A Study to Determine the Association of Self-Esteem and Body Dysmorphic Syndrome in Relation to the Use of Selfie-Filters

Singh Aprajita[*]**, Bhaskar Manju, Modi Rujul**

Department of Psychiatry, Mahatma Gandhi Medical College and Hospital, Jaipur, Rajasthan, India

Abstract **Context:** Selfie uploading and use of beautiful filters has become common today. **Aims:** To determine the prevalence of Body Dysmorphic disorder (BDD) in relation to the use of selfie filters on social media and its effects on self-esteem. **Settings and Design:** Observational cross-sectional study on 138 college students (aged 18-35 years) over a period of one month (January 2021). **Materials and Methods:** The information regarding the frequency, duration, preferred social media platform use, use of selfie filters, and frequency of uploading selfies was noted. The outcome measures were proportion of BDD and low self-esteem with its underlying risk factors. **Statistical analysis:** Uni- and multivariate logistic regression was used to find out significant risk factors of BDD and low self-esteem. **Results:** Social media platform was used in 94.93% cases (facebook and Instagram) with a mean duration of 4.2 hours. Selfie filters were used in 70.29% cases (4 uploadings per day). BDD was present in 17(12.32%) cases and 6(4.35%) had low self-esteem. The frequency of uploading selfies carried higher odds of BDD [OR 32.883(95%C.I.4.321 to 250.261)] and none of the factors showed independent association with low self-esteem. **Conclusion:** The use of selfie filters on the social platforms is raising concerns among the individuals about their body dysmorphism with a lowering of self-esteem.

Keywords Body dysmorphic disorder, Selfie-filters, Self-esteem

1. Introduction

Today's youngsters use a lot of gadgets, technology, and social network sites. Visual based social media channels like Instagram and Snapchat platforms that are on an all-time high in usage among men and women on social media [1].

Beauty filters are one of the most common content many young women and men use on Snapchat and Instagram. A beauty filter is a tool that helps in editing the user's photo by smoothing out their skin, enhance their facial features like eyes, lips, nose and also helps in altering the shape of their jawline, cheekbones etc. [2].

This level of physical perfection, traditionally seen only in celebrities or beauty magazines, can now be seen all over social media.

As the image becomes the norm, the standards of beauty of people around the world shift, which influences the self-esteem of an individual and can lead to Body Dysmorphia Disorder. As per the DSM V criteria, BDD is defined as "Preoccupation with one or more perceived defects or flaws in physical appearance that are not observable or appear slight to others" [3].

The theoretical models, such as the behavioural model, emphasizes operant conditioning, social learning, and the role of these tools in developing body dysmorphic-related beliefs [4].

The media and internet culture has become one of the powerful sources of vicarious learning for enhancing or getting appreciation for one's beauty and attractiveness. They are over engrossed in creating an online identity. This poses problems for those with body image concerns, especially girls, as society defines women more by their physical appearance than men [2]. Khanna A et al. (2017) studied such cases in an Indian scenario for the first time and showed the psychopathology of Body Dysmorphic syndrome through internet/mobile use [4]. However, this topic has been less dealt with in the literature but demands far-reaching attention for preventing this disorder from growing in the youth.

2. Aims and Objectives

The present study was done to determine the prevalence of Body Dysmorphic syndrome in males and females using selfie filters on social media and to assess the effects of these beauty filters and images on the self-esteem of the

study participants.

3. Materials and Methods

An observational cross-sectional descriptive study was done by narrative interviews of the college students and online filling of the self-made form (Google forms) over one month (January 2021). The participants considered eligible for inclusion in the study were required to be 18-35 years to read and write in the English language and use selfie filters on Instagram / Snapchat. Any participants of age <18 or >35 years, pregnancy or who gave any history of psychiatric disease or diseases affecting the musculoskeletal system, connective tissue disorders, or any previous surgical procedure involving the spine or upper musculoskeletal extremity and severe neck/shoulder trauma were excluded from the study.

The participants were explained about the study, and written informed consent was obtained from the participants. The demographic details such as age, gender, religion, occupation, residence and education were recorded. The information regarding the frequency, duration, preferred social media platform use, use of selfie filters, and frequency of uploading selfies was noted.

The sample size was based on the study of Anisha Khanna, et al [4] who observed prevalence of BDD as 1.7% to 2.4%. Taking this value as reference, the minimum required sample size with 3% margin of error and 5% level of significance is 100 patients. To reduce margin of error, total sample size taken is 138.

The diagnosis of body dysmorphic syndrome/ body dysmorphic disorder (BDD) was made based on the Dysmorphic Concern Questionnaire (DCQ) scale questionnaire as applied in the google form.

DCQ scale was developed by Oosthuizen et al. [5], which assesses the concern for body dysmorphism based on 7-items without establishing a DSM-IV diagnosis of BDD. The participants rate the questions on a 4-point scale which is scored from 0-3. The resulting total score may range from 0-21, with higher scores indicating more concern about BDD. =A DCQ score cut-off of 9 was selected in this study to label a participant as "BDD". This was based on the study by Mancuso et al. [6], where the cut off of 9 showed good internal consistency with the correct diagnosis of 91.6% samples.

We used the Rosenberg Self-esteem scale [7] to assess the self-esteem of the participants. It is a uni-dimensional 10-item scale that is answered on a 4-point Likert scale from "strongly agree" to "strongly disagree" about positive and negative feelings about self. The total score may range from 0-40, with higher scores indicating high self-esteem. For the present study, a cut-off of more than 20 was considered high self-esteem, and a score of 20 or less was considered low self-esteem.

The primary outcome measures included the proportion of participants with BDD and low self-esteem. The secondary outcomes were risk factors affecting BDD and self-esteem.

Table 1. Distribution of socio-demographic characteristics of study subjects

Socio-demographic characteristics	Frequency	Percentage
Age(years)		
Mean ± SD	27.73 ± 4.1	
Median (25th-75th percentile)	28(25-30)	
Range	16-39	
Gender		
Female	90	65.22%
Male	48	34.78%
Marital status		
Married	36	26.09%
Unmarried	100	72.46%
Widow/ Widower/ Divorced	2	1.45%
Area of residence		
Rural	1	0.72%
Sub-urban	13	9.42%
Urban	124	89.86%
Occupation		
Unemployed	2	1.45%
Government employee	3	2.17%
Health care provider	49	35.51%
Business	17	12.32%
Student	18	13.04%
Other	49	35.51%
Education		
Graduation	63	45.65%
Post-graduation	74	53.62%
Vocational education	1	0.72%
Religion		
Christian	6	4.35%
Hindu	114	82.61%
Jain	1	0.72%
Muslim	12	8.70%
Sikh	4	2.90%
Other	1	0.72%

3.1. Statistical Analysis

The data was entered in an M.S. Excel spreadsheet, and analysis was done using Statistical Package for Social Sciences (SPSS) version 21.0. P <0.05 was considered significant. Categorical variables were presented in number and percentage (%), and continuous variables were presented as mean ± S.D. and median. Univariate logistic regression was used to find out significant risk factors of BDD and low self-esteem.

The comparison of quantitative variables was made through independent t-Test (for two groups) and ANOVA (for more than two groups). Qualitative variables were done using Fisher's Exact test. Pearson correlation coefficient was used to assess the correlation of total score and suicide risk assessment scale with several attempts. For statistical

significance, a p-value of less than 0.05 was considered significant.

Table 2. Distribution of DCQ scale of study subjects

DCQ scale	Frequency	Percentage
Have you ever: Been concerned about some aspect of your physical appearance?		
Not at all	20	14.49%
Same as most people	99	71.74%
More than most people	14	10.14%
Much more than most people	5	3.62%
Total	138	100.00%
Have you ever: Considered yourself misinformed or distorted in some way (e.g. nose/hair/skin/sexual organs/overall body build)		
Not at all	59	42.75%
Same as most people	68	49.28%
More than most people	9	6.52%
Much more often than most people	2	1.45%
Total	138	100.00%
Have you ever: Considered your body to be malfunctional in some way (e.g. excessive body odour/flatulence/sweating)		
Not at all	66	47.83%
Same as most people	58	42.03%
More than most people	13	9.42%
Much more often than most people	1	0.72%
Total	138	100.00%
Have you ever: Consulted or felt you needed to consult a plastic surgeon/dermatologist/physician about these concerns		
Not at all	87	63.04%
Same as most people	37	26.81%
More than most people	10	7.25%
Much more often than most people	4	2.90%
Total	138	100.00%
Have you ever: Been told by others/doctors that you are average in spite of you firmly believing that something is wrong with your appearance or bodily functioning		
Not at all	99	71.74%
Same as most people	32	23.19%
More than most people	7	5.07%
Total	138	100.00%
Have you ever: Spent a lot of time worrying about a defect in your appearance/ bodily functioning		
Not at all	72	52.17%
Same as most people	49	35.51%
More than most people	15	10.87%
Much more often than most people	2	1.45%
Total	138	100.00%
Have you ever: Spent a lot of time covering up defects in your appearance/ bodily functioning		
Not at all	89	64.49%
Same as most people	36	26.09%
More than most people	9	6.52%
Much more often than most people	4	2.90%
Total	138	100.00%
DCQ scale		
Mean ± SD		4.21 ± 3.25
Median(25th-75th percentile)		3.5(2-6)
Range		0-14

4. Results

The demographic characteristics of the study population have been shown in Table 1. The study patients' mean age was 27.73 ± 4.1 years with 65.22% females and 34.78% males. The majority of the population (72.46%) were unmarried and resided in an urban area (89.86%). Occupationally, 13.04% were students, and only 1.45% were unemployed. The rest of the population was employed like being health care providers (35.51%), business (12.32%), government employees (2.17%) and others (35.51%). The studied population were graduates (45.65%) or post-graduates (53.62%) with a single case of vocational education. The majority of the individuals were Hindu (82.61%), followed by Muslim (8.7%), Christian (4.35%) and others.

The DCQ scale replies and the total score has been shown in Table 2.

The concern about their physical appearance was the same as other people in the majority (71.74%), with 14.49% having no concern about their physical appearance. Among the study population, 17(12.32%) individuals were found to worry more about a functional body defect. While putting selfie images, 11(7.97%) individuals thought to have misshapen organs, and 14(10.14%) were concerned about their body odour and flatulence. A total of 13 (9.42%) individuals spent a lot of time covering the body defects by using selfie filters.
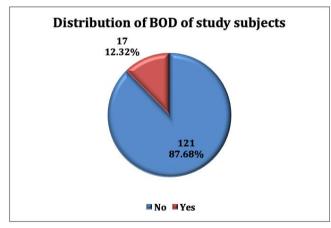

Figure 1. Distribution of BDD of study subjects

Overall, 14(10.14%) individuals felt to consult a medical professional for the body issues. Seven were told that by the doctors that they need not worry as they have standard bodies

like others.

The mean DCQ score of the study patients were 4.21 ± 3.25, with a median (IQR) of 3.5(2-6). As per the DCQ scale, Body dysmorphic disorder was present in 17(12.32%) patients. (Figure 1)

The mean Rosenberg self-esteem scale of the study patients was 30.12 ± 4.99. As per the scale, 6(4.35%) were having low self-esteem.

Social media platform was used in 94.93% of cases, among which Facebook and Instagram were commonly used. The mean duration of use was 4.2 hours. Selfie filters were used in 70.29% of cases, among which beauty filters and sweet face cameras were commonly used. The frequency of uploading selfies were 4 per day. (Table 3)

Table 3. Digital media use

Parameters	N (%)
Use of social media platform	131(94.93%)
Facebook	92(70.23%)
Instagram	26(19.85%)
Others	13(9.92%)
Duration of use (hours)	4.2±1.5
Use of selfie filters	97(70.29%)
Beauty filter	49(50.52%)
Sweet Face Camera	39(40.00%)
Others	9(9.28%)
Frequency of uploading selfies (/day)	4.065±1.65

Table 4. Univariate logistic regression to find out significant risk factors of BDD

BDD	Beta coefficient	Standard Error	P-value	Odds ratio	95% C.I.for Odds ratio	
					Lower	Upper
Age	0.071	0.063	0.264	1.073	0.948	1.215
Gender						
Female				1		
Male	-0.28	0.565	0.62	0.756	0.25	2.288
Marital Status						
Unmarried				1		
Married	0.892	0.547	0.103	2.441	0.835	7.133
Widow/ Widower/ Divorced	2.314	1.457	0.112	10.111	0.582	175.704
Area of Residence						
Urban				1		
Sub-urban	0.932	0.699	0.182	2.54	0.645	10.001
Rural	0.932	2.326	0.689	2.54	0.027	242.708
Occupation						
Business				1		
Unemployed	0.216	2.022	0.915	1.241	0.024	65.343
Government employee	-0.121	1.881	0.949	0.886	0.022	35.375
Health care provider	-0.489	0.861	0.57	0.613	0.113	3.314
Student	-0.632	1.121	0.573	0.531	0.059	4.779
Other	0.5	0.784	0.524	1.648	0.354	7.664
Education						
Graduation				1		
Post-graduation	-0.837	0.528	0.113	0.433	0.154	1.218
Vocational education	0.42	2.333	0.857	1.522	0.016	147.183
Religion						
Hindu				1		
Christian	0.718	1.037	0.488	2.051	0.269	15.64
Jain	0.919	2.328	0.693	2.506	0.026	240.062
Muslim	1.019	0.713	0.153	2.77	0.685	11.202
Sikh	-0.18	1.692	0.915	0.835	0.03	23.015
Other	0.919	2.328	0.693	2.506	0.026	240.062
Frequency of uploading selfies	3.300	0.944	0.0005	27.115	4.260	172.599
Use of selfie filters	1.699	0.884	0.049	5.466	1.021	30.927

Table 5.   Univariate logistic regression to find out significant risk factors of low self-esteem

Low self-esteem	Beta coefficient	Standard Error	P-value	Odds ratio	95% C.I. for Odds ratio	
					Lower	Upper
Age	-0.048	0.105	0.651	0.954	0.776	1.172
Gender						
Female				1		
Male	-1.017	1.11	0.36	0.362	0.041	3.188
Marital Status						
Unmarried				1		
Married	-0.31	0.953	0.745	0.734	0.113	4.751
Widow/ Widower/ Divorced	1.244	1.948	0.523	3.47	0.076	158.044
Area of Residence						
Urban				1		
Sub-urban	1.762	0.87	0.043	5.821	1.058	32.027
Rural	2.183	2.363	0.355	8.873	0.087	910.072
Occupation						
Business				1		
Unemployed	1.945	2.404	0.418	6.994	0.063	778.378
Government employee	1.609	2.286	0.481	5	0.057	441.379
Health care provider	0.611	1.615	0.705	1.842	0.078	43.641
Student	1.668	1.632	0.307	5.303	0.216	129.995
Other	0.611	1.615	0.705	1.842	0.078	43.641
Education						
Graduation				1		
Post-graduation	0.451	0.814	0.579	1.57	0.319	7.741
Vocational education	2.103	2.4	0.381	8.194	0.074	903.756
Religion						
Hindu				1		
Christian	0.426	1.645	0.796	1.531	0.061	38.475
Jain	1.892	2.351	0.421	6.631	0.066	665.153
Muslim	0.954	1.005	0.342	2.597	0.363	18.599
Sikh	0.794	1.723	0.645	2.212	0.075	64.839
Other	1.892	2.351	0.421	6.631	0.066	665.153
Frequency of uploading selfies	1.242	0.329	0.0002	3.463	1.817	6.598
Use of selfie filters	1.774	1.497	0.236	5.896	0.314	110.794

On performing univariate logistic regression, widowed individuals (OR 10.111, p=0.112) and married persons (OR 2.441, p=0.103) carried a higher risk for BDD in comparison to unmarried persons; males showed a lower risk of BDD (OR.756, p=0.620) in contrast to females; sub-urban and rural areas carried a higher risk (OR 2.54) in comparison to urban areas. However, statistically, none of the demographic factors was found to be a significant risk factor of BDD. The frequency of uploading selfies and use of selfie filters was significantly associated with higher odds of body dysmorphic disorder with an odds ratio of 27.115 and 5.466, respectively, as shown in Table 4.

On performing multivariate logistic regression, the frequency of uploading selfies was an independent risk

factor of BDD with an adjusted odds ratio of 32.883(4.321 to 250.261).

For low self-esteem, males showed a lower risk (OR.362, p=0.360); Widow/ Widower/ Divorced showed a higher risk (OR 3.470, p=0.523). People residing in suburban areas had a significantly higher risk and higher risk of low self-esteem with an odds ratio of 5.821, p=0.043. The frequency of uploading selfies was significantly associated with low self-esteem with an odds ratio of 3.463 with a p-value of 0.0002; however, selfie filters did not show a statistically significant risk associated with low self-esteem (Table 5).

On performing multivariate logistic regression, none of the factors was an independent risk factor of low self-esteem.

5. Discussion

The present generation has become an age of digitalization where every person is engaged in digital gadgets [4]. The demand for a clearer picture of oneself has brought many apps that may beautify your image with perfection. This has led to the continuous judgement of oneself in terms of body stature and looks. Dysmorphic concern, "an overconcern with an imagined or slight defect in physical appearance" [5], is one of the preliminary diagnostic criteria for BDD.

In the present study, among 70 participants, BDD was present in 17(12.32%) patients. The prevalence may vary among different populations with the use of different scales such as the 34-item Body Dysmorphic Disorder Examination (BDDE) [8], Body Dysmorphic Disorder Questionnaire (BDDQ) [9], Body Image Disturbance Questionnaire (BIDQ) [10] and DCQ.

In the present study, the DCQ scale used for BDD assessment in the present study has been validated as a screening tool for the general population rather than in-hospital psychology patients [6]. In corroboration with our study, Jorgensen et al. [11] reported BDD in 19(29%) patients using DCQ and BDDE. An Indian study by Dutta E et al. [12] on 92 U.G. and 103 PG students observed high mean scores of Body Image Acceptance and Action Questionnaire (BIAAQ), indicating obsession with body images while taking selfies. This has posed certain problems for those with concerns about their body image, especially girls, as our society defines women more by their physical appearance [12-14].

This was evident in the present study, where females carried a higher odds risk (though statistically not significant) of BDD in comparison to males. Even the total population studied that used selfie filters were predominated by women (65.22%). It has been proposed that the BDD becomes worst in girls because of their rigid perfectionist beliefs about their looks [4]. The findings were in line with Dutta et al. [12], where the use of selfies affected more females (undergraduates), P = 0.01, with no difference in the BIAAQ scores among males and females for the P.G. group (P = 0.843). Overall like the present study, there was no significant difference in the gender predisposition towards selfie images and BDD.

This has been confirmed in other studies where BDD Prevalence rates are similar among females and males [15,16]. The gender equivalence might be because females are more secretive about revealing selfie images and filters while participating in the surveys [6]. Grant et al. [17]. observed that 13.1% (n=122) of psychiatric patients were unwilling to disclose the concern of body dysmorphism when enquired. In another study, 16 (3.2%) individuals were reluctant to disclose body dysmorphism [18]. Though these two studies have been done only in psychiatric patients, this secretiveness has been much more pronounced in the general population, leading to statistical insignificance among males and females [19,20].

The use of selfies among young people has led to more seeking of medical professionals for BDD in terms of various surgeries and aesthetic procedures [4,6]. In our study, 14(10.14%) individuals felt to consult a medical professional for the body issues. Data shows that there has been an increase in 10% nose jobs, 7% hair transplants and 6% eyelid surgery over the years [14]. Since this perception of body image is becoming stronger with Instagram and Facebook selfie posting, plastic surgeries may observe an exponential rise in the future.

Despite this, it must be brought to attention that all individuals may not be in need of body correction surgery. It is just their misconception about themselves that is letting them be worried about their body image, thereby affecting them negatively in terms of causing anxiety, depression and other co-morbid psychiatric illnesses like a social phobia and obsessive-compulsive disorder (OCD) [21]. This may be because the concerns about body dysmorphism may be overpowered by other preoccupations that become difficult to control. The increasing belief and conviction about the negative self-perception may lead to the ideation of delusionality [22]. The delusions may include the belief that people criticize their appearance, note their defects and evaluate them negatively on social platforms, thereby leading to a negative perception of themselves [23].

This has led to the use of selfie-filters equivalent to the makeups/cosmetics that bring about camouflage in the usual life, seeking reassurance about their good body, thereby defying the flaw or the concern about the body disfigurement created in their mind.

In the present study, BDD was at higher risk among individuals residing in suburban and rural areas, which may be because of low confidence, self-image, and self-esteem among those residents compared to the urban population.

Decades of history have linked beauty with women, and the judgement over the digital world has exponentially increased the feeling of negative "self-evaluation", leading to low self-esteem [6].

In our study, we found 6(4.35%) cases of low self-esteem and females had a higher odds ratio (O.D.) for low self-esteem than males, though statistically, it failed to cross statistical boundaries. Literature shows that selfie-taking has been linked with low self-esteem [19]. It is comprehended that social media has become one of the resources to mediate interpersonal interaction to fulfil their self-esteem needs. The population try to boost their identity and morale through approval and "likes" of their selfie photos on social media which aggravates the misconceptions and assumptions. As per the self-verification theory [20], selfies are used to "receive self-verification from others in the form of positive comments and likes, but for those with body image issues, it leads to constant seeking and comparing of others' evaluations, ultimately leading to depressed affect".

Corroborating with risk factors associated with BDD, we found that individuals staying in suburban and rural areas had significantly low self-esteem. This may be related to the education and occupational status of that population. The exact reason for this low self-esteem may be linked

to the stigma of cultural and moral barriers that the rural-urban divide holds [24]. There is a certain level of discrimination that negatively impacts an individual in terms of his well-being, morale, and self-esteem. Though selfie filters and social platforms are becoming rampant in rural and urban sites, an inherent social stigma and negative discrimination may be a confounding factor causing a statistically significant difference in self-esteem and BDD in the present study.

The current study holds strength by clearly showing that the use of social media platforms and uploading of selfies with selfie filters increase the risk of body dysmorphic disorder, resulting in an overall decrease in the self-esteem of the general population. Since the frequency of uploading selfies carries a significantly higher risk of this disorder, it must be stressed here that general awareness must be created to decrease the frequency of selfie filters uploading and use.

The study had certain limitations. First, the study population was heterogeneous in terms of married-unmarried individuals, residents of rural/urban areas, students and working groups. Secondly, the study was conducted on small sample size. Third, we did not compare the type of use of gadgets (mobile/i=Pad) as this might impact the self-esteem of the participant.

6. Conclusions

The use of selfie filters on social platforms is raising concerns among individuals about their body dysmorphism. Such beliefs are intrusive, lowering the self-esteem of the individuals. The rural residents are at a significantly higher risk than the urban population, which might be due to behavioural discrimination, a fact that needs further large multi-centric trials for evidence. The regularity of uploading selfies with the use of selfie filters create more dysmorphism in the mind causing lowered self esteem.

Practical recommendations based on results: The use of selfie filters must be consciously applied without paying attention to the opinion of other person's, and one must keep oneself confidence intact about the body contour.

REFERENCES

[1] Karatsoli, M., Nathanail, E. Examining gender differences of social media use for activity planning and travel choices. Eur Transp Res Rev 2020; 12: 44.

[2] Yang J, Fardouly J, Wang Y, Shi We. Selfie-viewing and facial dissatisfaction among emerging adults: a moderated mediation model of appearance comparisons and self-objectification. Int J Environ Res Public Health 2020; 17(2): 672.

[3] Schieber K, Kollei I, de Zwaan M, Martin A. Classification of body dysmorphic disorder - what is the advantage of the new DSM-5 criteria? J Psychosom Res 2015; 78(3): 223-7.

[4] Khanna A, Sharma MK. Selfie use: The implications for psychopathology expression of body dysmorphic disorder. Ind Psychiatry J 2017; 26(1): 106-9.

[5] Oosthuizen P, Lambert T, Castle DJ, Dysmorphic concern: Prevalence and associations with clinical variables. Aust NZ J Psychiatry 1998; 32: 129–32.

[6] Mancuso SG, Knoesen NP, Castle DJ. The Dysmorphic Concern Questionnaire: A screening measure for body dysmorphic disorder. Aust N Z J Psychiatry 2010; 44(6): 535-42.

[7] Self report measures for love and compassion research: self-esteem. Available from https://fetzer.org/sites/default/files/images/stories/pdf/selfmeasures/Self_Measures_for_Love_and_Compassion_Research_SELF-ESTEEM.pdf [Accessed March 2021].]

[8] Rosen JC, Reiter J. Development of the body dysmorphic disorder examination. Behav Res Ther 1996; 34: 755–66.

[9] Phillips KA, Atala K.D., Pope HG. Diagnostic instruments for body dysmorphic disorder. Annual Meeting New Research Program and Abstracts. Washington, DC: American Psychiatric Association; 1995. p. 157.

[10] Cash TF, Phillips KA, Santos MT, Hrabosky JI. Measuring "negative body image": validation of the Body Image Disturbance Questionnaire in a nonclinical population. Body Image 2004; 1: 363–72.

[11] Jorgensen L, Castle D, Roberts C, Groth-Marnat G. A clinical validation of the Dysmorphic Concern Questionnaire. Aust NZ J Psychiatry 2001; 35: 124–8.

[12] Dutta E, Sharma P, Shah N, Bharati A, Sonavane S, Desousa A. Attitude toward selfie-taking and its relation to body image and narcissism in medical students. Indian J Psychol Med. 2018; 40(1): 17-21.

[13] Slater A, Tiggemann M. Gender differences in adolescent sport participation, teasing, self-objectification and body image concerns. J Adolesc 2011; 34: 455–63.

[14] Vats M. Selfie syndrome: An infectious gift of I.T. to health care. J Lung Pulm Respir Res 2015; 2: 48.

[15] Faravelli C, Salvatori S, Galassi F, Aiazzi L, Drei C, Cabras P. Epidemiology of somatoform disorders: a community survey in Florence. Soc Psychiatry Psychiatr Epidemiol 1997; 32: 24–9.

[16] Rief W, Buhlmann U, Wilhelm S, Borkenhagen ADA, Brähler E. The prevalence of body dysmorphic disorder: a population-based survey. Psychol Med 2006; 36: 877–85.

[17] Grant JE, Kim S, Crow SJ. Prevalence and clinical features of body dysmorphic disorder in adolescent and adult psychiatric inpatients. J Clin Psychiatry 2001; 62: 517–22.

[18] Zimmerman M, Mattia JI. Body dysmorphic disorder in psychiatric outpatients: Recognition, prevalence, comorbidity, demographic, and clinical correlates. Compr Psychiatry 1998; 39: 265–70.

[19] Varnali K. Self-disclosure on social networking sites. Social Behavior Personality 2015; 43: 1–14.

[20] Swann WB. Self-verification: Bringing social reality into harmony with the self. In: Suls J, Greenwald AG, editors.

Social Psychological Perspectives on the Self, 2nd volume. Hillsdale, NJ: Lawrence Erlbaum; 1983. pp. 33–66.

[21] Gunstad J, Phillips KA. Axis I comorbidity in body dysmorphic disorder. Compr Psychiatry 2003; 44: 270–6.

[22] Phillips KA, Psychosis in body dysmorphic disorder. J Psychiatr Res 2004; 38: 63–72.

[23] Phillips KA, McElroy SL, Keck PE Jr, Pope HG Jr, Hudson JI. Body dysmorphic disorder: 30 cases of imagined ugliness. Am J Psychiatry 1993; 150: 302–8.

[24] Forthal S, Fekadu A, Medhin G, Kebede D, Alem A, Cleare A.J., et al. Rural vs urban residence and experience of discrimination among people with severe mental illnesses in Ethiopia. BMC Psychiatry 2019; 19: 340.