



SOCIAL MEDIA USE AS A PROBLEMATIC BEHAVIOUR AND ITS ASSOCIATION WITH PERSONALITY TRAITS AMONG MEDICAL STUDENTS: A CROSS-SECTIONAL STUDY

Psychiatry

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ABSTRACT

Background & Objectives: Social media use has been linked to various health-related issues across physical, psychological, and social domains. Individual differences play a key role in how people experience distress or well-being related to social media. By examining personality traits, the study seeks to contribute to the understanding of how these factors influence social media behaviours and subsequent psychological outcomes. The aim of the study was to assess the patterns of social media behaviours and their association with personality traits among medical students.

Methods: The study was a cross-sectional observational research conducted over a year at a tertiary care centre and government medical college in India among medical students aged 18 to 30. Using purposive sampling, socio-demographic variables and details of social media usage were collected. The Big Five Inventory (BFI-10) was used to assess personality traits. Data was analyzed using chi-square test to identify relationships between variables. Statistical significance was set at $p < 0.05$. **Results:** Undergraduates were more active social media users than postgraduates or interns. Openness linked to less posting, conscientiousness to messaging. Extraversion correlated with less WhatsApp/status updates, agreeableness with more WhatsApp and time spent. Neuroticism tied to negative behaviour. **Interpretation & Conclusion:** Student groups exhibit distinct social media habits influenced by age and personality traits. This study deepens our understanding of the complex individual-social media relationship.

KEYWORDS

medical students, personality, personality inventory, social media.

INTRODUCTION

Social media are defined as the set of interactive internet applications that facilitate (collaborative or individual) creation, curation, and sharing of user-generated content.^[1] The use of social media has risen dramatically in the 21st century. It is evident and important to realize how social media has become an integral part of a person's daily life. The increased normality of communicating through social media has directly affected how human beings interact with one another.^[2]

Social media has recently grown to be a significant tool for university students to communicate and share information. In addition to connection with peers, teachers and university officials, students use social media to access academic resources.^[3]

Individual differences play a key role in determining how people interact with social media. The personality of a person can represent differences in characteristic patterns of thinking, feeling and consequently behaviour^[4]. Such findings suggest that personality traits offer a meaningful theoretical framework for understanding the dispositions that may be driving social media use in daily life.^[5]

The Five Factor Model outlines five broad personality traits-Openness, Conscientiousness, Extraversion, Agreeableness, and Neuroticism-that capture different aspects of an individual's thoughts, feelings, and behaviours.

Various researches suggest that Big Five personality traits influence information sharing behaviour on social media.^[6]

Existing research on individual differences, social media use, and psychological outcomes has identified several gaps. Personality traits are also shaped by cultural norms and values, but most research on personality and social media focuses on Western cultures.

This study may bridge this gap by exploring the complex relationship between individual personality differences and social media use behaviours among Indian users by assessing the patterns of social media behaviours and their correlation with personality traits among medical students.

MATERIALS AND METHODS

This observational cross-sectional study was carried out at a tertiary care centre and government medical college in India over a period of 1 year in a population of medical students. The study participants were

medical students (Undergraduates/Interns/Postgraduates) between the ages of 18 and 30 years who have been using social media for at least the last 4 weeks and able to comprehend English/Hindi/Gujarati. Students diagnosed and/or on treatment for any other psychiatric illness and those who had an exam within 1 month were excluded from the study.

Purposive sampling was done once in a month. The permission of the Institutional Ethics Committee was taken prior to sample collection. Written informed consent was obtained and data collection was done by the primary investigator in classrooms and hostel after obtaining the permission of concerned authority whenever necessary. Confidentiality of participants was maintained throughout the study. The study was conducted in accordance with the appropriate ethical principles for medical research involving human participants as stated in the WMA declaration of Helsinki. There was no support or funding from any external agency involved in this study.

Sample Size

$$n_0 = [z^2 p^*(1-p)] / e^2 / 1 + [z^2 p^*(1-p)] / e^2 * N$$

where,

e : margin of error (0.05)

p : the fraction of the population that displays the attribute (0.5 if unknown)

z : the z-value, extracted from a z-table (1.96 for 95% confidence)

n_0 : sample size

N : the size of the population

As total medical students were 1300, the minimum sample size required was 297, as per the above formula but the sample size was taken a little above the minimum (i.e., 320). Out of 320, 161 represent undergraduate students (out of which 40 each from within first, second, represent undergraduate students (out of which 40 each from within first, second, and third year & 41 from final year) and 159 interns and postgraduate students (out of which 40 each from within first, year postgraduate students and interns & 39 from second year) using purposive sampling method.

Tools

For collecting socio-demographic data, we have used a semi-structured data sheet considering study sample characteristics. The presence of social media use in the last 4 weeks along with the subsequent details regarding social media use was collected using the

self constructed semi structured pro forma.

Big five inventory (BF110) was applied to all eligible participants for personality assessment. The 10-item Big Five Inventory (free scale) assesses: openness, conscientiousness, extraversion, agreeableness, and neuroticism.^[7] Items were formatted as "I see myself as someone who..." followed by a characteristic of specific personality traits, with two items per trait rated on a 5-point Likert scale (1 = "strongly disagree" to 5 = "strongly agree"). Five items were reverse-coded so that a higher score indicated a lower level of the trait. Scores for each trait ranged from 2 to 10. A neutral response, marked as 3, was used if respondents answered "Neither agree nor disagree." If both items for a trait received a neutral response, the total score for that trait would be 6. A cut-off score of 7 was used to indicate the presence of the trait (sum of 7-10).

The scale demonstrated acceptable test-retest reliability and internal consistency with Cronbach's alpha of 0.14 to 0.71. The validity was supported by comparison with BF144.

Statistics

We have further categorized the subsequent behaviour after posting on social media as – positive, negative, neutral, absent and checking type, as these are their common subjective responses. We have also specified, for analysis, the frequency of posting in social media as daily, weekly, monthly and rarely.

The collected data was tabulated in Microsoft office Excel v.2007 and data analyzed using SPSS 20.0 for Windows.

The chi-square test was conducted for estimating the statistical significance of association between variables.

The level of statistical significance kept at $p < 0.05$ throughout the analysis.

Result was presented and discussed in reference to previous studies.

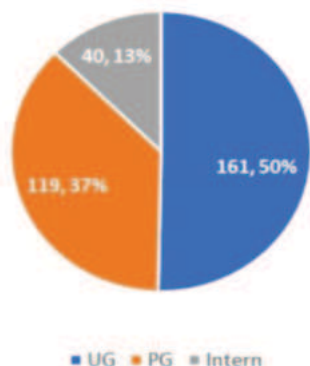
No funds or support from any external agency were used for conducting the study.

There was no conflict of interest for any of the authors in this study.

RESULTS

The study involved 320 medical students including undergraduates (UG), post graduates (PG) and interns from a tertiary care hospital in India, revealing a diverse range of socio-demographic characteristics.

Figure 1: Distribution of Participants based on year of study
Frequency Distribution of Study Population



The study population included 320 medical students- 161 undergraduates (MBBS), 119 postgraduates (MD/MS) and 40 interns. (Figure 1)

Significant association was found for Facebook and Telegram with postgraduate students showing higher prevalence while YouTube and WhatsApp showed higher prevalence with UG students. Photo, celebrity and fashion were significantly seen in UG students. Animation and status updates saw higher significance among PG students. UG students showed significant association with use of social media during class or duty hours. (Table 1)

Table 1: Comparison Of Year Of Study With Social Media Usage Pattern (Part 1 of 2)

Social media platforms					
	UG(n=161)	PG (n=119)	Intern (n=40)	Total	P value
Facebook	20(25.6%)	46(59.0%)	12(15.4%)	78(100.0%)	0.001
WhatsApp	113(44.5%)	103(40.6%)	38(15.0%)	254(100.0%)	0.001
Instagram	125(48.1%)	101(38.8%)	34(13.1%)	260(100.0%)	0.25
YouTube	21(72.4%)	6(20.7%)	2(6.9%)	29(100.0%)	0.044
Snapchat	4(36.4%)	5(45.5%)	2(18.2%)	11(100.0%)	0.624
Twitter	1(20.0%)	4(80.0%)	0(0.0%)	5(100.0%)	0.131
Telegram	0(0.0%)	4(66.7%)	2(33.3%)	6(100.0%)	0.036
Others	2(40.0%)	3(60.0%)	0(0.0%)	5(100.0%)	0.484
Type of content					
Photo	93(43.5%)	86(40.2%)	35(16.4%)	214(100.0%)	0.001
Video	112(50.0%)	81(36.2%)	31(13.8%)	224(100.0%)	0.523
Reels	108(46.4%)	93(39.9%)	32(13.7%)	233(100.0%)	0.066
Celebrity	51(46.4%)	37(33.6%)	22(20.0%)	110(100.0%)	0.013
Fashion	47(45.2%)	36(34.6%)	21(20.2%)	104(100.0%)	0.015
Animation	25(35.5%)	34(44.2%)	18(23.4%)	77(100.0%)	0.001
Message	85(45.7%)	69(37.1%)	32(17.2%)	186(100.0%)	0.088
Status update	56(39.4%)	57(40.1%)	29(20.4%)	142(100.0%)	0.001
Using social media during Class/Duty Hours					
Yes	78(47.9%)	56(34.4%)	29(17.8%)	163(100.0%)	0.014

UG students were significantly more likely to spend more than 5 hours daily on social media compared to PG students and interns. UG students were significantly more likely to post on social media daily. This finding suggests a distinct pattern of frequent engagement among UG students, while PG students and interns showed less frequent posting habits. Positive, negative and absent behaviours after posting on social media were significantly higher among UG students. Conversely neutral and checking behaviours were significantly more prevalent among PG students. (Table 2)

Table 2: Comparison of Year of Study with Social Media Usage Pattern (Part 2 of 2)

Time spend on social media every day					
	UG (n=161)	PG (n=119)	Intern (n=40)	Total	P value
<1 hour	5(27.8%)	10(55.6%)	3(16.7%)	18(100.0%)	0.007
1-2 hours	48(47.1%)	43(42.2%)	11(10.8%)	102(100.0%)	
2-4 hours	55(51.9%)	40(37.7%)	11(10.4%)	106(100.0%)	
4-5 hours	21(40.4%)	20(38.5%)	11(21.2%)	52(100.0%)	
>5hours	32(76.2%)	6(14.3%)	4(9.5%)	42(100.0%)	
Frequency of posting on social media					
Nil	47(62.7%)	21(28.0%)	7(9.3%)	75(100.0%)	0.001
Daily	33(86.8%)	3(7.9%)	2(5.3%)	38(100.0%)	
Weekly	24(49.0%)	19(38.8%)	6(12.2%)	49(100.0%)	
Monthly	43(32.1%)	69(51.5%)	22(16.4%)	134(100.0%)	
Rarely	14(58.3%)	7(29.2%)	3(12.5%)	24(100.0%)	
Subsequent behaviour after posting on social media					
Positive	46(68.7%)	20(29.9%)	1(1.5%)	67(100.0%)	0.001
Negative	11(55.0%)	6(30.0%)	3(15.0%)	20(100.0%)	
Neutral	8(30.8%)	17(65.4%)	1(3.8%)	26(100.0%)	
Absent	81(51.3%)	53(33.5%)	24(15.2%)	158(100.0%)	
Checking	15(30.6%)	23(46.9%)	11(22.4%)	49(100.0%)	

Figure 2: Summary of personality traits as per BF110 of all participants



Using BF110 scale, personality traits of all the study participants were assessed. Among the 320 participants, a substantial proportion exhibited traits associated with agreeableness, while openness, extraversion, and conscientiousness were also prevalent to varying degrees. Neuroticism, was less commonly observed. (Figure 2)

Conscientiousness showed a significant association with UG students and PG students more likely to exhibit this trait compared to interns. (Table 3)

Table 3: Comparison Of Year Of Study With Big 5 Personality Traits

Big 5 Personality Traits	UG (n=161)	PG (n=119)	Intern (n=40)	Total	P value
Openness	59(44.4%)	53(39.8%)	21(15.8%)	133(100.0%)	0.135
Conscientiousness	52(45.6%)	52(45.6%)	10(8.8%)	114(100.0%)	0.047
Extraversion	72(53.3%)	47(34.8%)	16(11.9%)	135(100.0%)	0.652
Agreeableness	102(50.0%)	80(39.2%)	22(10.8%)	204(100.0%)	0.376
Neuroticism	38(46.3%)	30(36.6%)	14(17.1%)	82(100.0%)	0.333

Openness

Infrequent posting on social media was associated with higher openness levels. Neutral behavior after posting on social media was found to be significantly associated with higher openness levels.

Table 4: Association Of Big 5 Personality Traits With Social Media Usage Pattern

Social media platforms											
	Openness	P value	Conscientiousness	P value	Extraversion	P value	Agreeableness	P value	Neuroticism	P value	
Facebook	34(43.6%)	0.676	28(35.9%)	0.954	36(46.2%)	0.415	43(55.1%)	0.069	18(23.1%)	0.553	
WhatsApp	107(42.1%)	0.688	89(35.0%)	0.668	97(38.2%)	0.004	155(61.0%)	0.041	71(28.0%)	0.061	
Instagram	108(41.5%)	0.986	92(35.4%)	0.852	108(41.5%)	0.625	164(63.1%)	0.602	68(26.2%)	0.652	
YouTube	14(48.3%)	0.442	9(31.0%)	0.588	16(55.2%)	0.138	20(69.0%)	0.54	7(24.1%)	0.847	
Snapchat	5(45.5%)	0.79	4(36.4%)	0.958	7(63.6%)	0.143	8(72.7%)	0.529	2(18.2%)	0.565	
Twitter	4(80.0%)	0.079	2(40.0%)	0.837	3(60.0%)	0.416	2(40.0%)	0.266	1(20.0%)	0.772	
Telegram	4(66.7%)	0.208	1(16.7%)	0.328	4(66.7%)	0.22	4(66.7%)	0.881	2(33.3%)	0.662	
Others	3(60.0%)	0.399	1(20.0%)	0.462	1(20.0%)	0.311	3(60.0%)	0.86	1(20.0%)	0.772	
Content											
Photo	93(43.5%)	0.328	74(34.6%)	0.579	85(39.7%)	0.204	136(63.6%)	0.916	59(27.6%)	0.257	
Video	96(42.9%)	0.473	78(34.8%)	0.647	87(38.8%)	0.064	140(62.5%)	0.477	58(25.9%)	0.867	
Reels	97(41.6%)	0.968	77(33.0%)	0.115	93(39.9%)	0.178	146(62.7%)	0.57	64(27.5%)	0.217	
Celebrity	44(40.0%)	0.681	30(27.3%)	0.024	42(38.2%)	0.294	60(54.5%)	0.013	32(29.1%)	0.304	
Fashion	45(43.3%)	0.667	31(29.8%)	0.132	44(42.3%)	0.976	54(51.9%)	0.002	30(28.8%)	0.36	
Animation	28(36.4%)	0.288	19(24.7%)	0.021	26(33.8%)	0.086	36(46.8%)	0.001	18(23.4%)	0.604	
Message	82(44.1%)	0.281	76(40.9%)	0.021	75(40.3%)	0.426	112(60.2%)	0.121	44(23.7%)	0.342	
Status Update	66(46.5%)	0.111	50(35.2%)	0.89	50(35.2%)	0.024	81(57.0%)	0.026	37(26.1%)	0.875	
Using social media during Class/Duty Hours											
Yes	69(42.3%)	0.776	53(32.5%)	0.237	74(45.4%)	0.236	106(65.0%)	0.627	44(27.0%)	0.568	
Time spends on social media every day											
	Openness	P value	Conscientiousness	P value	Extraversion	P value	Agreeableness	P value	Neuroticism	P value	
<1 hour	9(50.0%)	0.432	7(38.9%)	0.33	5(27.8%)	0.191	8(44.4%)	0.038	5(27.8%)	0.821	
1-2 hours	46(45.1%)		42(41.2%)		42(41.2%)		70(68.6%)		23(22.5%)		
2-4 hours	41(38.7%)		39(36.8%)		45(42.5%)		69(65.1%)		26(24.5%)		
4-5 hours	24(46.2%)		16(30.8%)		19(36.5%)		26(50.0%)		16(30.8%)		
>5hours	13(31.0%)		10(23.8%)		24(57.1%)		31(73.8%)		12(28.6%)		
Frequency of posting on social media											
Nil	28(37.3%)	0.047	21(28.0%)	0.438	30(40.0%)	0.051	47(62.7%)	0.722	15(20.0%)	0.319	
Daily	10(26.3%)		15(39.5%)		21(55.3%)		28(73.7%)		9(23.7%)		
Weekly	24(49.0%)		16(32.7%)		22(44.9%)		30(61.2%)		12(24.5%)		
Monthly	56(41.8%)		51(38.1%)		58(43.3%)		83(61.9%)		36(26.9%)		
Rarely	15(62.5%)		11(45.8%)		4(16.7%)		16(66.7%)		10(41.7%)		
Subsequent behaviour after posting on social media											
Positive	21(31.3%)	0.038	20(29.9%)	0.212	34(50.7%)	0.056	52(77.6%)	0.05	12(17.9%)	0.006	
Negative	5(25.0%)		9(45.0%)		12(60.0%)		12(60.0%)		11(55.0%)		
Neutral	16(61.5%)		14(53.8%)		10(38.5%)		19(73.1%)		7(26.9%)		
Absent	71(44.9%)		53(33.5%)		55(34.8%)		94(59.5%)		35(22.2%)		
Checking	20(40.8%)		18(36.7%)		24(49.0%)		27(55.1%)		17(34.7%)		

DISCUSSION

Socio-demographic Variable And Social Media Use

Undergraduates frequently viewed photos on social media, aligning with previous findings on social media engagement behaviours which showed preference for quick, visually engaging content.^[8]

Conscientiousness

Celebrity, animations and messaging showed a significantly lesser number of users with the trait.

Extraversion

WhatsApp users show a significant association with extraversion, with a lesser number of users exhibiting the trait. Status updates are associated with higher levels of extraversion. Daily posting has the highest proportion of extraversion, while rarely posting has the lowest though the statistical significance was marginal.

Agreeableness

The study found a significant association between agreeableness and WhatsApp usage, with more users exhibiting this trait.

Among the content viewed, celebrity, fashion and animation were significantly higher among agreeable participants.

Participants spending more than 5 hours show significantly higher levels of agreeableness compared to those in other time categories.

Higher levels of agreeableness were associated with positive behaviour after posting though the significance was marginal.

Neuroticism

Negative behaviour was significantly higher and positive behaviour lower among those exhibiting neuroticism. (Table 4)

Undergraduates showed the highest consumption of celebrity and fashion content, aligning with findings of previous research on social media's role in adolescent identity exploration.^[9] These content likely aids in navigating social norms and self-expression during this formative stage.

Undergraduates' high social media use during class aligns with other study findings linking problematic phone use to lower self-control and academic performance.^[10] Younger students' underdeveloped self-regulation may contribute to this behaviour.^[11]

Undergraduates posted daily more often than postgraduates who posted monthly. This pattern shows that social norms and contextual factors-possibly increasing academic pressure and clinical duties-influence social media behaviour across different groups.

Social Media Use And Its Association With Personality Traits

Contrary to previous research, our study found a negative association between openness and posting frequency. While openness is often linked to exploration and self-disclosure, these findings suggest a different relationship.^{[12][13]} Users exhibiting neutral post-posting behavior scored higher in openness. This aligns with research suggesting open individuals seek diverse social connections and are intellectually curious.^[13] Nevertheless, the desire for social recognition can make open individuals vulnerable to disappointment from negative feedback on self-promotional posts.^[14]

Conscientiousness was positively linked to messaging content, suggesting a preference for direct communication. Additionally, individuals with higher conscientiousness tended to spend less time on social media, aligning with research suggesting a focus on goal-oriented behavior.^[15] This suggests conscientious individuals may view social media as a potential distraction from their goals.

Contrary to the expectation that extraverts prefer visually stimulating content, our findings indicate a significant association between extraversion and lesser viewing of status updates.^[16] While not statistically significant, a trend emerged where participants spending more than five hours daily on social media exhibited higher extraversion levels compared to those spending less than an hour. This aligns with research suggesting extraverts' inclination towards social connection and self-promotion on these platforms.^[17] Participants who posted daily exhibited higher levels of extraversion compared to those posting infrequently, though only marginally significant. This finding supports research indicating extraverts' tendency for self-disclosure and social interaction online.^[12]

Our study revealed a strong positive association between agreeableness and WhatsApp usage. This aligns with the platform's emphasis on direct communication and group interactions, which resonate with the cooperative and trusting nature of agreeable individuals.^[18] Our findings showed a significant association between agreeableness and interest in celebrity and fashion content. This contradicts previous studies that suggest agreeable individuals prioritize social connection over self-promotion.^[19] Participants who spent more than five hours daily on social media exhibited higher levels of agreeableness. This finding contradicts other studies which suggested a negative correlation between agreeableness and time spent on social media.^[20] Highly agreeable participants reported more positive responses to their posts, though the significance was marginal. This aligns with the concept of positive reinforcement shaping behaviour and the tendency of agreeable individuals to avoid conflict.^[19]

Individuals high in neuroticism exhibited significantly more negative and fewer positive post-posting behaviours. This aligns with research suggesting a negativity bias among neurotics and the potential for social anxiety to influence online behaviour.^[21]

CONCLUSION

Our study highlights several key trends in social media usage. Instagram emerged as the dominant platform, with Reels being the most popular content format.

Postgraduates favoured Facebook ($P=0.001$) and Telegram ($P=0.036$), while undergraduates preferred YouTube ($P=0.044$) and WhatsApp ($P=0.001$). Undergraduates consumed more photo ($P=0.001$), celebrity ($P=0.013$), and fashion ($P=0.015$) content, whereas postgraduates leaned towards animation content ($P=0.001$). Both undergraduates and postgraduates posted status updates more frequently than interns ($P=0.001$). Undergraduates were significantly more likely to use social media during class or duty hours ($P=0.014$), spent more time on it daily ($P=0.007$), and posted more frequently ($P=0.001$) compared to postgraduates and interns. Undergraduates exhibited more positive, negative, and absent behaviours on social

media, while postgraduates displayed more neutral and checking behaviours ($P=0.001$).

Individuals high in openness tended to post less frequently ($P=0.047$) and exhibit neutral post-posting behaviour ($P=0.038$).

Conscientiousness was associated with preferring messaging content ($P=0.021$) and avoiding celebrity content and animations ($P=0.024$ each).

Extraversion was associated with using WhatsApp ($P=0.004$) and posting status updates ($P=0.024$) less frequently.

Agreeable individuals used WhatsApp more ($P=0.041$) and spent more time on social media ($P=0.038$) overall. They also engaged more with status updates ($P=0.026$) and various content types like celebrity ($P=0.013$), fashion ($P=0.002$), and animation ($P=0.001$).

Individuals high in neuroticism displayed significantly more negative post-posting behaviour and less positive behaviour ($P=0.006$).

Implications

This study highlights the link between personality traits and social media use, emphasizing its potential impact on mental health. By understanding these connections, mental health professionals can develop tailored interventions. The findings also emphasize the need for broader societal efforts to address the negative consequences of social media, including regulations, education, and public awareness campaigns.

Strength & Limitations

The study included a sample size of 320 participants, which is sufficient to allow for reliable inferences from the data. All participants were thoroughly briefed in advance regarding the purpose and implications of the study. Since personality-related dimensions typically begin to manifest during adolescence and early adulthood, students were selected as the study sample to appropriately capture the relationship between personality traits and social media behaviors.

The generalizability of the study's findings is limited by its sample population, which may not accurately represent the broader population.

The reliance on self-reported data introduces potential biases in social media usage and mental health reporting.

The cross-sectional design prevents establishing causal relationships between social media use and psychological outcomes.

Unmeasured variables such as pre-existing mental health conditions, offline social support, and life stressors might have influenced the results.

Controversies

No known controversies were present in this study

Future Research Recommendations

To strengthen the understanding of the relationship between social media use and psychological distress, future research should adopt longitudinal study designs to establish causality.

Expanding the sample to include diverse populations and controlling for confounding variables will enhance generalizability.

Given the dynamic nature of social media, researchers should regularly update their study methodologies and measurement tools to ensure the continued relevance and accuracy of their findings.

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