

Development and Validation of Body Dysmorphic Disorder Scale for Screening General Population

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ABSTRACT

Objective: To develop a reliable and valid Urdu indigenous Body Dysmorphic Disorder Scale (BDDS) for the Pakistani community.

Study Design: Cross-sectional study

Place and Duration of Study: Department of Psychology, University of Gujrat, Gujrat Pakistan, from Jun to Dec 2020.

Methodology: Based on the literature review, DSM-V criteria and semi-structured interviews conducted with psychologists, clinical psychologists, and psychiatrists, an item pool of 78 items was generated for BDDS. A panel of five experts evaluated these items for content and revised them based on judgemental remarks. In the pilot study, 40 individuals were purposively selected, and 78 items were administered, yielding 0.94 Cronbach Alpha. Pilot study-I was conducted on 350 participants for Inter-item correlations and Exploratory Factor Analysis (EFA). Pilot study II selected 120 participants conveniently, and Dysmorphic Concern Questionnaire (DCQ) along with a Scale of Adjustment Problems for Adults (SAPA) and BDDS were administered to analyse the validation of BDDS. In the main study, 200 conveniently selected individuals were given BDDS for Confirmatory Factor Analysis (CFA).

Results: Exploratory Factor Analysis yielded three factors with 77 total items of BDDS, each having 19 (Behavioural Slants), 14 (Relational Sensitivity) and 44 (Self-Criticism) items, showing Cronbach Alpha of 0.98 on the present sample. Convergent validity and discriminant validity DCQ and SAPA were satisfactory, respectively. CFA on 200 conveniently selected general population youth yielded 18 items screening BDDS.

Conclusion: Body Dysmorphic Disorder Scale is a reliable and valid indigenous tool developed in Pakistan. Confirmatory factor analysis confirmed to screen the general population.

Keywords: Body Dysmorphic Symptoms, General Population, Youth.

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INTRODUCTION

Body dysmorphic disorder (BDD), also called dysmorphic-phobia, is explained by an obsession with a flaw in a person's look or overstatement of minor body irregularities.¹ Individuals with BDD spend the most time thinking about their looks. Body Dysmorphic Disorder symptoms include comparing one's body parts to others and looking for flaws in the parts of the body.^{2,3} In severe cases, individuals are bound in-house and have high chances of admission to the hospital, particularly in mental wards, with or without attempted suicide.^{4,5}

Studies showed that negative and positive meta-cognitive attitudes about body dysmorphic, thought-fusion, and metacognitive management strategies were prominent.⁶ The culture of Pakistan has dominant socio-cultural pressure for being physically beautiful as an essential aspect in females rather than males. Adolescent females are expected to be slim and physically attractive to achieve admirable marriage

proposals.⁷ In Pakistan, body dysmorphic disorder was investigated in medical and non-medical students either with an adapted western developed tool or an unstandardised constructed questionnaire.⁸⁻⁹ However, there has yet to be a standardised scale development of BDD in Pakistan. We developed a body dysmorphic scale among the Pakistani population, which is based on cultural norms and helps to measure body dysmorphic symptoms. The objective of the study was to develop a reliable and valid scale to measure body dysmorphic disorder in the Pakistani community.

METHODOLOGY

The cross sectional study was conducted in five separate phases at Department of Psychology, University of Gujrat, Gujrat, from June to December 2020 after IERB approval.

Inclusion Criteria: Subjects of either gender and age group from different areas of Gujrat and Mandi Bahauddin were included in the study.

Exclusion Criteria: None

The first phase of the correlational study was covered to develop a scale of body dysmorphic

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disorder. Semi-structured Interviews were conducted with Six clinical psychologists, two psychologists, seven psychiatrists working at different hospitals in Lahore and ten general individuals were included. After that, the information from all the interviews was transcribed. 78 Items were generated according to the semi-structured interviews and literature review analysis. In order to ensure content validity, the researcher seeks the opinions of expert judges. The panel of experts consisting of 3 MPhil and 2 PhDs in psychology, were asked to evaluate the item on 5 points range between 0 to 4.

Phase-2 was a tryout study conducted to test 78 items of a newly constructed scale and subsequently do required modifications. A sample of 40 respondents (20 males and 20 females) aged between 17 to 55 years was conveniently chosen from different Gujrat and Mandi Bahauddin areas. Seventy-eight items of the Body Dysmorphic Disorder Scale (BDDS) with 5 point Likert scale of 0 to 4. No issues arose for comprehension of the BDDS, and Cronbach's Alpha is .94 for 78 items which is high internal consistency.

Phase-3 of the Pilot study was conducted on a sample of 350 respondents (147 males and 203 females) aged between 16 to 60 years conveniently chosen from different Gujrat and Mandi Bahauddin areas. Informed consent was obtained from participants, and they were assured regarding the secrecy and confidentiality of information.

BDDS, Urdu versions of Dysmorphic Concern Questionnaire¹⁰ developed by Oosthuizen, Lambert, and Castle in 1998 and Scale of Adjustment Problems for Adults¹¹ were administered with informed consent and confidentiality. In Phase-4, 120 individuals were conveniently selected from Gujrat. Pearson product-moment correlation coefficient was calculated in Statistical Package for the social sciences (SPSS) version 24 to analyse the convergent and discriminant validity of BDDS.

In Phase-5, the sample of 200 students (boys and girls of age group 19 to 24) whose education levels are intermediate, graduation, master and M.Phil were chosen from the different Gujrat and Mandi Bahauddin institutions. Confirmatory factor analysis was conducted in AMOS-24 for construct validation of BDDS to screen body dysmorphic symptoms in youth.

Exploratory factor analysis and Cronbach alpha reliability was calculated using Statistical Package for Social Sciences (SPSS) version 23.0.

RESULTS

The preliminary study was conducted on a sample of 200 participants (123 females and 77 males) aged 19 to 24 years ($M=21.44\pm1.93$) conveniently selected from the general population. Most participants fall between the age of 21 to 25 (25%), and there were 147 males and 203 females. An item referred to the statement obtained for presenting the symptoms of BDD. Table-I shows that item No. 78 has an insignificant negative inter-item correlation and therefore was deleted from the item pool. The remaining 77 items have a significant inter-item correlation between 0.30 and 0.73.

Table-I: Inter-item Correlation Matrices (n=350)

Items	R	Items	R	Items	R
1	0.697**	27	0.613**	53	0.546**
2	0.566**	28	0.610**	54	0.548**
3	0.505**	29	0.620**	55	0.622**
4	0.300**	30	0.575**	56	0.556**
5	0.504**	31	0.630**	57	0.483**
6	0.572**	32	0.561**	58	0.670**
7	0.629**	33	0.682**	59	0.695**
8	0.560**	34	0.710**	60	0.707**
9	0.517**	35	0.523**	61	0.662**
10	0.439**	36	0.585**	62	0.624**
11	0.649**	37	0.579**	63	0.628**
12	0.593**	38	0.677**	64	0.582**
13	0.658**	39	0.666**	65	0.589**
14	0.512**	40	0.683**	66	0.665**
15	0.296**	41	0.624**	67	0.714**
16	0.544**	42	0.584**	68	0.669**
17	0.614**	43	0.690**	69	0.642**
18	0.542**	44	0.565**	70	0.723**
19	0.536**	45	0.584**	71	0.669**
20	0.567**	46	0.561**	72	0.530**
21	0.528**	47	0.581**	73	0.635**
22	0.572**	48	0.660**	74	0.607**
23	0.643**	49	0.719**	75	0.727**
24	0.582**	50	0.566**	76	0.624**
25	0.628**	51	0.618**	77	0.658**
26	0.595**	52	0.676**	78	-0.078

** $p<0.01$

Table-II indicates the KMO value was 0.938, and a value of KMO above 0.80 falls in the meritorious category and has a significant level of adequacy. Bartlett's test of sphericity indicated a chi-square value of 18786.92 ($p < 0.001$), which indicates the factorability of the R-matrix and data set of BDD is suitable for exploratory factor analysis.

Table-II: Sample Adequacy Test

KMO		Bartlett's Test of Sphericity		
		Chi-Square	df	p-value
BDDS	0.938	18786.92	3003	<0.001

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Table-III: Factor loading and Rotation Sum Squared in EFA (n=350)

Statements	Self-Criticism	Statements	Behavioural Slants	Statements	Relational Sensitivity
Item 75	0.721	Item 45	0.704	Item 69	0.616
Item 70	0.719	Item 17	0.673	Item 37	0.586
Item 49	0.715	Item 18	0.650	Item 10	0.574
Item 71	0.652	Item 57	0.625	Item 77	0.569
Item 25	0.634	Item 44	0.612	Item 5	0.561
Item 30	0.631	Item 47	0.590	Item 68	0.558
Item 38	0.618	Item 46	0.555	Item 36	0.533
Item 60	0.616	Item 72	0.548	Item 73	0.517
Item 34	0.616	Item 41	0.533	Item 15	0.517
Item 31	0.615	Item 24	0.525	Item 4	0.447
Item 67	0.615	Item 35	0.513	Item 9	0.433
Item 40	0.609	Item 65	0.508	Item 42	0.423
Item 23	0.603	Item 56	0.507	Item 21	0.373
Item 29	0.593	Item 2	0.507	Item 14	0.346
Item 27	0.586	Item 3	0.506	-	-
Item 1	0.585	Item 13	0.476	-	-
Item 33	0.575	Item 32	0.454	-	-
Item 76	0.574	Item 53	0.432	-	-
Item 39	0.571	Item 20	0.416	-	-
Item 51	0.563	-	-	-	-
Item 61	0.561	-	-	-	-
Item 62	0.557	-	-	-	-
Item 8	0.549	-	-	-	-
Item 55	0.545	-	-	-	-
Item 43	0.532	-	-	-	-
Item 63	0.526	-	-	-	-
Item 22	0.525	-	-	-	-
Item 52	0.516	-	-	-	-
Item 66	0.514	-	-	-	-
Item 64	0.514	-	-	-	-
Item 6	0.508	-	-	-	-
Item 50	0.503	-	-	-	-
Item 59	0.469	-	-	-	-
Item 58	0.465	-	-	-	-
Item 74	0.461	-	-	-	-
Item 12	0.459	-	-	-	-
Item 26	0.454	-	-	-	-
Item 28	0.450	-	-	-	-
Item 48	0.439	-	-	-	-
Item 16	0.433	-	-	-	-
Item 11	0.424	-	-	-	-
Item 7	0.419	-	-	-	-
Item 54	0.416	-	-	-	-
Item 19	0.328	-	-	-	-
Total Variance	16.20	-	10.59	-	7.48
% of Variance	20.77	-	13.58	-	9.59
Cumulative %	20.77	-	34.35	-	43.95

Table-IV: Convergent and Discriminant Validity, Mean and Standard Deviation for BDDS (n=120)

Variables	2	3	4	5	Mean±SD
Body Dysmorphic Disorder Scale	0.73**	0.53**	0.61**	0.58**	79.86±55.13
Dysmorphic Concern Questionnaire	-	0.59**	0.62**	0.69**	4.26±4.5
Anxiety-Subscale of SAPA	-	-	0.83**	0.76**	34.08±8.64
Depression -Subscale of SAPA	-	-	-	0.66**	25.91±7.41
Conduct -Subscale of SAPA	-	-	-	-	16.08±4.38

** $p < 0.01$

Table-III shows exploratory factor analysis (EFA) for 77 items of BDDS. There were 43 items in factor 1,

named Self-criticism, 20 items in factor 2, called Behavioural Slants, and the remaining 14 items in factor 3, called relational sensitivity. It also shows moderate discriminant validity with anxiety, $r(118)=-0.53$, $p<0.01$, depression, $r(118)=0.61$, $p<0.01$, and conduct disorder, $r(118)=0.58$, $p<0.01$ Table-III. Table-V shows a confirmatory factor analysis of 18 items for the construct validity of BDDS to screen youth. Self-criticism contained ten items 31, 34, 38, 40, 49, 60, 67, 70, 71, and 75. Behavioural Slants contained four items 17, 18, 44, and 45. Relational sensitivity contained four items 36, 37, 68, and 69.

Table-V: CFA for Construct Validity of BDDS to Screen Youth (n=200)

Chi-Square	p-value	CFI	IFI	TLI	RMR	RMSEA
410.551	<0.001	0.92	0.91	0.90	0.05	0.07

CFI=Comparative Fit Index; IFI= Incremental Fit Index; TLI=Tucker Lewis index; RMR= Root Mean Square Residual; RMSEA= Root Mean Square Error of Approximation

DISCUSSION

Approximately 35% of adolescents (medical and non-medical students) have been found to exhibit symptoms of Body Dysmorphisms.¹⁰ which is similar to the findings of the prevalence in Germany, for 36.4% of adolescents have BDD.¹¹ highlighting the importance of exploration of the issues in Pakistan. It is the first scale to measure the level of Body Dysmorphic among adolescents within a Pakistani context. Previous studies included many scales developed in Western Countries that quantitatively assess Body Dysmorphic concerns, whereas every scale has validity, reliability, and cultural norms.¹² However, body dysmorphic has not been discussed in our culture, and no indigenous standardised tool was available for its evaluation. Many studies about Body Dysmorphic have been carried out around the world, but in Pakistan, not many studies conducted have been on this topic; the scale that is used in these studies to measure body dysmorphic is in the English language and according to the Western culture.^{13,14} So there is a need to develop a scale in the Urdu language according to Pakistani culture and language, which is easily understandable by everyone.

To check the symptoms of Body Dysmorphic Disorder, a scale for Body Dysmorphic Disorder was developed, which might be beneficial for the assessment and screening of Body Dysmorphic behaviours of individuals. After the generation of items, expert meetings were organised to check the items pool. Content validity or theoretical analysis is essential because it helps to check whether they describe the purpose.¹⁵

entirely. Some of the items were modified. After this, a tryout was obtained to check whether the people could easily understand the items on the scale. Try out provides help in order to understand the meaningfulness of item.¹⁶ The sample of tryouts was 40. A sample of 350 people was taken from the age range of.¹⁷ to 65 for initial item reduction. Exploratory factor analysis is important in the factor analysis process; exploratory factor analysis explores the variables and generates factors. It also gives us guidelines on how many numbers of factors.¹⁷ KMO and Bartlett's test of sphericity was adequate, so further analysis should be run on the data.¹⁸ This scale is developed in Urdu so people can understand it well and answer it correctly. For this purpose, 77 items Body Dysmorphic scale was developed with a high level of reliability $\alpha=.96$, which is acceptable.¹⁹

Convergent validity with the Urdu version of the Body Dysmorphic Questionnaire and discriminant validity with the Scale of Adjustment Problems of Adults is satisfactory. Construct validation by confirmatory factor analysis. The neglected mental health concern for body dysmorphic disorder and the increasing impact of social media.

CONCLUSION

A reliable and valid indigenous Body Dysmorphic Disorder Scale has been developed with 77 items in Exploratory Factor Analysis and three subscales called Self-Criticism, Behavioural Slants, and Relational Sensitivity in Pakistan. Confirmatory factor analysis yielded 18 items for BDDS to screen youth for body dysmorphic symptoms in Pakistan.

Conflict of Interest: None.

Authors' Contribution

Following authors have made substantial contributions to the manuscript as under:

SS: Data acquisition, data analysis, drafting the manuscript, approval of the final version to be published.

FK: Study design, drafting the manuscript, data interpretation, critical review, approval of the final version to be published.

MB: Critical review, concept data acquisition, drafting the manuscript, approval of the final version to be published.

Authors agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

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