate given the small number of events. These findings highlight the relevance of body-image concerns to the mind-skin connection in this population. Diagnostic, longitudinal, and culturally validated research is needed to clarify independent relationships and to inform clinical practice.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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