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# Prevalence of Body Dysmorphic Disorder (BDD) among the Lebanese University students: associated risk factors and repercussion on mental health

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## Keywords

## Summary

**Introduction**. *Body Dysmorphic Disorder (BDD) is a psychological illness characterized by persistent and intrusive preoccupation with an imagined or slight defect in appearance. This study aimed to determine the prevalence of BDD and investigate its association with mental health status (depression and anxiety), religiosity, eating disorder risk, and self-esteem among Lebanese University students.*

**Methods**. *A cross-sectional study was conducted in March 2020, involving students from the Lebanese University. Data were collected using the dysmorphic concern questionnaire (DCQ), Rosenberg self-esteem scale (RSE), religiosity scale, patient health questionnaire (PHQ-9), generalized anxiety disorder assessment (GAD-7), Eating Attitude test-26 scale (EAT-26).*

**Results**. *A total of 6,448 participants were enrolled in our study. The overall prevalence of BDD among university students was (6.4%). Our results showed that Lebanese students with BDD were more likely to have anxiety ORadj 1.3 (95% CI: 1.2-1.7) p-value 0.001, depression ORadj 1.2 (95% CI: 1.15-1.5) p-value 0.007, and eating disorder (Bulimia & Food preoccupation ORadj 1.06 (95% CI: 1.03-1.2) p-value 0.0, and oral control ORadj 1.09 (95% CI: 1.05-1.1) p-value < 0.001) compared to those with no BDD. We also found that students with BDD had Lower Self-esteem ORadj 0.88 (95% CI: 0.78-0.9) p-value < 0.001), and less likely to be religious ORadj 0.88 (95% CI: 0.82-0.9) p-value 0.02) compared to those with no BDD.*

**Conclusions**. *This pioneering study sheds light on the prevalence of BDD among Lebanese university students and its associated factors. Our findings underscore the importance of early detection of BDD during adolescence and young adulthood, necessitating timely psychological intervention to prevent chronicity and complications.*

## Introduction

Body Dysmorphic Disorder (BDD) is a significant psychological illness affecting approximately 3% of the general population in Western countries [1]. It is noteworthy that BDD is relatively common in adolescents, affecting both males and females [2]. This disorder is characterized by a persistent and intrusive preoccupation with an imagined imperfection or slight defect in one's physical appearance [3].

BDD victims frequently complain about facial or head features, this preoccupation can extend to anybody area or even encompass the entire body [4]. As a result, individuals suffering from BDD often experience clinically significant distress and impairment in social functioning [5]. Moreover, BDD is associated with an elevated risk of psychiatric hospitalization and suicide attempts [6]. The treatment of BDD poses considerable challenges due to the complexity of the disorder, necessitating a combination of cognitive-behavioral therapy, corrective surgery, and antidepressant medication [7, 8]. Despite being recognized for centuries, the term "BDD" has been relatively recent in the diagnostic lexicon. Initially categorized as a somatoform disorder, it was later described as dysmorphophobia in the Diagnostic and Statistical Manual of Mental Disorder, 3rd edition (DSM-III), and eventually classified as BDD in DSM-IV [9]. In the current DSM-V, BDD is classified under Obsessive-Compulsive and Related Disorders [10, 11]. Disturbingly, nearly 80% of BDD patients have reported lifetime suicidal ideation, and approximately 24% to 28% have attempted [12]. The suicide completion rate among BDD patients is alarmingly high at 0.3%, surpassing the rates observed in most other mental illnesses [13]. Additionally, a United States study indicated that 40% of plastic surgeons reported receiving threats, either physical or legal, from dissatisfied patients with [14]. BDD has been reported in numerous countries worldwide. Studies in western societies have shown a higher prevalence of BDD among university students (5.3%) compared to the general population (1.8%) [15]. Similarly, a recent study in The Kingdom of Saudi Arabia found a prevalence of 4.4% among female medical students in 2016 [16]. While BDD remains a significant concern

among university students in developed countries [17], there is limited research on this matter in the Middle East region. University students are exposed to many new environmental and lifestyle changes coupled with heightened concern for their appearance, which might increase their risk of BDD [15]. To date, no studies have been conducted to determine the prevalence of BDD among university students in Lebanon. Consequently, our study aims to address this gap by investigating the prevalence of BDD among Lebanese university students and assessing its association with various risk factors and its impact on mental health (anxiety, depression, eating disorders), religiosity, and self-esteem in their daily lives.

## Methods

### Study design and population

A cross-sectional study was conducted among university students at the Lebanese University in March 2020. It includes Lebanese students from 16 faculties (Faculty of Letters and Human Sciences, Faculty of Law and Political and Administrative Sciences, Faculty of Sciences, Faculty of Fine Arts and Architecture, Faculty of Pedagogy, Faculty of Information, Faculty of Economics and Business Administration, Faculty of Engineering, Faculty of Agronomy, Faculty of Public Health, Faculty of Medical Sciences, Faculty of Dental Medicine, Faculty of Pharmacy, Faculty of Tourism and Hospitality Management, and Faculty of Technology). The study enrolled all eligible Bachelor, Masters, and Ph.D. students registered at the Lebanese University for the academic year 2019-2020, resulting in a total of 6,504 participants. Data collection was carried out using an online questionnaire distributed through social media platforms, primarily "WhatsApp," utilizing a snowball sampling technique. The questionnaire was designed using a Google form.

### Ethical consideration

Ethical approval was obtained by the scientific research committee of the Neuroscience Research Center, Faculty of Medical Sciences at the Lebanese University. Participants will answer a yes–no question to confirm their willingness to participate voluntarily. All the necessary measures to safeguard participants' anonymity and confidentiality of information were respected. Written informed consent was obtained from all the participants. The methods were performed in accordance with the declaration of Helsinki.

### Sample size

The sample size was calculated using the online Raosoft sample size calculator designed specifically for population surveys. Assuming 80,000 students are registered in the Lebanese University, the required calculated sample size was 383 with a confidence level of 95% and a 5% margin of error. A total number of 6504 students were recruited in the present study.

### Questionnaire and instruments

The data were collected using an online survey to cover all the branches of faculties in all governates. A self-administered questionnaire was created in Arabic after a thorough search in the literature and sent online to the students to cover all the branches of the faculties at the Lebanese University.

1. Socio-demographic characteristics included age, gender, faculty, level of education, place of residence (Beirut, Mount Lebanon, North, South, and Beqaa), marital status (single, married, divorced, or widowed). Information about health behaviors included questions about cigarette and waterpipe smoking, alcohol consumption, physical activity, and its duration on a weekly basis.

2. Dysmorphic Concern Questionnaire (DCQ) is a 7-item self-report scale where the respondents rate their concern about their physical appearance relative to others on a 4-point scale. This score is a brief, sensitive, and specific screening instrument for BDD, which has a reliable cutoff of "9" [18]. The participants were categorized into "no BDD" and "with BDD" based on DCQ score, < 9 and ≥ 9 respectively.

3. The Arabic Rosenberg self-esteem (RES) scale is used to assess the self-esteem of the student [19]. It is a 10-item self-report scale that measures self-esteem by assessing positive and negative feelings about the self. This score ranges from 0 to 30 by which the numbers less than 15 indicate low self-esteem [20].

4. The Arabic religiosity scale is a 5-item self-report questions that have a measure of religious belief, practice, and importance in the daily life of adult psychiatric patients (including times of difficulties) and it has an acceptable and reliable validity [21].

5. The Arabic Patient health questionnaire (PHQ-9) is a brief self-report measure of 9 items, employed to assess and grade depression severity over the past 2 weeks. Responses ranged from 0 to 3 (0 = not at all, 1 = several days, 2 = more than half the days, 3 = nearly every day). Total scores, obtained by summing the responses to each item, range from 0 to 27 [22].

6. The Arabic Generalized anxiety disorder assessment (GAD-7) is widely used as a self-reporting scale to assess the symptoms of anxiety. It consists of 7 items that measure anxiety over the past 2 weeks. Items are rated on a 4-point Likert-type scale (0 = not at all, 1 = several days, 2 = more than half the days, 3 = nearly every day). The GAD-7 score is calculated by summing up the seven items with higher scores indicating a greater risk of anxiety [22].

7. The Arabic Eating Attitude test-26 (EAT-26) scale is s a 26-item self-report known for its high sensitivity, reliability, and validity in the Arabic population and usefulness for screening large populations. It measures eating disorder risk based on attitudes, feeling and behaviors related to eating. In addition, two EAT-26 subscales (Preoccupation scale and oral control scales) were used in this study [23].

The permission to use the previously mentioned scales was received from the original authors via emails. The preliminary final version of the questionnaire was administered to a sample of 20 eligible students. The aim was to check the clarity, coherence, and intelligibility of the questions with the average time needed for the participants to complete it. The data from the pilot study was removed from the final analysis.

### Data collection

The data was collected using an online survey. An arabic questionnaire was created and designed by the authors after a thorough search in the literature and a link was sent to the participants including a brief introduction on the background, the aim of the study, voluntary nature of participation, declarations of confidentiality and anonymity, and instructions for filling in the questionnaire.

### Statistical analysis

Statistical analysis was carried out using the statistical software SPSS (Statistical Package for Social Sciences), version 23.0. Descriptive statistics were reported using means and standard deviations (SD) for continuous variables and frequency with percentages for categorical variables. Multivariate logistic regression was used to identify factors associated with BDD as a dependent variable. The variables in bivariate analysis with p-value < 0.2 were entered into multivariable logistic regression. Adjusted odds ratio and their 95% confidence intervals were reported. The statistical significance level was set at p-value < 0.05 (two-sided).

## Results

### Characteristics of the study sample

The baseline characteristics of the entire study sample by DCQ score were described in Table I. The total number of students was 6448 of which 414 (6.4%) were diagnosed with BDD. The overall mean age of the study sample was 20.85 (SD = 3.81) years old, 78.2% were

Tab. I. Baseline characteristics of the participants with and without BDD among Lebanese University students.

| Characteristics | All students n = 6448 n (%) | No BDD n = 6034 (93.6) n (%) | With BDD n = 414 (6.4) n (%) | p-value |
|---|---|---|---|---|
| **Age** (mean ± SD)[††] | 20.85 ± 3.81 | 20.83 ± 3.84 | 21.07 ± 3.29 | 0.2 |
| **BMI** (mean ± SD)[††] | 23.06 ± 4.07 | 22.99 ± 3.98 | 23.98 ± 5.11 | < 0.001* |
| **Gender** | | | | |
| Male | 1405 (21.8) | 1324 (21.9) | 81 (19.6) | 0.25 |
| Female | 5043 (78.2) | 4710 (78.1) | 333 (80.4) | |
| **Marital status** | | | | |
| Single | 5507 (85.4) | 5134 (85.1) | 373 (90.1) | |
| Married | 888 (13.8) | 850 (14.1) | 38 (9.2) | 0.02* |
| Other[†] | 53 (0.8) | 50 (0.8) | 3 (0.7) | |
| **Place of residence** | | | | |
| Beirut | 317 (4.9) | 291 (4.8) | 26 (6.3) | |
| North Lebanon | 2576 (40) | 2421 (40.1) | 155 (37.4) | |
| South Lebanon | 2060 (31.9) | 1938 (32.1) | 122 (29.5) | 0.03* |
| Beqaa | 440 (6.8) | 417 (6.9) | 23 (5.6) | |
| Mount Lebanon | 1055 (16.4) | 967 (16) | 88 (21.3) | |
| **University level** | | | | |
| 1st year | 2454 (38.1) | 2321 (38.5) | 133 (32.1) | |
| 2nd year | 1526 (23.7) | 1434 (23.8) | 92 (22.2) | |
| 3rd year | 1284 (19.9) | 1195 (19.8) | 89 (21.5) | 0.005* |
| 4th year | 751 (11.6) | 695 (11.5) | 56 (13.5) | |
| 5th year | 296 (4.6) | 267 (4.4) | 29 (7) | |
| > 5th year | 137 (2.1) | 122 (2) | 15 (3.6) | |
| **Cigarette smoking** | | | | |
| Non-smoker | 6076 (94.2) | 5690 (94.3) | 386 (93.2) | 0.3 |
| Current smoker | 372 (5.8) | 344 (5.7) | 28 (6.8) | |
| **Waterpipe smoking** | | | | |
| Non-smoker | 5158 (80) | 4819 (79.9) | 339 (81.9) | 0.3 |
| Current smoker | 1290 (20) | 1215 (20.1) | 75 (18.1) | |
| **Physical activity** | | | | |
| Absent | 3556 (55.1) | 3298 (54.7) | 258 (62.3) | 0.002* |
| Present | 2892 (44.9) | 2736 (45.3) | 156 (37.7) | |
| **Drinking alcohol** | | | | |
| No | 5820 (90.3) | 5466 (90.6) | 354 (85.5) | 0.001* |
| Yes | 628 (9.7) | 568 (9.4) | 60 (14.5) | |

[†] Divorced or widowed. [††] Mean ± Standard deviation. * p-value < 0.05 is considered significant.

Tab. II. Bivariate analysis of BDD among Lebanese University students.

| Scales | All students n = 6448 (mean ± SD)†† | No BDD n = 6034 (93.6) (mean ± SD)†† | With BDD n = 414 (6.4) (mean ± SD)†† | p-value |
|---|---|---|---|---|
| RSE | 19.97 ± 4.79 | 20.31 ± 4.55 | 14.94 ± 5.39 | < 0.001* |
| Religiosity | 10.03 ± 2.78 | 10.11 ± 2.73 | 8.90 ± 3.32 | < 0.001* |
| GAD-7 | 8.95 ± 5.16 | 8.63 ± 4.99 | 13.65 ± 5.41 | < 0.001* |
| PHQ-9 | 9.03 ± 5.75 | 8.62 ± 5.48 | 14.94 ± 6.28 | < 0.001* |
| EAT-26 | 61.11 ± 23.80 | 61.98 ± 23.36 | 48.36 ± 26.43 | < 0.001* |
| Bulimia & food Preoccupation | 2.52 ± 2.19 | 2.46 ± 2.14 | 3.50 ± 2.74 | < 0.001* |
| Oral control | 3.10 ± 3.46 | 2.92 ± 3.29 | 5.76 ± 4.56 | < 0.001* |

†† Mean ± Standard deviation. * p-value < 0.05 is considered significant.
RSE: Rosenberg self-esteem scale; GAD-7: Generalized Anxiety Disorder-7; PHQ-9: Patient Health Questionnaire-9, EAT-26: Eating Attitude test-26 scale.

female and the majority of the participants were single (85.4%). The association between BDD and students' characteristics showed that the score was significantly associated with BMI, material status, place of residency, university level, physical activity and, drinking alcohol with p-value < 0.001, 0.02,0.03,0.005,0.002 and 0.001 respectively. Our results also showed that age, gender, and smoking were not statistically associated with BDD (p-value 0.2, 0.25 and 0.3 respectively).

Bivariate analysis of the association of BDD and RES, religiosity, GAD-7, PHQ-9, EAT-26

Bivariate analysis showed high significant association between BDD and all the scales with a p-value < 0.001 (Tab. II). Participants with BDD showed higher scores of GAD-7 (13.65 ± 5.41), PHQ-9 (14.94 ± 6.28), Preoccupation scale (3.50 ± 2.74), and Oral control scale (5.76 ± 4.56) but lower scores of RES (14.94 ± 5.39), Religiosity (8.90 ± 3.32), and EAT-26 (48.36 ± 26.43) compared to the participants with no-BDD.

### MULTIVARIATE LOGISTIC REGRESSION

The associations between BDD and the scales were also assessed by multivariate logistic regression after controlling the socio-demographic characteristics (age, gender, smoking, place of residence, level of education, gender, cigarette smoking status, physical activity, and alcohol consumption in the total sample (Tab. III). Our results showed that Lebanese students with Body dysmorphic Disorder were more likely to have anxiety ORadj 1.3 (95% CI: 1.2-1.7) p-value 0.001, depression

Tab. III. Adjusted odds ratio with their 95% confidence intervals from multivariate logistic regression of BDD for the study sample.

| Scale | ORadj | 95% CI | p-value |
|---|---|---|---|
| RSE | 0.88 | 0.78-0.9 | < 0.001* |
| Religiosity | 0.82 | 0.82-0.9 | 0.02* |
| GAD-7 | 1.3 | 1.2-1.7 | 0.001* |
| PHQ-9 | 1.2 | 1.15-1.5 | 0.007* |
| Bulimia & Food Preoccupation | 1.06 | 1.03-1.2 | 0.01* |
| Oral Control | 1.09 | 1.05-1.1 | < 0.001* |

95% CI: 95% Confidence Interval, ORadj: adjusted odds ratio; RSE Rosenberg self-esteem scale; GAD-7: Generalized Anxiety Disorder-7; PHQ-9: Patient Health Questionnaire-9. * p-value < 0.05 is considered significant.

ORadj 1.2 (95% C:1.15-1.5) p-value 0.007, and eating disorder (Bulimia & Food preoccupation ORadj 1.06 (95% CI: 1.03-1.2) p-value 0.0, and oral control ORadj 1.09 (95% CI: 1.05-1.1) p-value < 0.001, compared to those with no BDD. We also found that students with BDD had Lower Self-esteem ORadj 0.88 (95% CI: 0.78-0.9) p-value < 0.001, and less likely to be religious ORadj 0.88 (95% CI: 0.82-0.9) p-value 0.02, compared to those with no BDD.

## Discussion

To our knowledge, this is the first epidemiological cross-sectional study on a large sample of Lebanese University students to assess the prevalence of BDD and to evaluate its association with different factors including self-esteem, religiosity, anxiety, depression, and eating disorders.

Our study showed that the prevalence of BDD among Lebanese University students was 6.4% of the collected sample which was somehow close to several results of studies reporting the prevalence of BDD among college students. The prevalence of BDD among various students' populations ranges from 2.3% in Australia [24], to 4.4% in Saudi Arab [16], 4.5% in Iran [25], 4.8% in Turkey [26], 4.9% in China [27], 5.1% in South Africa [28], 5.3% in Germany [15], and 5.8% in Pakistan [29]. Our result is most likely to be consistent with the result of other studies. This could be due to the similar mean of age (~20). Also, younger generations are usually more concerned about their look than elders. In addition, the impact of social media significantly affects opinions about body appearance and personality. Moreover, university students are exposed to many new environmental and habitual changes where appearances play an important role in the academic fields.

In terms of gender distribution of BDD, 80.4% of students with BDD were females which was nearly similar to these studies reporting a consistently higher prevalence among female students than male [15, 16, 24, 25, 28, 29]. The high prevalence of BDD among females could be explained by the fact that females in the early twenties are more concerned about their body image than males. Moreover, it is likely due in part to cultural

expectation, societal standards, and body changes during menarche.

This study showed a significant association between BDD and self-esteem by which a moderate negative relationship was found between BDD and self-esteem. This is in line with previous findings suggesting that BDD is accompanied by low self-esteem [5, 15, 30-32]. Thus, BDD is not only limited to appearance but may also extend to other domains of the self and personality. This negative association between BDD and self-esteem might be partly explained by the depression status where people with BDD often suffer from depression which is in turn associated with low self-esteem [32]. However, it is unclear whether low self-esteem predisposes one to BDD or is a consequence of BDD; but a negative correlation is present.

The results of our study also indicated an association between BDD and religiosity. Poor religious believes and/or practices were significantly linked to BDD taking into consideration that religious obsessions are common and predominant in Middle Eastern countries including Lebanon. Even though we could not find any research focusing on the relation between BDD and religious behavior, religious devotion has been reported as a risk factor for mental illness such as anxiety disorders [33] and depression [34, 35]. Yet, highly religious people tend to have higher self-esteem [36], this could explain the positive relationship between BDD and poor religious practices.

Regarding depression and anxiety, higher depression and anxiety scores were found to be linked to BDD. In our study, those who were diagnosed with BDD obtained significantly higher scores on the GAD-7 and PHQ-9 compared to those who were not diagnosed with BDD. Also, a positive association was found between BDD and anxiety and depression. This survey was in agreement with previous studies reporting a positive association between BDD on one hand and depression and anxiety on the other hand [15, 37-40]. A possible explanation for this association could be related to bodily concerns by which BDD individuals are usually dissatisfied with their appearance and often concerned about being negatively judged.

Regarding eating disorders, our study suggested an association between eating disorders and BDD considering two subscales of the EAT-26 (Bulimia & Food Preoccupation and oral control scales) which showed a slight positive correlative association. Our results are consistent with previous studies that revealed a link between BDD and eating disorders [5, 25, 41, 42]. The environmental factors should be taken into consideration by which some BDD subjects may experience awkward criticisms compared to others or even a slight defect is often emphasized by others. Hence, BDD patients usually experience low-calorie or unsuitable diets in order to improve their physical appearance.

Due to the underrecognized nature of this disorder and its substantial impact on an individual's quality of life, our research findings underscore the critical importance of raising public awareness and promoting psychological precautions. In light of this, the development of targeted social media campaigns for young adults should be approached with careful consideration of image-related content to avoid exacerbating Body Dysmorphic Disorder (BDD) symptoms. These associations, as highlighted in our study, can serve as valuable resources for health education professionals, parents, and communities, guiding them in their efforts to implement preventive measures and curb the chronicity of this distressing disorder.

The implications of our study's findings are particularly significant for professionals working in counseling and psychology, especially in educational settings. As part of their practice, these professionals may benefit from incorporating assessments for students who have experienced bullying, as such individuals may be more susceptible to other forms of violence, suicidality, and various health risk behaviors and conditions. Proactive measures aimed at preventing and addressing body shaming should be integrated into their strategies to foster a healthier and more supportive environment for those affected by BDD.

Our study has many strengths. To our knowledge, this is the first study investigating the prevalence of BDD and its associated factors (self-esteem, religiosity, anxiety, depression and eating disorders) among Lebanese University students. A comprehensive battery of well-validated with high-reliability measures and a large sample size enabled robust data analysis. Moreover, our results are highly consistent with the findings of other studies. However, we were aware that our research may have several limitations. First, the cross-sectional nature of the study can only demonstrate association and not a cause-effect relationship. Second, the representativeness of the total population of the Lebanese University students might be affected, our sample was not based on a random selection, and it is only from the Lebanese University, which is a public university in Lebanon, the findings did not reflect the whole picture of all students enrolled in private and public universities in Lebanon. Finally, the reliance on self-reported information may subject the study to response bias which could eventually underestimate the associations our study has shown. Despite the limitations identified, we believe that the study addresses a major health problem that challenges university students in Lebanon.

## Conclusions

This pioneering study in Lebanon sheds light on the prevalence of BDD among Lebanese university students and its associated factors. BDD was found to be significantly linked to elevated levels of depression, anxiety, and eating disorders, along with lower levels of self-esteem and religiosity. These findings underscore the importance of early detection of BDD during adolescence and young adulthood, necessitating timely psychological intervention to prevent chronicity and

complications. Moreover, promoting widespread awareness through various social media and public platforms is essential to address this psychological issue effectively.

## Acknowledgments

## Conflict of interest statement

The authors have no potential conflicts of interest to declare.

## Authors' contributions

AS and YJ developed the project idea. OI and RD formulated the questionnaire. AS and YJ organized and analyzed the survey. LAA, ZN, and AS drafted and critically reviewed the paper. ZN reviewed the manuscript for important intellectual content. All authors read and agreed on the final version.

## References

[8] Hartmann AS, Buhlmann U. Prevalence and underrecognition of body dysmorphic disorder. In: Phillips KA, ed. Body dysmorphic disorder: advances in research and clinical practice. Oxford University Press 2017, pp. 49-60. https://doi.org/10.1093/med/9780190254131.003.0005

[9] Mufaddel A, Osman OT, Almugaddam F, Jafferany M. A review of body dysmorphic disorder and its presentation in different clinical settings. Prim Care Companion CNS Disord 2013;15:PCC.12r01464. https://doi.org/10.4088/PCC.12r01464

[10] Cororve MB, Gleaves DH. Body dysmorphic disorder: a review of conceptualizations, assessment, and treatment strategies. Clin Psychol Rev 2001;21:949-70. https://doi.org/10.1016/s0272-7358(00)00075-1

[11] Phillips KA. Body dysmorphic disorder: recognizing and treating imagined ugliness. World Psychiatry 2004;3:12-7.

[12] Biby EL. The relationship between body dysmorphic disorder and depression, self-esteem, somatization, and obsessive-compulsive disorder. J Clin Psychol 1998;54:489-99. https://doi.org/10.1002/(sici)1097-4679(199806)54:4<489::aid-jclp10>3.0.co;2-b

[13] Phillips KA, Diaz SF. Gender differences in body dysmorphic disorder. J Nerv Ment Dis 1997;185:570-7. https://doi.org/10.1097/00005053-199709000-00006

[14] Higgins S, Wysong A. Cosmetic surgery and body dysmorphic disorder - An update. Int J Womens Dermatol 2017;4:43-48. https://doi.org/10.1016/j.ijwd.2017.09.007

[15] Ipser JC, Sander C, Stein DJ. Pharmacotherapy and psychotherapy for body dysmorphic disorder. Cochrane Database Syst Rev 2009;2009:CD005332. https://doi.org/10.1002/14651858.CD005332.pub2

[16] Fischer BA. A review of American psychiatry through its diagnoses: the history and development of the Diagnostic and Statistical Manual of Mental Disorders. J Nerv Ment Dis 2012;200:1022-30. https://doi.org/10.1097/NMD.0b013e318275cf19

[17] Toro-Martínez E. [DSM-5: OCD and related disorders]. Vertex 2014;25:63-7.

[18] Rosenfield E. Overview of DSM-5 changes. Massachusetts General Hospital ocd and related disorders program, 2013. Available from: https://mghocd.org/dsm-5/ (Access on: 5/1/2024).

[19] Phillips KA. Suicidality in body dysmorphic disorder. Prim Psychiatry 2007;14:58-66.

[20] Phillips KA, Menard W. Suicidality in body dysmorphic disorder: a prospective study. Am J Psychiatry 2006;163:1280-2. https://doi.org/10.1176/ajp.2006.163.7.1280

[21] Sarwer DB. Awareness and identification of body dysmorphic disorder by aesthetic surgeons: results of a survey of American Society for Aesthetic Plastic Surgery members. Aesthet Surg J 2002;22:531-5. https://doi.org/10.1067/maj.2002.129451

[22] Bohne A, Wilhelm S, Keuthen NJ, Florin I, Baer L, Jenike MA. Prevalence of body dysmorphic disorder in a German college student sample. Psychiatry Res 2002;109:101-4. https://doi.org/10.1016/s0165-1781(01)00363-8

[23] Shaffi Ahamed S, Enani J, Alfaraidi L, Sannari L, Algain R, Alsawah Z, Al Hazmi A. Prevalence of body dysmorphic disorder and its association with body features in female medical students. Iran J Psychiatry Behav Sci 2016;10:e3868. https://doi.org/10.17795/ijpbs-3868

[24] Koran LM, Abujaoude E, Large MD, Serpe RT. The prevalence of body dysmorphic disorder in the United States adult population. CNS Spectr 2008;13:316-22. https://doi.org/10.1017/s1092852900016436

[25] Mancuso SG, Knoesen NP, Castle DJ. The Dysmorphic Concern Questionnaire: a screening measure for body dysmorphic disorder. Aust N Z J Psychiatry 2010;44:535-42. https://doi.org/10.3109/00048671003596055

[26] Zaidi U, Awad SS, Mortada EM, Qasem HD, Kayal GF. Psychometric evaluation of Arabic version of Self-Esteem, Psychological Well-being and Impact of weight on Quality of life questionnaire (IWQOL-Lite) in female student sample of PNU. European Medical, Health and Pharmaceutical Journal 2015;8:29-33. https://doi.org/10.12955/emhpj.v8i2.703

[27] Rosenberg M. Rosenberg Self-Esteem Scale (RSE). Acceptance and Commitment therapy. Measures Package 1965;61:18.

[28] Khalaf DR, Hlais SA, Haddad RS, Mansour CM, Pelissolo AJ, Naja WJ. Developing and testing an original Arabic religiosity scale. Middle East Curr Psychiatry [Internet] 2014;21:127-38. https://doi.org/10.1097/01.XME.0000444753.76812.79

[29] Sawaya H, Atoui M, Hamadeh A, Zeinoun P, Nahas Z. Adaptation and initial validation of the Patient Health Questionnaire - 9 (PHQ-9) and the Generalized Anxiety Disorder - 7 Questionnaire (GAD-7) in an Arabic speaking Lebanese psychiatric outpatient sample. Psychiatry Res 2016;239:245-52. https://doi.org/10.1016/j.psychres.2016.03.030

[30] Al-Subaie A, al-Shammari S, Bamgboye E, al-Sabhan K, al-Shehri S, Bannah AR. Validity of the Arabic version of the Eating Attitude Test. Int J Eat Disord 1996;20:321-4. https://doi.org/10.1002/(SICI)1098-108X(199611)20:3<321::AID-EAT12>3.0.CO;2-2

[31] Bartsch D. Prevalence of body dysmorphic disorder symptoms and associated clinical features among Australian university students. Clin Psychol 2007;11:16-23. https://doi.org/10.1080/13284200601178532

[32] Aflakseir A, Jamali S, Mollazadeh J. Prevalence of Body Dysmorphic Disorder Among a Group of College Students in Shiraz. Zahedan J Res Med Sci 2021;23:e95247. https://doi.org/10.5812/zjrms.95247

[33] Cansever A, Uzun O, Dönmez E, Özşahin A. The prevalence and clinical features of body dysmorphic disorder in college students: a study in a Turkish sample. Compr Psychiatry 2003;44:60-4. https://doi.org/10.1053/comp.2003.50010

[34] Zhu H, Deng Y. The prevalence of the body dysmorphic disorder among undergraduate students in Hainan [in Chinese]. J

Hainan Med Univ 2010;16:123-26. https://doi.org/10.13210/j.cnki.jhmu.2010.01.032

[35] Dlagnikova A, Van Niekerk RL. The prevalence of body dysmorphic disorder among South African university students. S Afr J Psychiatry 2015;21:104-06. https://doi.org/10.4102/sajpsychiatry.v21i3.668

[36] Taqui AM, Shaikh M, Gowani SA, Shahid F, Khan A, Tayyeb SM, Satti M, Vaqar T, Shahid S, Shamsi A, Ganatra HA, Naqvi HA. Body Dysmorphic Disorder: gender differences and prevalence in a Pakistani medical student population. BMC Psychiatry 2008;8:20. https://doi.org/10.1186/1471-244X-8-20

[37] Baykal B, Erdim I, Ozbay I, Oghan F, Oncu F, Erdogdu Z, Kayhan FT. Evaluation of relationship between body dysmorphic disorder and self-esteem in rhinoplasty candidates. J Craniofac Surg 2015;26:2339-41. https://doi.org/10.1097/SCS.0000000000002082

[38] Hartmann AS, Thomas JJ, Greenberg JL, Matheny NL, Wilhelm S. A comparison of self-esteem and perfectionism in anorexia nervosa and body dysmorphic disorder. J Nerv Ment Dis 2014;202:883-8. https://doi.org/10.1097/NMD.0000000000000215

[39] Kuck N, Cafitz L, Bürkner PC, Hoppen L, Wilhelm S, Buhlmann U. Body dysmorphic disorder and self-esteem: a meta-analysis. BMC Psychiatry 2021;21:310. https://doi.org/10.1186/s12888-021-03185-3

[40] Agorastos A, Demiralay C, Huber CG. Influence of religious aspects and personal beliefs on psychological behavior: focus on anxiety disorders. Psychol Res Behav Manag 2014;7:93-101. https://doi.org/10.2147/PRBM.S43666

[41] Bonelli R, Dew RE, Koenig HG, Rosmarin DH, Vasegh S. Religious and spiritual factors in depression: review and integration of the research. Depress Res Treat 2012;2012:962860. https://doi.org/10.1155/2012/962860

[42] Gupta S, Avasthi A, Kumar S. Relationship between religiosity and psychopathology in patients with depression. Indian J Psychiatry 2011;53:330-5. https://doi.org/10.4103/0019-5545.91907

[43] Papazisis G, Nicolaou P, Tsiga E, Christoforou T, Sapountzi-Krepia D. Religious and spiritual beliefs, self-esteem, anxiety, and depression among nursing students. Nurs Health Sci 2014;16:232-8. https://doi.org/10.1111/nhs.12093

[44] Hakim RF, Alrahmani DA, Ahmed DM, Alharthi NA, Fida AR, Al-Raddadi RM. Association of body dysmorphic disorder with anxiety, depression, and stress among university students. J Taibah Univ Med Sci 2021;16:689-694. https://doi.org/10.1016/j.jtumed.2021.05.008

[45] Liao Y, Knoesen NP, Deng Y, Tang J, Castle DJ, Bookun R, Hao W, Chen X, Liu T. Body dysmorphic disorder, social anxiety and depressive symptoms in Chinese medical students. Soc Psychiatry Psychiatr Epidemiol 2010;45:963-71. https://doi.org/10.1007/s00127-009-0139-9

[46] Shaw AM, Arditte Hall KA, Rosenfield E, Timpano KR. Body dysmorphic disorder symptoms and risk for suicide: the role of depression. Body Image 2016;19:169-74. https://doi.org/10.1016/j.bodyim.2016.09.007

[47] Phillips KA, Siniscalchi JM, McElroy SL. Depression, anxiety, anger, and somatic symptoms in patients with body dysmorphic disorder. Psychiatr Q 2004;75:309-20. https://doi.org/10.1023/b:psaq.0000043507.03596.0d

[48] Kollei I, Schieber K, de Zwaan M, Svitak M, Martin A. Body dysmorphic disorder and nonweight-related body image concerns in individuals with eating disorders. Int J Eat Disord 2013;46:52-9. https://doi.org/10.1002/eat.22067

[49] Rabe-Jablonska Jolanta J, Sobow Tomasz M. The links between body dysmorphic disorder and eating disorders. Eur Psychiatry 2000;15:302-5. https://doi.org/10.1016/s0924-9338(00)00398-9