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IMPACT OF SOCIAL MEDIA PHARMA INFLUENCERS ON DRUG-SAFETY KNOWLEDGE, ATTITUDES, AND PRACTICES AMONG MBBS STUDENTS: A CROSS-SECTIONAL STUDY

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Keywords:

Social media, Pharmaceutical influencers, Drug safety, MBBS students, Self-medication, Misinformation

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ABSTRACT: Background: Social media has emerged as a dominant source of drug- and supplement-related information, with pharmaceutical and wellness influencers often disseminating unverified or promotional content. Medical students, as early trainees, may be particularly susceptible to such misinformation. **Objective:** To assess the extent of exposure to pharma influencers and evaluate associated knowledge, attitudes, and practices among MBBS students. **Methods:** A cross-sectional questionnaire-based study was conducted among 155 MBBS students. The validated survey assessed influencer exposure, drug-safety knowledge, attitudes toward online medical content, and self-reported behaviours. Knowledge differences were analyzed using independent t-tests. **Results:** Of the participants, 78.1% followed pharma influencers and 89% regularly encountered drug-related posts. Influencer-followers demonstrated significantly lower drug-safety knowledge (mean 3.5 vs 4.6; p = 0.0003). Nearly one-third reported purchasing influencer-promoted products, with adverse effects reported by 22.4% of users. **Conclusion:** High exposure to pharma influencers is associated with reduced pharmacological literacy and unsafe self-medication practices, underscoring the need for structured digital health literacy training in medical curricula.

INTRODUCTION: The rapid expansion of digital communication technologies has reshaped how health information is produced, disseminated, and consumed worldwide [1, 2]. Social media platforms such as Instagram, YouTube, and TikTok now serve as major sources of drug- and supplement-related information among young adults, including medical students. The emergence of pharmaceutical influencers, individuals who routinely promote medications, supplements, nutraceuticals, and aesthetic interventions, has further accelerated this trend [3–5].

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Unlike licensed clinicians, many influencers lack formal biomedical training yet exert significant persuasive power owing to parasocial relationships, algorithmic amplification, and perceived authenticity. Studies indicate that more than half of drug-related content on social media contains inaccuracies or exaggerated claims [6, 7]. Misrepresentations surrounding glutathione injections, protein supplements, herbal fat burners, liver cleansers, and cosmetic pharmacological agents are widespread, often presented without safety warnings or regulatory backing [8–10].

Medical students, despite being future prescribers, are not immune to these influences. In early stages of training, when pharmacology foundations are still developing, students may internalize misinformation due to repeated exposure and heuristic shortcuts such as the illusion-of-truth effect [11, 12].

Indian data specifically examining influencer-driven pharmaceutical misinformation among medical students remain scarce. Most available reports focus on general social media use, overlooking the rapidly expanding influencer-driven pharmaceutical sector [13–15]. Regulatory bodies such as the Advertising Standards Council of India have issued digital influencer guidelines, but compliance remains inconsistent [16]. Without structured digital literacy training within the medical curriculum, students may inadvertently adopt unsafe drug beliefs. Thus, this study investigates the extent to which MBBS students follow pharma influencers, their level of drug-safety knowledge, corresponding attitudes toward influencer content, and behaviours such as unsupervised supplement use. This work fills a critical evidence gap and aims to inform educational and regulatory approaches addressing digital health misinformation.

MATERIALS AND METHODS: A cross-sectional analytical study was conducted at Indira Medical College and Hospitals in 2025 among MBBS students aged 18 years and above. A total of 155 complete responses were obtained through convenience sampling. A structured, validated Google Form was used. The questionnaire comprised six sections: demographics, social media exposure, influencer following, knowledge (6 true/false items), attitudes (5 Likert-scale items), and practices. Content validity was established by three pharmacology experts (I-CVI = 0.89), and pilot reliability testing demonstrated Cronbach's α = 0.78. Knowledge scores ranged from 0 to 6. Attitudinal perceptions were evaluated using percentage distributions. Practices included supplement purchase patterns, consultation behaviour, and adverse effects. Statistical analysis was performed using SPSS v26. Descriptive statistics summarized frequencies and means. Knowledge score differences between influencer followers and non-followers were tested using independent t-tests. Chi-square tests were used to analyze categorical associations. A p-value < 0.05 was considered statistically significant [17, 18]. Ethical approval was obtained from the Institutional Ethics Committee. Informed digital consent was mandatory prior to participation.

RESULTS: A total of 155 MBBS students participated. Gender distribution was nearly equal (50.3% male, 49.7% female). The representation across MBBS years was balanced, and 55.5% had completed formal pharmacology coursework.

TABLE 1: PARTICIPANT DEMOGRAPHIC CHARACTERISTICS (N = 155)

Variable	Category	n (%)
Gender	Male	78 (50.3%)
	Female	77 (49.7%)
Year of Study	First Year	40 (25.8%)
	Second Year	38 (24.5%)
	Third Year	39 (25.2%)
	Final Year	38 (24.5%)
Completed Pharmacology	Yes	86 (55.5%)
	No	69 (44.5%)

Social media exposure was high: 78.1% followed at least one pharma influencer, while 89% reported encountering drug- or supplement-related content online. Instagram and YouTube were the most frequently used platforms.

Mean knowledge score was 3.8 ± 1.2. Influencer followers had significantly lower knowledge scores (3.5 ± 1.1) compared to non-followers (4.6 ± 1.0), suggesting a negative association between influencer exposure and drug-safety understanding (p 0.0003).

TABLE 2: COMPARISON OF KNOWLEDGE SCORES BETWEEN INFLUENCER-FOLLOWERS AND NON-FOLLOWERS

Group	Mean ± SD	Statistical Test	p-value
Influencer-followers	3.5 ± 1.1	Independent t-test	< 0.001
Non-followers	4.6 ± 1.0	Independent t-test	< 0.001

Attitudinal responses revealed that 42% acknowledged being influenced by social media recommendations. Although 61% felt confident in identifying misinformation, their knowledge performance suggested otherwise. Most students (87%) agreed that sponsorship disclosures should be mandatory, and 91% advocated for regulatory oversight of online drug promotion.

TABLE 3: ATTITUDINAL RESPONSES TOWARD INFLUENCER CONTENT

Attitude Statement	% Agree	% Neutral	% Disagree
Influencer content affects my perception	42%	18%	40%

I can identify misinformation	61%	14%	25%
Sponsorship disclosure is necessary	87%	7%	6%
Online drug promotion should be regulated	91%	4%	5%

Behaviourally, 31.6% had purchased influencer-promoted products, including supplements, skin treatments, and fitness-related enhancers. Among purchasers, 22.4% reported adverse effects: gastritis, skin irritation, palpitations, and insomnia were most common. Only 18.1% consulted a doctor before using these products.

TABLE 4: PRACTICES RELATED TO INFLUENCER-PROMOTED PRODUCTS

Practice Variable	Response	n (%)
Purchased influencer-promoted products	Yes	49 (31.6%)
	No	106 (68.4%)
Consulted a doctor before use	Yes	28 (18.1%)
Experienced side effects	Yes	11 (22.4% of users)

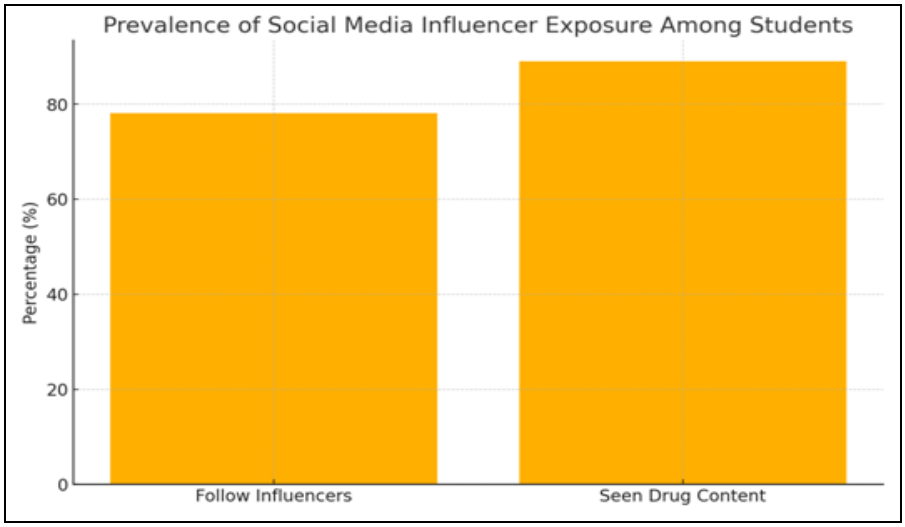

FIG. 1: PREVALENCE OF EXPOSURE TO PHARMACEUTICAL INFLUENCERS AMONG MBBS STUDENTS

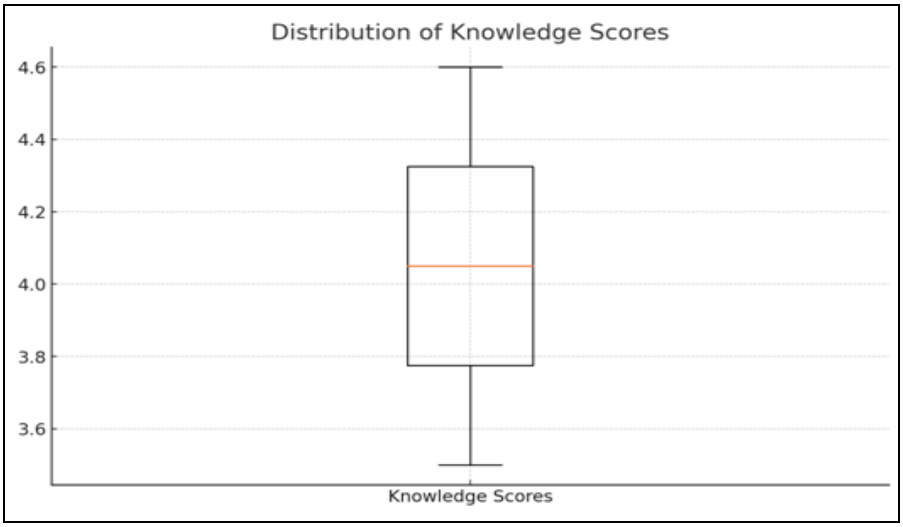

FIG. 2: DISTRIBUTION OF DRUG-SAFETY KNOWLEDGE SCORES AMONG INFLUENCER-FOLLOWERS AND NON-FOLLOWERS

DISCUSSION: This study provides compelling evidence that exposure to social media pharma influencers is highly prevalent among MBBS students and that such exposure correlates with reduced drug-safety knowledge. These findings parallel global data showing that health misinformation on digital platforms can distort understanding even among medically trained

individuals [19–21]. The observed inverse relationship between influencer following and knowledge mirrors research from Europe and the Middle East, where exposure to unregulated medical content diminishes evidence-based decision-making skills [22, 23]. Influencers typically employ persuasive communication strategies visual storytelling, personal validation, and algorithmic virality that enhance message retention irrespective of accuracy [24]. This can explain why students confident in identifying misinformation still demonstrated lower knowledge scores. The behavioural findings are particularly concerning. Nearly one-third of respondents purchased influencer-promoted products, highlighting susceptibility to commercial health misinformation. Adverse effects reported align with known risks of unregulated supplements, including hepatotoxicity, cardiovascular stimulation, and dermatological reactions [25, 26].

The low rate of physician consultation underscores a false perception of safety fostered by influencer messaging. These patterns signal urgent curricular needs. Recommendations include integrating structured digital health literacy modules, misinformation recognition training, critical appraisal exercises, and pharmacovigilance awareness into MBBS education. Regulatory strategies must also be strengthened; despite ASCI guidelines, compliance among health influencers remains low.[27] International models involving mandatory disclosure, algorithmic accountability, and influencer certification provide potential frameworks for adaptation in India [28, 29]. Strengths of this study include its validated questionnaire, adequate sample size, and focus on an underexplored domain in medical education. Limitations include self-reported behaviours, single-centre sampling, and the cross-sectional design, which restricts causal inference. Future work should involve multicentric studies and qualitative analyses of belief formation.

CONCLUSION: This study demonstrates that exposure to pharmaceutical influencers on social media is associated with reduced drug-safety knowledge and unsafe self-medication practices among MBBS students. These findings have important implications for patient safety and future prescribing behaviour. Incorporating structured digital health literacy and misinformation-recognition training into medical curricula, along with stronger regulatory oversight of online drug promotion, is essential to safeguard evidence-based practice. The high prevalence of influencer-driven product use and the occurrence of adverse effects further highlight an urgent need for intervention. Medical education frameworks must evolve to include structured digital health literacy, misinformation recognition modules, and critical appraisal training. Furthermore, regulatory mechanisms must address the unchecked promotion of drugs, supplements, and aesthetic agents on social media platforms. Without coordinated educational and policy responses, misinformation will continue to undermine evidence-based practice, compromise patient safety, and erode public trust in healthcare systems.

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Ethical Approval: Ethical approval was waived as this was a minimal-risk, questionnaire-based, non-interventional study involving adult MBBS students. Participation was voluntary, informed digital consent was obtained from all respondents, and anonymity and confidentiality were strictly maintained in accordance with ICMR ethical guidelines.

Author Contributions: Dr. Navneeth Selvan conceptualized the study, designed the methodology, developed the questionnaire, collected and analyzed data, interpreted the findings, and prepared the manuscript. The author approved the final manuscript for submission.

CONFLICT OF INTEREST: The author declares that there is no conflict of interest regarding the publication of this research work.

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