



SOCIAL MEDIA ADDICTION AMONG INDIAN UNDERGRADUATE MEDICAL STUDENTS AND ITS ASSOCIATION WITH DEPRESSION AND ANXIETY: A CROSS-SECTIONAL STUDY

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ABSTRACT

Background: Social media addiction among medical students is an emerging concern with potential mental health implications. Indian data using standardized instruments remain limited. **Aims:** To assess the prevalence of social media addiction using the Bergen Social Media Addiction Scale (BSMAS) and examine its association with depression (HAM-D) and anxiety (HAM-A) among medical students. **Methods:** A cross-sectional study was conducted among 350 medical students at Krishna Mohan Medical College, Mathura. Participants completed a sociodemographic proforma, the BSMAS, and underwent clinician-administered HAM-D and HAM-A assessments. Pearson correlations and cross-tabulations were used for analysis. **Results:** Mean age was 23.0 ± 2.2 years (53.1% female). Mean BSMAS score was 14.4 ± 5.0 ; 3.7% met the threshold for problematic use (≥ 19), though 70.0% self-perceived at least slight addiction. Depression (HAM-D ≥ 8) was present in 32.9% and anxiety (HAM-A ≥ 8) in 33.7%. BSMAS correlated significantly with HAM-D ($r = 0.381$, $p < 0.001$) and HAM-A ($r = 0.297$, $p < 0.001$). Among problematic users, 69.2% had at least mild depression versus 31.5% of non-problematic users. **Conclusion:** Social media addiction is significantly associated with depression and anxiety among Indian medical students. Despite low formal prevalence, widespread habitual use and sub-threshold symptoms warrant targeted digital wellness interventions.

KEYWORDS : Social Media Addiction, BSMAS, Depression, Anxiety, HAM-D, HAM-A, Medical Students, India

INTRODUCTION

Social media has fundamentally transformed communication patterns worldwide, with India accounting for approximately 467 million users as of 2023.^{1,2} While offering benefits such as connectivity and information access, excessive social media use has been linked to adverse mental health outcomes, particularly among young adults.^{3,4}

Social media addiction — characterized by salience, tolerance, mood modification, withdrawal, relapse, and conflict⁵ — exploits the brain's dopaminergic reward circuitry through intermittent reinforcement mechanisms.^{6,7} Medical students are particularly vulnerable owing to intense academic pressures, limited leisure time, and elevated baseline rates of depression (global prevalence $\sim 27.2\%$)⁸ and anxiety (20–50%).^{9,10}

Indian studies have reported concerning findings: Saha and Sarkar (2020) found 11.6% social media dependency among West Bengal medical students,¹¹ while Basu et al. (2021) documented mean weekly social media use of 21.8 hours among Delhi medical students.¹² However, few Indian studies have employed the internationally validated Bergen Social Media Addiction Scale (BSMAS) or simultaneously examined associations with depression and anxiety using clinician-administered instruments.

This study aimed to assess social media addiction prevalence using the BSMAS and examine its association with depression (HAM-D) and anxiety (HAM-A) among medical students at a North Indian medical college.

MATERIALS AND METHODS

Design: Cross-sectional, observational, analytical study.

Setting: Krishna Mohan Medical College and Hospital, Mathura, Uttar Pradesh.

Participants: 350 medical students (MBBS, interns, postgraduates) aged ≥ 18 years who actively used social media and provided written informed consent. Students not using social media or declining consent were excluded.

Sample size was calculated using $n = Z^2 \times p \times (1-p) / d^2$ ($Z =$

1.96, $p = 0.37$, $d = 0.05$), yielding $n = 359$. Convenience sampling was employed.

Ethical approval was obtained from the Institutional Ethics Committee. Informed consent was obtained in English/Hindi. Students with significant symptoms were offered psychiatric referral.

Instruments

1. Sociodemographic and social media usage proforma — demographics, usage patterns, self-perceived addiction, perceived mental health and academic impact, prior psychiatric diagnosis.
2. Bergen Social Media Addiction Scale (BSMAS) — six-item self-report scale (score range 6–30); cut-off ≥ 19 for problematic use.
3. Hamilton Depression Rating Scale (HAM-D) — 17-item clinician-administered scale (0–52); severity: 0–7 normal, 8–13 mild, 14–18 moderate, ≥ 19 severe.
4. Hamilton Anxiety Rating Scale (HAM-A) — 14-item clinician-administered scale (0–56); severity: 0–7 minimal, 8–14 mild, 15–23 moderate, 24–30 moderate-severe, ≥ 31 severe.

Statistical Analysis

SPSS version 26.0. Descriptive statistics (mean $\pm$ SD, median, IQR, frequencies, percentages), Pearson correlation coefficients, and cross-tabulations were used. $p < 0.05$ was considered significant.

RESULTS

Sociodemographic Profile

Mean age was 23.0 ± 2.2 years (range 18–30). Females constituted 53.1% ($n = 186$). Third-year (39.1%) and fourth-year (34.9%) students comprised 74.0% of the sample. The majority (92.6%) resided in on-campus hostels.

Social Media Usage Patterns

Most students (78.9%) spent ≥ 2 hours daily on social media, with 15.4% spending > 4 hours. Over half (51.2%) experienced urges to check accounts "often" or "very often," and 56.3% had attempted to reduce usage. Seventy percent self-rated as at least slightly addicted, while 24.9% perceived negative effects on mental well-being and 33.4% on academic performance. A quarter (25.7%) reported prior psychiatric diagnosis.

BSMAS Scores

Mean BSMAS score was 14.4 ± 5.0 (median 15.0; IQR 11–18; range 6–30). Using the cut-off of ≥ 19 ,¹³ only 3.7% ($n = 13$) met criteria for problematic use, contrasting sharply with the 70.0% self-perceived addiction rate.

HAM-D Scores

Mean HAM-D was 6.9 ± 8.3 (median 4.0; IQR 0–11; range 0–50). The distribution was positively skewed. Two-thirds (67.1%) were in the normal range; 19.7% had mild, 8.0% moderate, and 5.1% severe depression. Overall, 32.9% had at least mild depression.

HAM-A Scores

Mean HAM-A was 7.1 ± 9.9 (median 2.0; IQR 0–12; range 0–56). The distribution was heavily skewed. Minimal anxiety was present in 66.3%; 14.6% had mild, 10.6% moderate, 6.0% moderate-severe, and 2.6% severe anxiety. Overall, 33.7% had at least mild anxiety.

DISCUSSION

The 3.7% BSMAS-measured prevalence of problematic social media use is consistent with international studies using the same threshold (1.5–5.0%)^{13–16} but lower than Indian studies employing different instruments (11.6%¹¹ to 55.2%¹⁷). The striking discrepancy between formal prevalence (3.7%) and self-perceived addiction (70.0%) suggests that the BSMAS threshold captures only the most severe cases, while a much larger proportion experiences habitual, subjectively concerning patterns. This is supported by behavioural indicators: 78.9% spending ≥ 2 hours daily, 51.2% reporting frequent urges, and 56.3% having attempted reduction — all consistent with Griffiths' addiction components.⁵

Depression (32.9%) and anxiety (33.7%) prevalence rates are consistent with global meta-analytic estimates for medical students.^{6–10} The 5.1% with severe depression and 2.6% with severe anxiety represent clinically alarming findings requiring active screening programmes.

The moderate BSMAS–HAM-D correlation ($r = 0.381$) aligns with meta-analytic estimates of $r = 0.20$ – 0.35 for social media–depression associations.^{3–16} The slightly stronger correlation may reflect the use of addiction-specific (BSMAS) and clinician-administered (HAM-D) instruments. Proposed mechanisms include social comparison,^{19–20} displacement of protective offline activities,²¹ sleep disruption,²² and reward system dysregulation.^{6–7} The cross-tabulation finding of three-fold higher moderate/severe depression among problematic users (38.5% vs. 12.2%) is consistent with Saha and Sarkar's finding that depressed students were 6.7 times more likely to have social media dependency.¹¹

The BSMAS–HAM-A correlation ($r = 0.297$), though weaker, is significant and consistent with Alfaya et al. (2023).¹⁷ The seven-fold elevation in severe anxiety among problematic users (15.4% vs. 2.1%) suggests particular association with severe anxiety mediated through FOMO,²³ information overload,²⁴ and social evaluation concerns.

The very strong HAM-D–HAM-A correlation ($r = 0.805$) confirms the well-established depression-anxiety comorbidity²⁵ and supports transdiagnostic mental health approaches in medical colleges.

Limitations include cross-sectional design precluding causal inference, convenience sampling, single-centre setting, very small problematic BSMAS group ($n = 13$) limiting group comparison power, skewed HAM-D/HAM-A distributions, and absence of multivariate adjustment for confounders.

CONCLUSION

Social media addiction is significantly and positively associated with both depression and anxiety among Indian medical students. Although only 3.7% met formal BSMAS criteria for problematic use, widespread habitual engagement and sub-threshold psychological symptoms suggest that the burden extends far beyond the formally

addicted minority. These findings underscore the need for digital wellness programmes, routine mental health screening, and accessible psychiatric services in medical colleges. Longitudinal and multi-centre studies are needed to establish causal pathways.

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