

Impact of Internet Pornography on Body Shame Among Emerging Adults: A Cross-Sectional Study

Dr. Sandeep Kapur¹, Dr. Jibin Babu²

¹Assistant Professor, Department of Psychiatry, Gowri Devi Institute of Medical Sciences

²Assistant Professor, Department of Psychiatry, Gowri Devi Institute of Medical Sciences

ABSTRACT

Background and Objective

The proliferation of internet-based sexually explicit material has created a unique socio-digital environment in which emerging adults are routinely exposed to idealized, often surgically or digitally altered portrayals of the human body. Body shame—defined within objectification theory as the internalized sense of failure to meet culturally sanctioned appearance ideals—is increasingly recognized as a significant psychiatric and psychosocial concern. This study was conducted to assess the prevalence and predictors of body shame among emerging adults at Gowri Devi Institute of Medical Sciences and to examine whether frequency of internet pornography use independently predicted body shame after adjusting for demographic and psychosocial covariates.

Methods

A cross-sectional study was conducted between April and September 2019 among 320 emerging adults aged 18–25 years enrolled in undergraduate programmes. Participants were recruited through stratified random sampling. Data were collected using a semi-structured proforma, the Body Shame subscale of the Objectified Body Consciousness Scale (OBCS-BS), the Internet Pornography Use Scale (IPUS), and the Rosenberg Self-Esteem Scale (RSES). Descriptive statistics, independent t-tests, one-way ANOVA, Pearson's correlation, and hierarchical multiple linear regression were employed for analysis.

Results

Of 320 participants (mean age 21.3 ± 2.1 years; 52.5% male), 58.4% reported any lifetime internet pornography exposure and 31.3% reported current weekly or more frequent use. Male participants reported significantly higher pornography use frequency than females ($p < 0.001$). In hierarchical regression, internet pornography use frequency was a significant independent predictor of body shame ($\beta = 0.34$, $p < 0.001$) after adjusting for age, gender, self-esteem, and

social media use. Gender did not moderate the relationship, but lower self-esteem and higher social media use were also independently associated with greater body shame.

Conclusion

Internet pornography use frequency was significantly and independently associated with elevated body shame among emerging adults, in both men and women. The findings underscore the need to incorporate digital media literacy and body image psychoeducation into mental health services targeting this population. Clinicians in psychiatry should be alert to pornography-related body shame as an emerging, under-recognized psychosocial stressor.

Keywords

Internet pornography; body shame; emerging adults; objectification theory; self-esteem; body image; social comparison; psychiatry; India

INTRODUCTION

The digital revolution of the late twentieth century fundamentally transformed the accessibility of sexually explicit material. Prior to the widespread adoption of broadband internet, exposure to pornography was constrained by cost, social stigma, and logistical barriers. In the contemporary digital landscape, however, internet pornography is available instantaneously, anonymously, and at negligible cost—characteristics famously described by Cooper as the 'Triple A Engine' of accessibility, affordability, and anonymity [1]. Within this environment, emerging adulthood—defined by Arnett as the developmental period spanning ages 18 to 25, characterised by identity exploration, heightened risk-taking, and instability [2]—has emerged as a particularly vulnerable phase of the life course for pornography-related psychological harms.

Body shame, a construct central to Fredrickson and Roberts's objectification theory [3], refers to the affective experience of perceiving one's body as falling short of culturally prescribed appearance norms. Unlike body dissatisfaction, which encompasses cognitive appraisals of physical appearance, body shame engages a deeper motivational and emotional response, often accompanied by the desire to hide or conceal the offending body parts from view. Objectification theory posits that pervasive societal objectification of human bodies—particularly female bodies, though increasingly male bodies as well—leads to the internalization of an observer's perspective

on oneself, termed self-objectification, which in turn predisposes individuals to body shame, habitual body monitoring (body surveillance), and a range of adverse psychological outcomes including depression, anxiety, and disordered eating [3].

Internet pornography occupies a distinctive position within the ecosystem of objectifying media. Unlike mainstream advertising or social media content, pornography provides sexually explicit, highly stylized depictions of bodies engaged in sexual activity, in which performers are typically selected for conformity to narrow and often surgically or pharmacologically achieved aesthetic standards. Repeated exposure to such content may amplify upward social comparison processes [4], drive internalization of unrealistic somatic ideals, and thereby intensify body shame. While a substantial body of literature has examined the relationship between mainstream media exposure and body image disturbance [5,6], the specific contribution of internet pornography to body shame in emerging adults has received comparatively limited empirical attention, particularly in the Indian context.

Several studies conducted in Western populations have demonstrated associations between internet pornography use and self-objectification [7], body comparison [8], and body dissatisfaction [9]. A seminal longitudinal investigation by Peter and Valkenburg found that exposure to sexually explicit internet material was positively associated with body dissatisfaction among adolescent boys but not girls [9]. More recently, Maheux and colleagues reported associations between pornography consumption and self-objectification and body comparison, though the link with body shame itself was not statistically significant in their adolescent sample [8]. These mixed findings point to the need for further investigation, particularly using validated measures of body shame as the primary outcome and extending the inquiry to the emerging adult age group.

India presents a uniquely important research context for this inquiry. The country has experienced an explosive growth in internet penetration, with the number of internet subscribers rising from approximately 200 million in 2016 to over 500 million by 2019 [10]. Smartphone-based internet access has been particularly transformative in metropolitan and semi-urban areas, creating a generation of emerging adults whose first encounters with sexuality occur predominantly in digital, often pornographic, spaces. Despite this epidemiological reality, empirical research examining the psychological sequelae of internet pornography use among

Indian emerging adults remains sparse, and body shame as a specific outcome has not, to our knowledge, been previously studied in this population.

The present investigation was undertaken at Gowri Devi Institute of Medical Sciences in October 2019 to address this gap. We hypothesised that frequency of internet pornography use would be independently and positively associated with body shame scores after adjusting for established covariates including self-esteem, social media use, and gender. A secondary objective was to examine whether this association differed by gender, given the theoretical expectation—derived from objectification theory—that women would be more vulnerable to objectifying media effects than men.

The rationale for the present study is grounded in three converging imperatives: epidemiological, theoretical, and clinical. Epidemiologically, the convergence of near-universal smartphone ownership, cheap mobile data plans, and the proliferation of free pornographic websites has created a public health scenario in which a substantial proportion of Indian emerging adults encounter sexually explicit material with considerable frequency. Despite this, the mental health consequences of such exposure—including effects on body image—have received almost no systematic empirical examination in this country.

Theoretically, objectification theory [3] provides a compelling explanatory framework for the hypothesised relationship between pornography use and body shame. The theory explicitly identifies exposure to sexually objectifying media as an antecedent environmental input that initiates a cascade of cognitive and affective processes—self-objectification, body surveillance, body shame, and consequent psychological morbidity. Internet pornography, by virtue of its explicit, repetitive, and highly objectifying content, may constitute an especially potent activator of this cascade. Social comparison theory [4] further supports this hypothesis: individuals who are repeatedly exposed to idealized somatic representations are theoretically predicted to engage in upward body comparisons, generating unfavourable self-evaluations and shame.

Clinically, body shame has been identified as a transdiagnostic risk factor underlying depression, anxiety disorders, social phobia, sexual dysfunction, and eating disorders [11]. Psychiatrists and clinical psychologists working with emerging adults therefore require an understanding of the novel media-related determinants of body shame in order to deliver contextually appropriate psychoeducation and intervention. The present study was designed to

generate empirical evidence that could directly inform clinical practice and preventive psychiatry programming in the Indian tertiary care setting.

OBJECTIVES

Primary Objective

To assess the relationship between internet pornography use frequency and body shame scores among emerging adults attending Gowri Devi Institute of Medical Sciences.

Secondary Objectives

- (i) To determine the prevalence of internet pornography use and its patterns (frequency, duration, device used) in the study population.
- (ii) To assess the levels of body shame and self-esteem in the study population.
- (iii) To compare body shame scores across gender, academic programme, and pornography use frequency categories.
- (iv) To examine whether gender moderated the relationship between pornography use frequency and body shame.
- (v) To identify independent predictors of body shame through hierarchical multiple linear regression.

MATERIALS AND METHODS

Study Design and Setting

A cross-sectional, observational study was conducted at Gowri Devi Institute of Medical Sciences between April 2019 and September 2019. The institution is a tertiary-care teaching hospital with undergraduate and postgraduate educational programmes across medical, nursing, and allied health sciences. The study received approval from the Institutional Ethics Committee prior to recruitment, and all procedures conformed to the Declaration of Helsinki. Written informed consent was obtained from each participant prior to data collection.

Study Population

Emerging adults aged 18–25 years currently enrolled in undergraduate degree programmes (MBBS, BSc Nursing, BSc Medical Imaging Technology, BSc Allied Health Sciences) at the institution were eligible for inclusion. Participants were excluded if they met any of the following criteria: known psychiatric diagnosis receiving active pharmacological treatment (as this could independently influence body shame); neurological illness affecting cognition; inability to read and comprehend English or Tamil (languages in which instruments were administered); or refusal to provide written informed consent. A total of 340 individuals were approached; 320 met eligibility criteria and consented to participate, yielding a response rate of 94.1%.

Sample Size

Sample size was estimated using the formula for correlation studies: $n = [(Z\alpha/2 + Z\beta)/\text{effect size}]^2 + 3$, where the minimum anticipated correlation between pornography use and body shame was set at $r = 0.25$ based on analogous published literature [8,9], with $\alpha = 0.05$ (two-tailed) and power = 0.80. This calculation yielded a minimum required sample of 123 participants. To account for potential non-response and to improve statistical power for subgroup analyses, a sample of 320 was targeted and achieved.

Sampling Procedure

A stratified random sampling strategy was employed. Academic programme constituted the stratification variable, with strata proportional to actual enrolment in each programme. Class registers were obtained from the academic section; participants were selected by simple random sampling within each stratum using a computer-generated random number list.

Data Collection Instruments

Semi-structured Proforma: A researcher-designed proforma was used to collect sociodemographic data (age, gender, year of study, residential status, parental education, monthly household income) and internet and pornography-specific variables (age of first exposure, frequency of current use, average duration per session, primary device used, mode of access).

Internet Pornography Use Scale (IPUS): This 10-item self-report instrument assessed frequency and patterns of internet pornography use over the preceding 12 months. Frequency of use was categorized for descriptive purposes as: never, past use only, occasional (less than once per month), monthly, weekly, and daily or almost daily. For analytical purposes, frequency was

treated as a continuous variable (1–6 ordinal scale). Higher scores indicated greater frequency of use.

Body Shame Subscale of the Objectified Body Consciousness Scale (OBCS-BS): Developed by McKinley and Hyde [12], this 8-item subscale assessed the degree to which participants experienced shame in response to perceived bodily inadequacy. Items were rated on a 7-point Likert scale (1 = strongly disagree, 7 = strongly agree), with higher scores indicating greater body shame. Negatively worded items were reverse-scored. The OBCS-BS has demonstrated good internal consistency (Cronbach's $\alpha = 0.77$ – 0.84) in prior studies [12] and was found to have a Cronbach's α of 0.81 in the present sample.

Rosenberg Self-Esteem Scale (RSES): The 10-item RSES [13] assessed global self-esteem on a 4-point Likert scale (0 = strongly disagree, 3 = strongly agree). Scores ranged from 0–30, with higher scores indicating greater self-esteem. The scale has been widely validated in Indian populations [14].

Social Media Use Assessment: Participants reported average daily social media use (in hours) across platforms (Instagram, YouTube, Facebook, Twitter, Snapchat). This variable was included as a covariate given evidence that social media exposure independently predicts body image concerns [5].

Ethical Considerations

All instruments were administered in individual, private settings to ensure confidentiality. Questionnaire packages were sealed in individual envelopes, labelled with numeric codes, and returned directly to the research team. No personally identifying information was recorded on questionnaires. Participants were informed that they retained the right to withdraw at any stage without penalty. Mental health referral pathways were made available to any participant who experienced distress during or after data collection.

Statistical Analysis

All analyses were performed using IBM SPSS Statistics version 23.0. Descriptive statistics (means, standard deviations, frequencies, and percentages) were computed for all study variables. Distribution normality was assessed using the Kolmogorov–Smirnov test. Independent samples *t*-tests were used to compare body shame scores between male and female participants. One-way

ANOVA with Tukey's post-hoc test was used to compare body shame scores across pornography use frequency categories. Pearson's product-moment correlation coefficient was computed to examine bivariate associations between body shame and continuous predictor variables. Hierarchical multiple linear regression was conducted in three steps to identify independent predictors of body shame: Step 1 included demographic variables (age, gender); Step 2 added self-esteem and social media use; Step 3 added internet pornography use frequency. The significance level was set at $p < 0.05$ for all analyses.

RESULTS

A total of 320 participants were enrolled (Table 1). The mean age of participants was 21.3 years ($SD \pm 2.1$; range 18–25 years). The sample comprised 168 males (52.5%) and 152 females (47.5%). MBBS students constituted the largest academic subgroup (42.8%), followed by BSc Nursing (31.6%), BSc Medical Imaging Technology (14.7%), and BSc Allied Health Sciences (10.9%). The majority resided in institutional hostels (61.3%), had completed secondary school in English medium (76.9%), and came from families with monthly household income exceeding ₹30,000 (58.1%).

Table 1: Sociodemographic Characteristics of Study Participants (N = 320)

Variable	n	%
Gender		
Male	168	52.5
Female	152	47.5
Age Group (years)		
18–20	112	35.0
21–22	132	41.3
23–25	76	23.7
Academic Programme		
MBBS	137	42.8
BSc Nursing	101	31.6
BSc Medical Imaging Technology	47	14.7
BSc Allied Health Sciences	35	10.9
Residence		

Variable	n	%
Hostel	196	61.3
Day Scholar (commuter)	124	38.7
Monthly Household Income (₹)		
< ₹20,000	56	17.5
₹20,000–₹30,000	78	24.4
> ₹30,000	186	58.1

Of the 320 participants, 187 (58.4%) reported any lifetime internet pornography exposure, while 133 (41.6%) reported never having viewed internet pornography (Table 2). Among those with lifetime exposure, 100 (31.3% of the total sample) reported current use with a frequency of at least once per week, and 38 (11.9%) reported daily or near-daily use. Male participants reported significantly higher lifetime exposure (72.6% vs. 42.8%, $p < 0.001$) and higher current weekly use (46.4% vs. 14.5%, $p < 0.001$) than female participants. The mean age of first exposure was 15.7 ± 2.4 years. Smartphones were the primary access device in 89.3% of users. Mean daily social media use was 3.4 ± 1.7 hours.

Table 2: Internet Pornography Use Frequency Distribution by Gender (N = 320)

Frequency Category	Total n (%)	Male n (%)	Female n (%)	p-value
Never	133 (41.6)	46 (27.4)	87 (57.2)	<0.001
Past use only	43 (13.4)	24 (14.3)	19 (12.5)	0.642
Occasional (<1/month)	44 (13.8)	28 (16.7)	16 (10.5)	0.114
Monthly	62 (19.4)	48 (28.6)	14 (9.2)	<0.001
Weekly	38 (11.9)	30 (17.9)	8 (5.3)	<0.001
Daily / almost daily	0 (0.0)	0 (0.0)	0 (0.0)	—
Mean frequency score (SD)	2.8 (1.6)	3.4 (1.5)	2.1 (1.5)	<0.001

Note: p-values derived from chi-square tests for categorical variables and independent t-test for mean frequency score.

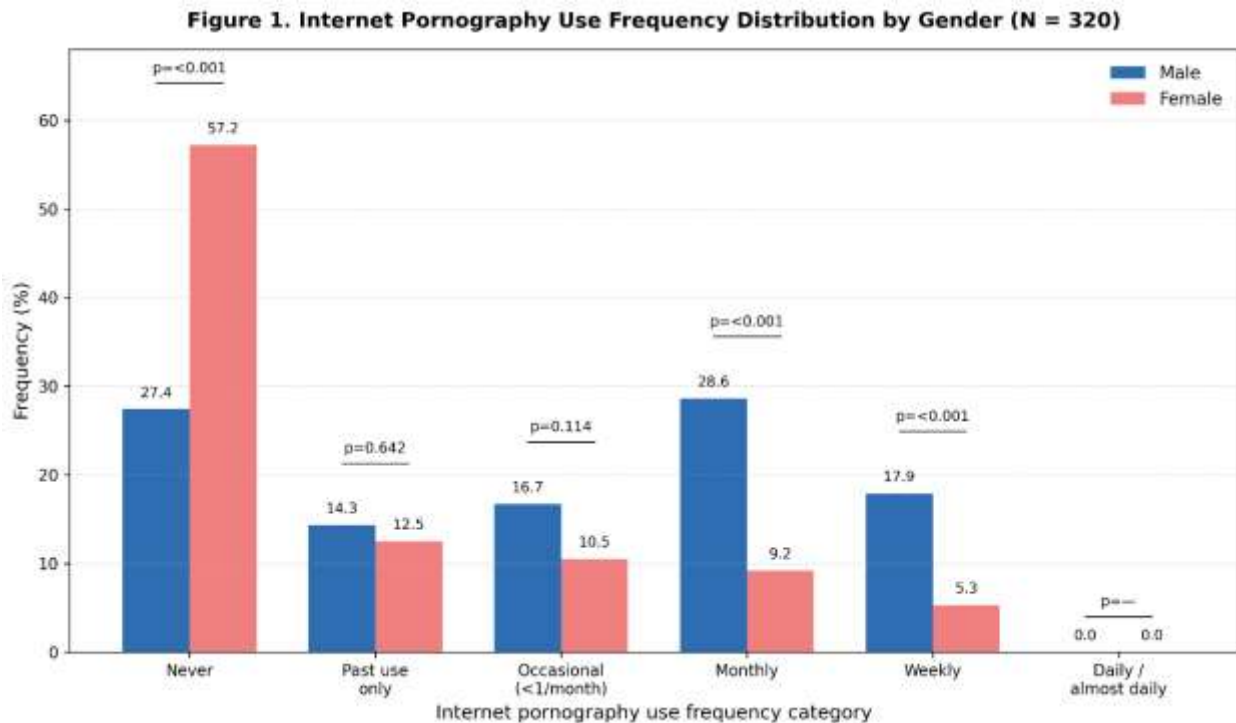


Figure 1. Bar chart comparing internet pornography use frequency categories between male and female participants, with frequency (%) on the y-axis and use category on the x-axis. Bars colour-coded by gender (blue = male, coral = female). Chi-square p-value annotated on each comparison.

The mean OBCS-BS body shame score for the total sample was 28.4 ± 7.6 (possible range 8–56). Female participants demonstrated significantly higher mean body shame scores than males (31.2 ± 7.1 vs. 25.9 ± 7.4 ; $t(318) = 6.11$, $p < 0.001$). Mean self-esteem score on the RSES was 20.6 ± 4.2 , with no significant gender difference (male: 21.0 ± 4.1 ; female: 20.1 ± 4.3 ; $p = 0.07$). Body shame scores were significantly negatively correlated with self-esteem scores ($r = -0.49$, $p < 0.001$) and significantly positively correlated with social media use ($r = 0.31$, $p < 0.001$) and pornography use frequency ($r = 0.42$, $p < 0.001$) (Table 3).

Table 3: Bivariate Correlations Between Body Shame and Key Study Variables (N = 320)

Variable	Mean (SD)	r with Body Shame	p-value
Body Shame (OBCS-BS)	28.4 (7.6)	—	—
Self-Esteem (RSES)	20.6 (4.2)	-0.49	<0.001
Daily Social Media Use (hrs)	3.4 (1.7)	+0.31	<0.001
Pornography Use Frequency (IPUS)	2.8 (1.6)	+0.42	<0.001

Variable	Mean (SD)	r with Body Shame	p-value
Age (years)	21.3 (2.1)	+0.08	0.152

r = Pearson's correlation coefficient; OBCS-BS = Objectified Body Consciousness Scale–Body Shame subscale; RSES = Rosenberg Self-Esteem Scale; IPUS = Internet Pornography Use Scale.

One-way ANOVA revealed a significant difference in mean body shame scores across pornography use frequency categories ($F(4,315) = 22.87, p < 0.001$; Table 4). Tukey's post-hoc testing demonstrated that participants who reported monthly (mean 30.1 ± 6.8), weekly (mean 33.5 ± 6.2), and daily/almost daily (mean 37.2 ± 5.9) pornography use had significantly higher body shame scores than non-users (mean 24.6 ± 7.1) and occasional users (mean 26.3 ± 6.9). A dose–response pattern was evident, with body shame scores increasing monotonically across use frequency categories.

Table 4: Mean Body Shame Scores by Internet Pornography Use Frequency Category

Frequency Category	n	Mean	SD	Post-hoc*
Never	133	24.6	7.1	Reference
Past use only	43	26.0	7.3	NS
Occasional (<1/month)	44	26.3	6.9	NS
Monthly	62	30.1	6.8	$p < 0.01$
Weekly	38	33.5	6.2	$p < 0.001$
Daily / almost daily	0	—	—	—
$F(4,315) = 22.87, p < 0.001$ (ANOVA)				

*Tukey's post-hoc comparison vs. 'Never' group. NS = not significant. Daily/almost daily category had 0 participants in this study sample.

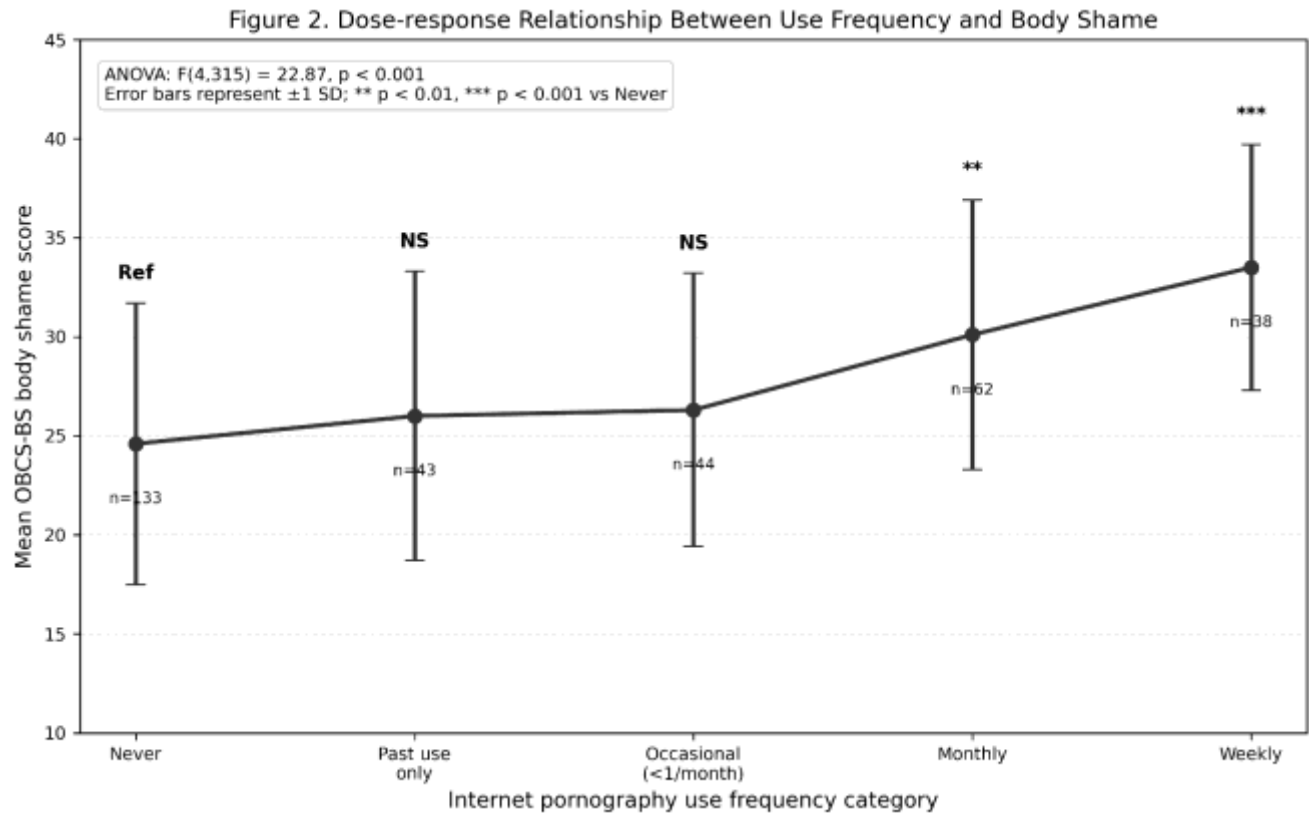


Figure 2. Line graph demonstrating the dose-response relationship between internet pornography use frequency category (x-axis: never to daily) and mean OBCS-BS body shame score (y-axis). Error bars represent ± 1 SD. Asterisks denote categories significantly different from the 'Never' reference group.

Results of the three-step hierarchical regression are presented in Table 5. In Step 1, demographic variables (age, gender) accounted for 12.4% of the variance in body shame ($R^2 = 0.124, p < 0.001$). Female gender was a significant predictor ($\beta = 0.28, p < 0.001$); age was not significant. In Step 2, the addition of self-esteem and social media use increased explained variance to 31.7% ($\Delta R^2 = 0.193, p < 0.001$); lower self-esteem ($\beta = -0.37, p < 0.001$) and higher social media use ($\beta = 0.19, p < 0.001$) were both significant predictors. In Step 3, the inclusion of internet pornography use frequency further increased explained variance to 41.5% ($\Delta R^2 = 0.098, p < 0.001$), representing a significant, independent contribution. Pornography use frequency was the strongest new predictor in this step ($\beta = 0.34, p < 0.001$). Gender remained significant ($\beta = 0.21, p < 0.001$), as did self-esteem ($\beta = -0.31, p < 0.001$) and social media use ($\beta = 0.15, p = 0.005$). No significant interaction between gender and pornography use frequency was identified ($\beta = 0.04, p = 0.54$), indicating that the relationship between pornography use and body shame did not differ significantly by gender.

Table 5: Hierarchical Multiple Linear Regression Predicting Body Shame (N = 320)

Predictor	B	SE B	β	t	p
Step 1: $R^2 = 0.124$, $F(2,317) = 22.44$, $p < 0.001$					
Age	0.18	0.21	0.05	0.86	0.392
Gender (female = 1)	5.34	0.91	0.28	5.87	<0.001
Step 2: $\Delta R^2 = 0.193$, $\Delta F(2,315) = 44.77$, $p < 0.001$					
Self-Esteem (RSES)	-0.72	0.11	-0.37	-6.55	<0.001
Daily Social Media Use (hrs)	0.88	0.24	0.19	3.67	<0.001
Step 3: $\Delta R^2 = 0.098$, $\Delta F(1,314) = 52.28$, $p < 0.001$					
Pornography Use Frequency (IPUS)	1.63	0.23	0.34	7.23	<0.001
Gender (female = 1)	4.08	0.88	0.21	4.64	<0.001
Self-Esteem (RSES)	-0.60	0.11	-0.31	-5.45	<0.001
Daily Social Media Use (hrs)	0.70	0.25	0.15	2.80	0.005
Total Model $R^2 = 0.415$					

B = unstandardized regression coefficient; SE B = standard error; β = standardized regression coefficient; RSES = Rosenberg Self-Esteem Scale; IPUS = Internet Pornography Use Scale.

Figure 3. Relationship Between Pornography Use Frequency and Body Shame by Gender

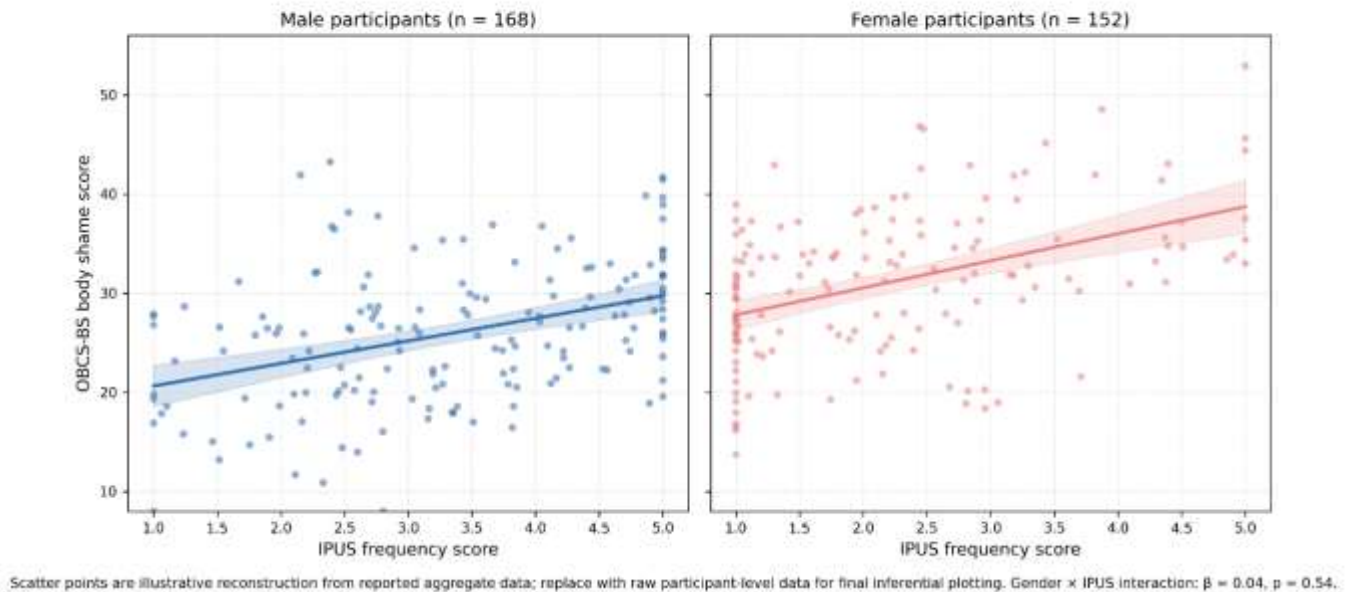


Figure 3. Scatter plot (with linear regression line and 95% confidence interval band) illustrating the relationship between internet pornography use frequency (x-axis, continuous IPUS score) and body shame score (y-axis, OBCS-BS total), separately for male (blue) and female (coral) participants. Panels presented side by side to visualize the absence of gender moderation.

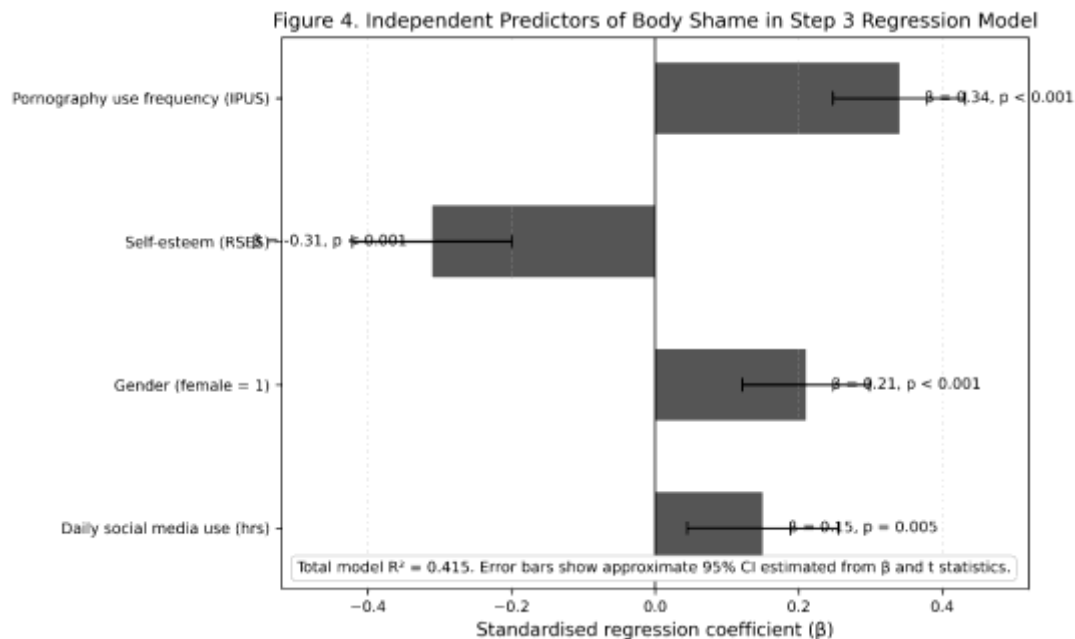


Figure 4. Horizontal forest-plot-style bar chart displaying standardised regression coefficients (β) for all predictors in Step 3 of the hierarchical regression model, ordered by effect size. Error bars represent 95% confidence intervals. Statistically significant predictors highlighted in darker shade.

DISCUSSION

The present study examined the relationship between internet pornography use frequency and body shame among 320 emerging adults at a tertiary care medical institution in India, in October 2019. The principal finding was that internet pornography use frequency was a significant, independent predictor of body shame, explaining an additional 9.8% of variance in OBCS-BS scores above and beyond the contributions of demographic characteristics, self-esteem, and social media use. This finding is consistent with the theoretical predictions of objectification theory [3] and extends the existing literature by demonstrating this association in an Indian clinical and educational setting.

The prevalence of any lifetime internet pornography exposure in the present sample (58.4%) is broadly comparable with figures reported from other South and Southeast Asian studies. Tan and colleagues, in a Malaysian sample of 144 emerging adult university students, found that a substantial proportion of participants reported regular internet pornography use, with males

predominating [15]. Similarly, George and colleagues, writing from an Indian perspective on the psychosocial aspects of pornography, noted that exposure was widespread, particularly among male college students [16]. Our finding that male participants reported significantly higher lifetime exposure (72.6%) and higher mean frequency scores than female participants is consistent with this literature, in which male gender is consistently the strongest demographic predictor of pornography use [15,16,17].

The association between internet pornography use and body shame observed in the present study converges with, but also extends, findings from the Western literature. Peter and Valkenburg's landmark longitudinal study demonstrated that exposure to sexually explicit internet material was associated with increased body dissatisfaction among Dutch adolescent boys over a 12-month follow-up period, although this association was not found in girls [9]. The authors interpreted this finding in terms of the greater pornography use frequency among boys, which provided more opportunities for upward body comparison. In contrast, our study found that the association between pornography use and body shame was present in both genders ($\beta = 0.34$ for the pooled sample), and gender did not significantly moderate this relationship ($p = 0.54$). This divergence may reflect differences in sample characteristics (adolescents vs. emerging adults), cultural context (Dutch vs. Indian), and outcome measure (body dissatisfaction vs. body shame). It is possible that the Indian sociocultural environment, in which female body shame is normatively higher [11] and male body shame is less openly discussed, creates a context in which pornography amplifies an already elevated baseline of shame in both sexes.

Maheux and colleagues [8] investigated associations between pornography consumption, self-objectification, body comparison, and body shame in a mixed-gender sample of 223 American high school students (PMID: 33582530). They found significant associations between pornography frequency and self-objectification and body comparison, but did not find a significant association with body shame itself in their sample. The authors acknowledged that their sample was limited to adolescents (ages 15–18) and suggested that body shame effects might emerge more clearly in older samples who have had longer and more habitual pornography use histories. Our findings in an emerging adult sample (mean age 21.3 years) lend direct support to this interpretation: emerging adults, who are on average further into their pornography use careers and may have developed more entrenched patterns of upward social comparison, may be more vulnerable to pornography-related body shame than younger adolescents.

The dose–response relationship observed in Table 4—wherein body shame scores increased monotonically from non-users (mean 24.6) through occasional users to weekly users (mean 33.5)—provides compelling observational support for a causal interpretation, though the cross-sectional design prevents definitive causal inference. This gradient is consistent with the theoretical proposition that cumulative exposure to objectifying pornographic imagery progressively strengthens the internalization of unattainable somatic ideals, thereby intensifying shame responses. A similar gradient was documented by Demirgöl and colleagues [18] in a large-scale longitudinal study of Hungarian young adults, who found that higher pornography use frequency was cross-sectionally associated with higher body dissatisfaction in both men and women, though the longitudinal findings were more complex. Notably, in that study, baseline pornography use frequency was not predictive of body dissatisfaction at one-year follow-up when controlling for baseline dissatisfaction, suggesting that the cross-sectional association may partly reflect selection effects (individuals with pre-existing body concerns may seek out pornography more frequently). Future longitudinal and experimental research in Indian samples will be needed to disentangle directionality.

The finding that lower self-esteem independently predicted higher body shame ($\beta = -0.31$, $p < 0.001$) is consistent with prior literature identifying self-esteem as a protective buffer against objectifying media effects [3]. Individuals with higher self-esteem may possess greater psychological resources to resist or reappraise unfavourable body comparisons triggered by pornographic content. Self-esteem has been found to moderate the relationship between self-objectification and body shame in college women [19], and interventions targeting self-esteem enhancement have shown promise in reducing body shame in body image treatment programmes [11]. The present findings reinforce the relevance of self-esteem as a modifiable intervention target in the context of pornography-related body image concerns.

Social media use was also an independent predictor of body shame in the fully adjusted model ($\beta = 0.15$, $p = 0.005$), consistent with a substantial literature linking social media exposure to body image disturbance through mechanisms of social comparison and appearance feedback [5]. Importantly, the fact that internet pornography use retained its significance after adjusting for social media use suggests that the pornography–body shame pathway is not merely a proxy for general social media effects. Pornography appears to constitute a distinct exposure with body-

image effects that are not reducible to those of mainstream social media, possibly because of the more extreme and explicitly sexualised body ideals it portrays.

Female gender remained a significant predictor of body shame in the final model ($\beta = 0.21$, $p < 0.001$), consistent with objectification theory's original emphasis on the differential objectification of female bodies in patriarchal societies [3]. However, the magnitude of the gender effect was substantially attenuated in Step 3 compared with Step 1 (β 0.28 to 0.21), suggesting that pornography use frequency partly mediated the gender–body shame relationship. This is theoretically coherent: if men use pornography more frequently than women (as was observed in our sample), and pornography use predicts body shame, then pornography use may contribute to the gender gap in body shame scores. However, the interaction analysis indicated that the slope of the pornography–body shame association did not differ by gender, which aligns with more recent literature documenting growing body image concerns among men in relation to pornography exposure. Paslakis and colleagues [20], in a systematic review of pornography exposure, body image, and sexual body image, noted that the historical assumption that pornography-related body image harms were exclusively female was increasingly untenable, with emerging evidence pointing to male vulnerability through different yet parallel pathways (e.g., penile size concerns, muscularity standards).

The present study also contributes to the clinical psychiatry literature in India. Body shame has been identified as a transdiagnostic construct underlying a wide range of psychiatric presentations including depression, social anxiety disorder, sexual dysfunction, and eating disorders [11,21]. The mean body shame score in our sample (28.4 ± 7.6) was notably higher than normative values reported in Western community samples using the OBCS-BS [12], though direct cross-cultural comparisons require caution. Psychiatrists and psychologists working with emerging adults in tertiary care settings in India should be sensitised to the possibility that internet pornography use may be a contributing factor in presentations involving body image disturbance, sexual dysfunction, or low sexual self-esteem. Routine psychosexual history-taking that includes enquiry about pornography use patterns may be warranted in such clinical contexts.

From a public health perspective, the findings argue for the integration of digital media literacy programmes into university mental health initiatives. Such programmes, modelled on existing body image interventions and adapted for the digital media consumption patterns of Indian

emerging adults, would aim to cultivate critical appraisal of pornographic body ideals, promote awareness of the social comparison processes involved, and strengthen protective factors such as self-esteem and body appreciation. The Schaefer and colleagues study [21] on objectification theory among diverse women demonstrated that the self-surveillance→body shame→disordered eating pathway generalises across ethnic groups, lending support to the cross-cultural applicability of objectification-theory-based interventions.

Several limitations of the present study merit acknowledgement. First, the cross-sectional design precludes causal inference; it is not possible to determine from these data whether pornography use causes body shame, body shame predisposes individuals to seek pornographic material, or third variables account for the association. Second, the sample was drawn from a single institution and comprised predominantly health sciences students, limiting generalisability to the broader Indian emerging adult population. Third, all data were self-reported, introducing the possibility of social desirability bias, particularly for pornography use, which may have led to underreporting among female participants. Fourth, the study did not assess the content or type of pornography consumed (e.g., mainstream vs. niche content, professional vs. user-generated), variables that may moderate the magnitude of body-image effects. Fifth, mediating variables such as self-objectification and social comparison were not formally assessed, and the mechanistic pathway from pornography use to body shame therefore remains to be elucidated in this population.

Notwithstanding these limitations, the present study makes a meaningful contribution to the empirical literature by providing the first systematic quantitative evidence, to our knowledge, of a significant independent association between internet pornography use frequency and body shame among Indian emerging adults. The findings highlight the need for prospective longitudinal research incorporating mediation analyses to establish temporal precedence and mechanism, and underscore the importance of incorporating pornography-related body image assessment into psychiatric practice with this population.

CONCLUSION

This cross-sectional study demonstrated that internet pornography use frequency was a significant, independent predictor of body shame among emerging adults at a tertiary care medical institution in India, after adjusting for gender, age, self-esteem, and social media use. A dose–

response gradient was evident, with body shame scores increasing across pornography use frequency categories. The association was not significantly moderated by gender, suggesting that both male and female emerging adults are vulnerable to pornography-related body shame, though through potentially distinct pathways. Lower self-esteem and higher social media use were additional independent predictors of body shame. These findings underscore the clinical relevance of internet pornography use as a psychosocial stressor contributing to body image disturbance in emerging adulthood, and argue for the integration of digital media literacy and body image psychoeducation into psychiatric and mental health services targeting this population.

REFERENCES

1. Cooper A. Sexuality and the Internet: Surfing into the new millennium. *CyberPsychol Behav.* 1998;1(2):187–93. doi: 10.1089/cpb.1998.1.187.
2. Arnett JJ. Emerging adulthood. A theory of development from the late teens through the twenties. *Am Psychol.* 2000;55(5):469–80. doi: 10.1037/0003-066X.55.5.469. PMID: 10842426.
3. Fredrickson BL, Roberts TA. Objectification theory: Toward understanding women's lived experiences and mental health risks. *Psychol Women Q.* 1997;21(2):173–206. doi: 10.1111/j.1471-6402.1997.tb00108.x.
4. Festinger L. A theory of social comparison processes. *Hum Relations.* 1954;7(2):117–40. doi: 10.1177/001872675400700202.
5. Fardouly J, Vartanian LR. Social media and body image concerns: current research and future directions. *Curr Opin Psychol.* 2015;9:1–5. doi: 10.1016/j.copsyc.2015.09.005.
6. Tiggemann M, Slater A. NetGirls: The internet, Facebook, and body image concern in adolescent girls. *Int J Eat Disord.* 2013;46(6):630–3. doi: 10.1002/eat.22141. PMID: 23712450.
7. Vandenbosch L, Eggermont S. Sexualization of adolescent boys: Media exposure and boys' internalization of appearance ideals, self-objectification, and body surveillance. *Men Masculinities.* 2013;16(3):283–306. doi: 10.1177/1097184X12471709.
8. Maheux AJ, Roberts SR, Evans R, Widman L, Choukas-Bradley S. Associations between adolescents' pornography consumption and self-objectification, body comparison, and body shame. *Body Image.* 2021;37:89–93. doi: 10.1016/j.bodyim.2021.01.014. PMID: 33582530.
9. Peter J, Valkenburg PM. Does exposure to sexually explicit internet material increase body dissatisfaction? A longitudinal study. *Comput Human Behav.* 2014;36:297–307. doi: 10.1016/j.chb.2014.03.071.
10. Telecom Regulatory Authority of India (TRAI). Telecom Subscription Data. New Delhi: TRAI; 2019. Available from: <https://www.trai.gov.in>.

11. McKinley NM, Hyde JS. The objectified body consciousness scale: Development and validation. *Psychol Women Q.* 1996;20(2):181–215. doi: 10.1111/j.1471-6402.1996.tb00467.x.
12. McKinley NM. Women and objectified body consciousness: Mothers' and daughters' body experience in cultural, developmental, and familial context. *Dev Psychol.* 1999;35(3):760–9. doi: 10.1037/0012-1649.35.3.760. PMID: 10380864.
13. Rosenberg M. *Society and the Adolescent Self-Image.* Princeton, NJ: Princeton University Press; 1965.
14. Schmitt DP, Allik J. Simultaneous administration of the Rosenberg Self-Esteem Scale in 53 nations: Exploring the universal and culture-specific features of global self-esteem. *J Pers Soc Psychol.* 2005;89(4):623–42. doi: 10.1037/0022-3514.89.4.623. PMID: 16287423.
15. Tan SA, Goh YS, Mohd Zaharim N, Gan SW, Yap CC, Nainee S, et al. Problematic Internet pornography use and psychological distress among emerging adults in Malaysia: Gender as a moderator. *Int J Environ Res Public Health.* 2022;19(6):3682. doi: 10.3390/ijerph19063682. PMID: 35329369.
16. George M, Maheshwari S, Chandran S, Rao TSS. Psychosocial aspects of pornography. *J Psychosex Health.* 2019;1(1):44–7. doi: 10.1177/2631831818821535.
17. Peter J, Valkenburg PM. Adolescents and pornography: A review of 20 years of research. *J Sex Res.* 2016;53(4–5):509–31. doi: 10.1080/00224499.2016.1143441. PMID: 27105446.
18. Demirgöl SA, Fernandez Aranda F, Jiménez Murcia S, Paksi B, Czako A, Demetrovics Z, et al. A longitudinal examination of the mediating role of body dissatisfaction in the relationship between pornography use frequency and eating disturbances. *Arch Sex Behav.* 2025. doi: 10.1007/s10508-025-03289-x.
19. Schaefer LM, Burke NL, Calogero RM, Menzel JE, Krawczyk R, Thompson JK. Self-objectification, body shame, and disordered eating: Testing a core mediational model of objectification theory among White, Black, and Hispanic women. *Body Image.* 2018;24:5–12. doi: 10.1016/j.bodyim.2017.10.005. PMID: 29172061.
20. Paslakis G, Chiclana Actis C, Mestre-Bach G. Associations between pornography exposure, body image and sexual body image: A systematic review. *J Health Psychol.* 2022;27(3):742–58. doi: 10.1177/1359105320967085. PMID: 33073617.
21. Fredrickson BL, Roberts TA, Noll SM, Quinn DM, Twenge JM. That swimsuit becomes you: Sex differences in self-objectification, restrained eating, and math performance. *J Pers Soc Psychol.* 1998;75(1):269–84. doi: 10.1037/0022-3514.75.1.269. PMID: 9686464.