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SOCIAL MEDIA USAGE AMONG DENTAL FACULTY AND STUDENTS: AN ASSESSMENT USING BLOOM'S TAXONOMY FRAMEWORK

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ABSTRACT

BACKGROUND. Dental faculty and students use social media extensively for professional and personal purposes. Optimizing social media use in dentistry is crucial for enhancing its overall efficiency.

OBJECTIVE. The study's main objective is to assess social media usage, classify its professional engagement using Bloom's Taxonomy, and examine its impact on individual productivity in personal use among dental faculty and students.

MATERIAL AND METHODS. The study adopted a cross-sectional design using an English version of a validated self-administered questionnaire to explore the social media usage among 451 participants. It was conducted among dental faculty, postgraduates, interns and undergraduates at a dental institute in Belagavi, India. The content validity and the Cronbach's alpha coefficient value for the questionnaire was found to be 0.76 and 0.85 respectively. Construct validity of the modified Internet Addiction Test was established through exploratory factor analysis. Professional engagement was classified based on Bloom's taxonomy framework across nine cognitive domains. Descriptive statistics, binomial logistic regression, and Kruskal-Wallis tests was carried out with a level of significance set at $p \leq 0.05$.

RESULTS. Among the 451 participants, the majority were females belonging to the age group of 21-30 years. Dental postgraduates had the highest professional use of social media platforms such as YouTube for clinical skills (91.1%), LinkedIn for job search (84.3%), Google scholar for knowledge (89.7%) and ResearchGate for clinical reasoning (87.1%) with the highest Bloom's taxonomy scores among all affiliations group. In contrast, social media addiction scores were highest among undergraduates and lowest among dental faculty ($p \leq 0.05$).

CONCLUSIONS. Dental postgraduates had the highest professional social media usage based on the Bloom's taxonomy framework, followed by dental faculty. Interns and undergraduate students showed the highest social media addiction scores, indicating recreational use and distraction, highlighting the need for balanced usage.

Keywords: *dental students, social media, dental faculty, bloom's taxonomy*

INTRODUCTION

Social media has become very essential for connecting, communicating, and sharing information in today's world (1). It’s role in education and professional development has dramatically increased (2). Social media have been widely used by dentists and dental students to enhance professional networking, educational purposes and even patient communication (3). Facebook, LinkedIn, Instagram, Twitter, and YouTube have become important sources for the dental profession because people are demanding the availability of current information as these improve the professionals and student's education (4). They can easily access sources, hence the sharing of research, case reports, and other materials is facilitated to improve collaboration. Virtual discussions allow knowledge to be shared through videos, webinars, and courses, which can enhance skill development and performance. Further, they help in networking among the dentists, building community, enhancing organizational identity, and creating a more dynamic dental education environment (5, 6).

However, despite these advantages, social media usage among healthcare professionals and students has raised concerns around digital professionalism, especially in clinical reasoning contexts. Key issues include the disclosure of patient-identifiable information, violation of professional boundaries, and a lack of clarity between personal and professional roles in digital spaces with limited evidence-based guidelines and structured training on ethical digital conduct (7, 8). Furthermore, platforms like LinkedIn and especially informal social media such as WhatsApp, Instagram, Facebook and YouTube are major sources of misinformation which enable exaggeration of qualifications and spread pseudoscientific or misleading dental advice, hereby posing a risk to public health and necessitating critical evaluation and responsible usage by professionals (9, 10, 11).

Additionally, Social media addiction is a developing concern in India despite its great benefits (12). In this regard, it often affects the academic performance of most students because they get easily distracted, and professionals may face difficulties in meeting their respective responsibilities due to excessive usage (13). Mental wellness is significantly affected, as social media comparisons often lead to feelings of tension and anxiety. This situation might lead to a degradation in their focus which in turn severely affects patient care. With more frequent usage of social media these days, proper care and judgment must be taken regarding the same to provide an acceptable balance between personal usage and professional enhancement (14, 15).

Bloom's taxonomy is devised systematically to manage and classify all the educational goals, objectives, and standards within two categories, namely knowledge and various

dimensions of cognitive processes such as understanding, application, analysis, synthesis, and evaluation (16). Hana Alsobayel used Bloom's hierarchy to evaluate the use of social media among healthcare professionals, particularly physicians in Saudi Arabia. It found that the positive perceived impact of social media existed in several domains, including knowledge acquisition and problem-solving (17). Bloom's taxonomy included in the usage of social media in the dental sector can be a significant facilitator in achieving improved education, as different levels can be addressed through various social media outlets.

While Bloom's taxonomy has been applied in healthcare and dental education, covering areas like comprehension, curriculum development, and flipped classrooms research (18, 19, 20), specifically exploring social media use through this framework among dental professionals, especially within the Indian context, remains limited. Although social media offers various advantages, it also presents several challenges. This study, aimed to contribute to this scarcity of research by assessing professional social media usage among dental faculty and students using the Bloom's taxonomy framework, as well as its effect on personal productivity.

MATERIALS AND METHODS

Study design and setting. The present cross-sectional study has been reported in accordance with STROBE guidelines. It was carried out among faculty members, postgraduate students, interns, and undergraduate students at a dental teaching institute in Belagavi, India, from February to May 2023. The institute included both undergraduate and postgraduate dental education programs and an academic hospital serving a diverse patient population.

Eligibility criteria and Ethical consideration. The inclusion criteria included the dental faculty members and students who were available on the day of data collection and were willing to give their informed consent. Although the questionnaire was administered in English, all potential participants were proficient in English, as it is the medium of instruction at the institute. Those who refused to give their consent were excluded from the study. Ethical clearance (Ref. no:1629) was obtained for the study from Institutional Research and Ethics Committee.

Questionnaire development. The questionnaire was developed in six stages. A conceptual framework was created through literature review and expert consultation. The Young's Internet Addiction Test (IAT) was modified according to study objectives to measure personal effects of social media addiction, while Bloom's taxonomy assessed professional social media usage based on nine domains (17, 21). An initial pool of 20 items on adverse effects of social media addiction and 9 items on professional usage was refined through expert

discussions and cognitive interviews with five participants. This iterative process resulted in 10 questions and 9 domains addressing the personal and professional impacts of social media usage.

Pilot study. The pilot study consisted of 20 participants from the target population, including faculty, postgraduates, interns, and undergraduates, with 14 females and 6 males. It was conducted to address ambiguity and improve comprehension. Three unclear questions about the adverse effects of social media were revised to improve clarity based on participant feedback.

Validity and reliability assessments. Face validity was calculated as the percentage agreement of five subject experts. It resulted in an 82% agreement. Content validity ratio was calculated and the result was 0.76, which identified the questionnaire to be a valid tool. Then, reliability was calculated by using Cronbach's alpha coefficient and estimated the internal consistency at 0.85. Exploratory factor analysis was conducted using responses from 20 participants who completed the 10-item modified Young's Internet Addiction Test. The analysis met sampling adequacy criteria (KMO = 0.665, Bartlett's Test $p < 0.001$) and supported a unidimensional factor structure, indicating acceptable construct validity. Generally, these tests indicated that the survey questionnaire developed for this study was valid and suitable for data collection in the English language.

Sample size estimation and sample distribution. The sample size was calculated based on a cross-sectional study conducted by Hana Alsobayel among healthcare professionals, which reported a 79.3% prevalence rate for professional social media usage (17). Taking these findings into account and considering a 10% attrition rate, the sample size was calculated using the formula: $n = z^2pq/d^2$, and was estimated to be 451, with a 5% allowable error. The sampling frame included all dental faculty members and students (Undergraduates, Postgraduates and Interns) at the institute during study period. The participants were recruited using convenience sampling technique, which may introduce selection bias.

Characteristics of the questionnaire. The validated self-administered closed ended questionnaire set in English had four sections: (1) sociodemographic details, (2) social media platforms has been divided into professional connect and learning platforms (LinkedIn, ResearchGate, Google Scholar and YouTube) and Communication and recreational platforms (WhatsApp, Twitter, Instagram, Facebook and Snapchat) used for professional and personal purposes and weekly usage frequency, (3) professional social media usage based on nine Bloom's taxonomy domains which includes knowledge, job search, clinical reasoning, critical thinking, clinical skills, problem-solving, creativity, decision-making, and patient outcomes

and scored using dichotomous (yes/no) responses, and (4) Impacts of social media addiction on personal life was measured on a 5-point Likert scale (1 = Never, 2 = Rarely, 3 = Sometimes, 4 = Often, 5 = Always).

Data collection. The questionnaire was administered to the faculty, postgraduates, and interns in their respective departments and to undergraduates in their classrooms by a single investigator at the dental institute. To minimize bias during administration, a single investigator distributed the questionnaires, with 5–10 volunteers monitoring to ensure standardization. The respondents were allowed 15 minutes to complete the questionnaire.

Statistical Analysis. The data was analysed using Microsoft Excel 2019 and IBM SPSS Statistics 25. Descriptive statistics included percentages, means, standard deviations, medians, and interquartile ranges. Normality was assessed using Q-Q plots, skewness/kurtosis, and the Shapiro-Wilk test. As data were non-normally distributed, the Kruskal-Wallis test followed by Dunn's post-hoc test with Bonferroni correction was used to compare Bloom's taxonomy scores and social media addiction scores across participant categories. Binary logistic regression was performed to assess predictors of professional social media usage (dependent variable: type of usage, Professional vs. Personal/Never) with participant category as the predictor (Undergraduates as reference), adjusted for gender. Model fit was evaluated using Nagelkerke R^2 and the Likelihood Ratio Test. No missing data were observed. No sensitivity analyses were conducted, as the primary analyses sufficiently addressed the study objectives and data quality was high. Significance was set at $p \leq 0.05$.

RESULTS

The study was conducted among 451 participants, with all providing consent and no refusals, resulting in a 100% response rate, which in turn minimized participation bias. The majority of the participants were in the age group of 21-30 years (65.6%) and were females (66.3%). Among the study categories, 39.9% were undergraduates and 24.2% were postgraduates (Table 1).

Social media usage. The majority of faculty reported using social media for less than five hours per week (37.2%), while postgraduates averaged 6–10 hours weekly (31.2%). Interns and undergraduates had the highest usage at 16–20 hours per week, with 31% and 32.8% respectively. Usage declined across all groups for those exceeding 20 hours per week, with undergraduates leading this category at 13.3% (Figure 1).

Social media usage among the study participants. Social media usage was highest among postgraduates across all nine Bloom's taxonomy domains. LinkedIn was largely for job

search (84.3%), Google scholar for Knowledge acquisition (89.7%) whereas ResearchGate (87.1%), WhatsApp (73.4%), Twitter (81.6%) supported clinical reasoning. YouTube was effective in improving clinical skills (91.1%) while Instagram (72.8%), Facebook (69.8%) and Snapchat (66.9%) were found to be useful for enhancing creativity. Postgraduates recorded the highest median Bloom's taxonomy scores, followed by faculty, while undergraduates and interns had lower scores. Dunn's post-hoc test confirmed that, for most professional platforms, postgraduates and faculty scored similarly and significantly higher than interns and undergraduates (Table 2 and Figure 2).

Figure 3 illustrates the violin plot comparing the kernel density estimate of the social media addiction scores among the study participants. Undergraduates and interns demonstrated the highest levels of social media usage with more variability, while faculty members exhibited the lowest and most consistent usage. The Kruskal Wallis test showed that there was a significant difference in the social media addiction scores among the four study groups ($p \leq 0.05$); Table 3 revealed that undergraduates and interns exhibited significantly higher addiction scores than postgraduates and faculty, as confirmed by Dunn's post-hoc test ($p \leq 0.05$).

Binary logistic regression models adjusted for gender showed that professional social media use is significantly higher among postgraduates and faculty compared to undergraduates, especially on academic platforms like LinkedIn, ResearchGate, Google Scholar, and YouTube. The highest odds were seen for postgraduates using Google Scholar (aOR = 9.53) and LinkedIn (aOR = 7.75), with all models showing good fit (LRT $p < 0.001$). Contrastingly, recreational sites such as Instagram, Facebook, and Snapchat had weaker or insignificant relationships. Twitter and WhatsApp alone presented moderately significant for professional usage among postgraduates and academics but with poorer model fit. (Table 4). Due to the limitations of study design, sensitivity analysis and testing for interaction terms were not conducted.

DISCUSSION

This study examined patterns of social media usage among dental students and faculty through the lens of Bloom's taxonomy, revealing distinct differences in cognitive engagement and professional behaviour. Postgraduates demonstrated the highest levels of professional use and cognitive engagement across platforms such as LinkedIn and Google Scholar, whereas undergraduates exhibited higher tendencies toward social media addiction, particularly on recreational platforms. These observations capture the dual role of social media within dental education as both a facilitator of professional development and a source of distraction, both depending on user profile and purpose. This dual effect underscores the significance of guided

social media use in academic environments, highlighting that social media was a double-edged sword for dental students and faculty. Majority of the dental faculty in the current study used social media for less than five hours per week, suggesting their greater professional responsibilities, time constraints, and a preference for traditional learning methods. In contrast, undergraduates and interns in the current study reported the highest weekly usage of 16–20 hours. Farghal et al. and Uma et al. found the similar results, whereby dental undergraduates used social media applications such as WhatsApp, Instagram, and YouTube frequently, with most usage for communication and entertainment but with some educational application (13, 22). These findings indicate that the younger participants had a strong orientation towards digital platforms, influencing their learning habits towards visual and fast-paced contents rather than traditional academic sources. While this technological innovation can provide access to informal education and professional connectivity, it would also pose risks of decreased attention spans, decreased critical thinking, and the likelihood of neglecting key academic or clinical duties (23, 24). These kinds of trends may influence their professional competence, particularly in activities requiring sustained concentration, reflective learning, and patient-centred care.

As compared to other study categories, the postgraduates in the present study had higher odds of using social media platforms such as LinkedIn, ResearchGate, and Google Scholar for professional purposes. This reflects greater academic maturity and a more focused professional orientation. This is consistent with evidence reported from earlier research among dental and medical students highlighting increasing utilization of social media for academic purposes and career advancement. In the dental education setting, these trends are an indication of a trend towards career-oriented and evidence-based learning due to objectives such as research publication, employment, and clinical decision-making, suggesting an indication of a change from passive utilization to active, goal-oriented learning (25, 26, 27). Contrary to the findings of the present study, other studies have reported different platforms for professional usage. Kurian et al. identified that YouTube and Facebook were among the most frequently used platforms by dental trainees and professionals in India for dentistry content (3). Likewise, Jamkhande et al. also cited WhatsApp and Facebook as the most commonly used platforms among Indian dental practitioners for professional purposes (5). Also, Twitter and YouTube were the most used platforms among healthcare professionals in Saudi Arabia for professional purposes as reported by Hana Alsobayel (17). These findings may reflect differences in social media engagement based on users academic needs, professional roles, or levels of digital literacy training.

The Commission on Dental Accreditation (CODA) has specified that dental graduates should be competent in critical thinking, problem-solving, and evidence-based decision-making in patient care (CODA Standard 2-10) (6). Because of the importance of social media's role in shaping the dental profession, this study utilized the taxonomy of educational objectives, which classifies educational goals into knowledge and cognitive processes, forming a two-dimensional framework. This framework can guide dental faculty and students in structuring social media usage by aligning knowledge sharing with activities such as creating, analyzing, and applying content, thereby enhancing learning and professional communication (11). The research evidence indicates that successful use of social media among dental students and professionals can be beneficial. By Integrating the domains of Bloom's taxonomy, such as knowledge, job search, clinical reasoning, critical thinking, clinical skills, problem solving, creativity, decision making, and patient outcomes, social media platforms can enhance professional skills, enhance patient care, and promote greater professionalism in the dental practice. The findings of the present study showed a distinct pattern of postgraduates accessing the social media platforms more often, especially in fields that are aligned with higher-level cognitive processes such as knowledge building and critical thinking. This trend indicates the way academic literature such as Google Scholar and ResearchGate, and professional networks such as LinkedIn, are being systematically incorporated into postgraduate studies and professional development. These observations are supported by previous studies by Khalifa et al., Alanzi et al., and Saxena et al., which describe social media as highly resourceful for knowledge attainment, communication, and clinical practice (15, 28, 29), reinforcing its relevance in modern dental education and professional development. In addition, the employment of multimedia and interactive sites such as YouTube and Instagram indicates that postgraduates are using multimedia materials to improve clinical skills and stimulate creativity, demonstrating a diversified model of digital learning. This is in line with earlier research (3, 13), which has depicted YouTube's contribution to enhanced clinical competencies through user-friendly learning material.

Social media platforms such as Twitter and WhatsApp were found to be beneficial primarily in the domain of clinical reasoning in the present study. In contrast, a study conducted among practicing physicians in Saudi Arabia reported that Twitter was perceived as beneficial across all measured domains of professional development (17). This variation in perceived benefits may be explained by differences in the participant populations. While the Saudi study included a broader range of healthcare professionals from various disciplines, our study focused specifically on dental faculty members and students within an academic institution, whose

professional experiences and use of social media may differ accordingly. Instagram, Facebook, and Snapchat enhance creativity in dentistry exposure to innovative trends, ultimately improving professional growth and engagement.

Although social media has its useful effects, too much use leads to some detrimental effects. Beyond the professional usages of these social media applications, this present research also investigated personal life effects on social media addiction. The scores of undergraduates and interns appeared to be significantly higher in cases of social media addiction, consistent with a research study by Kumar et al., on internet addiction (30). These findings align with another study that states most participants are worried about their addiction to social media, even at the examination time, and that time spent on social media adversely affects their job performance (13). Overall, the findings indicate a serious problem with social media use management and its detrimental effects on young trainees' day to day lives.

This research's innovative extension of Bloom's taxonomy to evaluate professional use of social media among dental students and faculty offers curriculum design actionable insights. Consistent with CODA Standard 2-10, dental education must incorporate directed social media activities including case-based discussions, evidence-based content sharing, and peer review on sites such as LinkedIn, ResearchGate, and YouTube. Such strategies are capable of fostering higher-order cognitive skills such as critical thinking, clinical reasoning, and decision-making. Faculty must also develop online professionalism policies and hold workshops on assessing online information and building a trustworthy professional image. In addition, given the extensive screen use by undergraduates, universities must integrate digital well-being modules, including habits like screen time tracking, technology-free pauses, and deliberate offline learning to improve mental concentration and academic achievement. These present study findings provide useful insights but must be interpreted with caution. Conducted at a single dental institute using convenience sampling, the study may reflect selection bias and limit generalizability. Self-reported data could introduce recall and social desirability bias. While personal vs professional social media use was compared, this offered only indirect insight into engagement. Platform-specific behaviours, such as active posting versus passive browsing, were not assessed. Binary response options limited the depth of professional engagement measurement; hence future studies should use Likert scales or frequency-based tools. The cross-sectional design does not include for causal inference, highlighting the need for longitudinal studies with broader, diverse samples.

CONCLUSION

This study highlights the dual impact of social media on dental students and faculty, revealing distinct usage patterns across academic levels. While platforms like LinkedIn, ResearchGate, Google Scholar, and YouTube contribute significantly to professional development by enhancing knowledge acquisition, clinical skills, and job opportunities, excessive social media use especially among undergraduates and interns poses a risk of addiction and reduced productivity. Applying Bloom's taxonomy allowed structured assessment of cognitive engagement, highlighting the depth of professional learning influenced by social media. These findings emphasize the need to promote e-professionalism and digital responsibility within dental education. A balanced, structured approach can help maximize benefits, enhance academic performance, and support long-term professional development.

REFERENCES

1. Omar AS, Ondimu KO. The Impact of Social Media on Society: A Systematic Literature Review.
2. Bruguera C, Guitert M, Romeu T. Social media and professional development: A systematic review. Research in Learning Technology. 2019 Nov 12;27.
3. Kurian N, Varghese IA, Cherian JM, Varghese VS, Sabu AM, Sharma P, et al. Influence of social media platforms in dental education and clinical practice: A cross-sectional survey among dental trainees and professionals. Journal of Dental Education. 2022;86(8):1036–42.
4. Bahabri RH, Zaidan AB. The impact of social media on dental practice promotion and professionalism amongst general dental practitioners and specialists in KSA. J Taibah Univ Med Sci. 2021 Jan 23;16(3):456–60.
5. Jamkhande A, Pangarikar Ab, Khairnar Mr, Gavali N, Patil Y, Wadgave U. Social Media Use in Dental Practice by Dental Practitioners of India: A Cross-sectional Survey. Journal of Clinical & Diagnostic Research. 2022 Jun 1;16(6).
6. Neiva GF, Hasslen JA, Bompolaki D, Pugach-Gordon M, Wright W, Kumar SS. Social media in dental education: The need for institutional policies and content regulation. Journal of Dental Education. 2023;87(10):1476–80.
7. Ahmed W, Jagsi R, Gutheil TG, Katz MS. Public Disclosure on Social Media of Identifiable Patient Information by Health Professionals: Content Analysis of Twitter Data. J Med Internet Res. 2020 Sep 1;22(9):e19746.
8. Guraya SS, Guraya SY, Yusoff MSB. Preserving professional identities, behaviors, and values in digital professionalism using social networking sites; a systematic review. BMC Med Educ. 2021 Jul 12;21(1):381.

9. Beckingham S. Professionalism and Online Presence. InHigher Education Computer Science: A Manual of Practical Approaches 2023 May 30 (pp. 275-285). Cham: Springer International Publishing.
10. Jeyaraman M, Ramasubramanian S, Kumar S, Jeyaraman N, Selvaraj P, Nallakumarasamy A, Bondili SK, Yadav S. Multifaceted Role of Social Media in Healthcare: Opportunities, Challenges, and the Need for Quality Control. Cureus. 2023 May 16;15(5):e39111.
11. Kbaier D, Kane A, McJury M, Kenny I. Prevalence of Health Misinformation on Social Media-Challenges and Mitigation Before, During, and Beyond the COVID-19 Pandemic: Scoping Literature Review. J Med Internet Res. 2024 Aug 19;26:e38786.
12. Gupta R, Taneja N, Anand T, Gupta A, Gupta R, Jha D, Singh S. Internet Addiction, Sleep Quality and Depressive Symptoms Amongst Medical Students in Delhi, India. Community Ment Health J. 2021 May;57(4):771-776.
13. Farghal NS, Islam MS, Dasnadi SP, Alteneiji SO, Awheed AM. The Impact of Social Media on Professional Learning among Undergraduate Dental Students: A Cross-sectional Study. J Contemp Dent Pract. 2023 Nov 1;24(11):877–86.
14. Varshney S, Menon I, Gupta R, Sharma A, Arora V, Bashir S. Addiction and Usage of Social Media Among Dental Students Studying in Dental Institute of Ghaziabad, Uttar Pradesh. Journal of Indian Association of Public Health Dentistry. 2022 Mar;20(1):86.
15. Al-Khalifa KS, Al-Swuailem AS, AlSheikh R, Muazen YY, Al-Khunein YA, Halawany H, et al. The use of social media for professional purposes among dentists in Saudi Arabia. BMC Oral Health. 2021 Jan 12;21:26.
16. Krathwohl DR. A Revision of Bloom's Taxonomy: An Overview. Theory Into Practice. 2002;41(4):212–8.
17. Alsobayel H. Use of Social Media for Professional Development by Health Care Professionals: A Cross-Sectional Web-Based Survey. JMIR Med Educ. 2016 Sep 12;2(2):e15.
18. Verenna AA, Noble KA, Pearson HE, Miller SM. Role of comprehension on performance at higher levels of Bloom's taxonomy: Findings from assessments of healthcare professional students. Anat Sci Educ. 2018 Sep;11(5):433-444.
19. Lin, G.S.S., Chin, Y.J., Chong, R.S. *et al.* Expert consensus on relevant topics for undergraduate paediatric dental curriculum using the fuzzy Delphi method: a new direction for Malaysian dental education. *BMC Oral Health* **23**, 452 (2023).
20. Wei Y, Peng Z. Application of the flipped classroom model based on Bloom's Taxonomy of Educational Objectives in endodontics education for undergraduate dental students. PeerJ. 2025 Jan 29;13:e18843.

21. Raju Srijampana VVG, Endreddy AR, Prabhath K, Rajana B. Prevalence and patterns of internet addiction among medical students. Medical Journal of Dr DY Patil Vidyapeeth. 2014 Dec;7(6):709.
22. Uma E, Nieminen P, Mani SA, John J, Haapanen E, Laitala ML, et al. Social Media Usage among Dental Undergraduate Students—A Comparative Study. Healthcare (Basel). 2021 Oct 20;9(11):1408.
23. Noor U, Younas M, Saleh Aldayel H, Menhas R, Qingyu X. Learning behavior, digital platforms for learning and its impact on university student's motivations and knowledge development. Front Psychol. 2022 Nov 23;13:933974.
24. Firth J, Torous J, López-Gil JF, Linardon J, Milton A, Lambert J, Smith L, Jarić I, Fabian H, Vancampfort D, Onyeaka H, Schuch FB, Firth JA. From "online brains" to "online lives": understanding the individualized impacts of Internet use across psychological, cognitive and social dimensions. World Psychiatry. 2024 Jun;23(2):176-190.
25. Rajeh MT, Sembawa SN, Nassar AA, Al Hebshi SA, Aboalshamat KT, Badri MK. Social media as a learning tool: Dental students' perspectives. J Dent Educ. 2021 Apr;85(4):513-520.
26. Sterling M, Leung P, Wright D, Bishop TF. The Use of Social Media in Graduate Medical Education: A Systematic Review. Acad Med. 2017 Jul;92(7):1043-1056.
27. Apel Z, Fagundes NC, Sharmin N, Nassar U, Gow G, Apel D, Perez A. Social Media in Oral Health Education: A Scoping Review. European Journal of Dental Education. 2025 Feb;29(1):50-63.
28. Alanzi T, Al-Yami S. Physicians' Attitude towards The Use of Social Media for Professional Purposes in Saudi Arabia. Int J Telemed Appl. 2019 Dec 2;2019:6323962.
29. Saxena P, Gupta SK, Mehrotra D, Kamthan S, Sabir H, Katiyar P, et al. Assessment of digital literacy and use of smart phones among Central Indian dental students. J Oral Biol Craniofac Res. 2018;8(1):40–3.
30. Kumar S, Kumar A, Badiyani B, Singh SK, Gupta A, Ismail MB. Relationship of internet addiction with depression and academic performance in Indian dental students. Clujul Med. 2018 Jul;91(3):300–6

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Table 1. Demographic profile of the participants.

Characteristics	n (%)
Age (years)	
>20	81 (18.0)
21-30	296 (65.6)
31-40	19 (4.2)
>40	55 (12.2)
Total	451 (100.0)
Gender	
Female	299 (66.3)
Male	152 (33.7)
Total	451 (100.0)
Affiliations	
Faculty	78 (17.3)
PG Student	109 (24.2)
Intern	84 (18.6)
UG Student	180 (39.9)
Total	451 (100.0)

All values are expressed as the frequency with percentages (as in parentheses).

Table 2. Distribution of social media platforms for professional usage by Bloom's taxonomy domains and bloom's taxonomy scores across different affiliations.

Social media platforms	Affiliations	Blooms taxonomy domains									Median (IQR)	*p* value[‡]
		Knowledge n (%)[a]	Job search n (%)[a]	Clinical Reasoning n (%)[a]	Critical Thinking n (%)[a]	Clinical Skills n (%)[a]	Problem Solving n (%)[a]	Creativity n (%)[a]	Decision Making n (%)[a]	Patient Outcome n (%)[a]		
Professional connect and learning platforms												
LinkedIn	Faculty	59 (75.9%)	55 (70.5%)	42 (53.3%)	37 (47.9%)	34 (43.5%)	45 (57.6%)	15 (18.7%)	13 (16.6%)	28 (35.9%)	6.00 (3.00-8.00)[α]	<0.001*
	Postgraduates	86 (78.9%)	92 (84.3%)	63 (57.8%)	69 (63.3%)	59 (54.3%)	76 (69.9%)	23 (21.0%)	22 (19.9%)	49 (45.0%)	8.00 (4.00-9.00)[α]	
	Interns	40 (47.9%)	50 (59.3%)	18 (21.0%)	20 (23.3%)	8 (10.7%)	27 (32.3%)	9 (10.9%)	11 (13.1%)	15 (17.9%)	4.00 (3.00-4.00)[β]	
	Undergraduate	72 (39.9%)	92 (51.1%)	36 (19.9%)	38 (21.0%)	16 (8.9%)	31 (17.0%)	17 (9.2%)	20 (11.2%)	28 (15.8%)	3.00 (1.00-4.00)[β]	
ResearchGate	Faculty	55 (70.2%)	31 (39.4%)	60 (76.6%)	50 (63.9%)	21 (26.7%)	54 (69.7%)	26 (32.7%)	57 (73.5%)	23 (29.6%)	6.00 (3.00-8.00)[α]	<0.001*
	Postgraduates	91 (83.5%)	26 (23.6%)	95 (87.1%)	87 (79.6%)	32 (29.2%)	85 (77.6%)	39 (35.6%)	89 (81.5%)	32 (29.8%)	8.00 (4.00-9.00)[α]	
	Interns	45 (53.1%)	9 (11.3%)	37 (43.6%)	20 (23.4%)	13 (15.6%)	28 (33.9%)	13 (15.7%)	31 (36.7%)	12 (14.6%)	4.00 (3.00-4.00)[β]	
	Undergraduate	76 (42.4%)	17 (9.5%)	46 (25.3%)	20 (11.2%)	23 (12.5%)	53 (29.6%)	24 (13.3%)	50 (27.6%)	15 (8.6%)	3.00 (1.00-4.00)[β]	
Google scholar	Faculty	56 (72.3%)	20 (25.9%)	62 (78.9%)	63 (81.1%)	20 (26.1%)	62 (79.9%)	11 (13.9%)	64 (81.5%)	60 (76.7%)	6.00 (4.00-8.00)[α]	<0.001*
	Postgraduates	98 (89.7%)	30 (27.8%)	91 (83.3%)	93 (85.4%)	32 (29.2%)	89 (81.9%)	16 (14.7%)	94 (86.6%)	88 (80.5%)	8.00 (4.00-9.00)[α]	
	Interns	38 (45.8%)	17 (19.8%)	22 (25.6%)	35 (41.2%)	17 (19.7%)	29 (34.5%)	8 (9.8%)	32 (37.9%)	33 (39.8%)	4.00 (3.00-4.00)[β]	
	Undergraduate	71 (39.6%)	19 (10.6%)	36 (19.8%)	68 (37.8%)	18 (9.8%)	48 (26.9%)	10 (5.7%)	54 (29.8%)	38 (21.1%)	3.00 (1.00-4.00)[β]	
YouTube	Faculty	54 (69.7%)	18 (23.1%)	57 (73.3%)	62 (79.8%)	64 (82.0%)	60 (76.6%)	53 (67.8%)	55 (71.1%)	59 (75.9%)	5.00 (4.00-8.00)[α]	<0.001*
	Postgraduates	77 (71.1%)	28 (26.1%)	95 (86.7%)	91 (83.3%)	99 (91.1%)	90 (82.6%)	80 (73.1%)	87 (79.9%)	89 (81.5%)	6.00 (5.00-8.00)[α]	
	Interns	30 (35.4%)	13 (15.7%)	30 (36.1%)	32 (37.8%)	39 (46.7%)	33 (39.1%)	48 (56.7%)	34 (41.0%)	72 (39.8%)	5.00 (4.00-6.00)[α]	
	Undergraduate	54 (29.8%)	18 (9.8%)	54 (29.8%)	50 (27.6%)	64 (35.6%)	39 (21.7%)	82 (45.7%)	72 (39.8%)	60 (33.3%)	2.00 (2.00-4.00)[β]	
Communication and recreational platforms												
WhatsApp	Faculty	48 (61.3%)	16 (20.1%)	54 (69.8%)	47 (59.8%)	26 (33.8%)	52 (66.6%)	28 (36.1%)	52 (66.7%)	24 (31.3%)	2.00 (2.00-3.00)[α]	<0.001*

	Postgraduates	76 (69.8%)	25 (23.1%)	80 (73.4%)	69 (63.3%)	45 (41.1%)	76 (69.8%)	43 (39.1%)	76 (69.9%)	40 (36.5%)	3.00 (2.00-3.00) $^{\alpha}$	
	Interns	20 (23.6%)	10 (11.9%)	22 (25.8%)	13 (15.8%)	14 (16.7%)	24 (29.1%)	17 (19.8%)	36 (42.5%)	19 (22.3%)	1.00 (1.00-2.00) $^{\beta}$	
	Undergraduate	38 (21.1%)	14 (7.8%)	35 (19.7%)	14 (7.6%)	21 (11.6%)	34 (18.7%)	28 (15.7%)	54 (29.8%)	31 (17.3%)	1.00 (1.00-1.00) $^{\gamma}$	
Twitter	Faculty	51 (65.6%)	36 (45.6%)	60 (76.5%)	47 (59.8%)	22 (27.9%)	47 (59.9%)	18 (22.9%)	43 (55.4%)	21 (26.6%)	2.00 (2.00-3.00) $^{\alpha}$	<0.001*
	Postgraduates	83 (75.8%)	56 (51.8%)	89 (81.6%)	75 (68.5%)	35 (32.1%)	68 (62.6%)	30 (27.9%)	65 (59.9%)	32 (29.5%)	3.00 (2.00-3.00) $^{\alpha}$	
	Interns	16 (18.9%)	8 (9.8%)	14 (16.9%)	13 (15.8%)	8 (9.9%)	15 (17.9%)	8 (9.9%)	14 (16.6%)	13 (15.6%)	2.00 (1.00-2.00) $^{\beta}$	
	Undergraduate	18 (9.8%)	10 (5.3%)	14 (7.7%)	15 (8.6%)	12 (6.7%)	17 (9.5%)	10 (5.8%)	15 (8.1%)	17 (9.5%)	1.00 (1.00-1.00) $^{\gamma}$	
Instagram	Faculty	39 (49.8%)	20 (25.6%)	23 (29.5%)	17 (21.9%)	44 (56.9%)	17 (21.9%)	54 (69.6%)	19 (23.9%)	36 (46.6%)	3.00 (2.00-4.00) $^{\alpha}$	<0.001*
	Postgraduates	59 (54.3%)	31 (28.8%)	34 (31.3%)	31 (28.5%)	68 (62.1%)	32 (29.6%)	79 (72.8%)	29 (26.9%)	65 (59.6%)	3.00 (2.00-4.00) $^{\alpha}$	
	Interns	13 (15.9%)	10 (11.8%)	11 (12.9%)	11 (12.9%)	10 (11.9%)	12 (14.3%)	10 (11.7%)	13 (15.6%)	10 (11.6%)	2.00 (2.00-2.00) $^{\beta}$	
	Undergraduate	21 (11.8%)	13 (7.2%)	18 (9.9%)	14 (7.6%)	10 (5.7%)	18 (9.9%)	12 (6.9%)	18 (10.1%)	13 (7.4%)	1.00 (1.00-1.00) $^{\gamma}$	
Facebook	Faculty	40 (50.8%)	31 (39.6%)	25 (31.6%)	16 (20.9%)	23 (29.6%)	19 (24.6%)	52 (66.8%)	16 (19.9%)	39 (49.9%)	3.00 (2.00-3.00) $^{\alpha}$	<0.001*
	Postgraduates	61 (56.3%)	52 (47.7%)	40 (36.5%)	27 (24.6%)	35 (32.1%)	33 (30.4%)	76 (69.8%)	29 (26.9%)	62 (56.7%)	3.00 (2.00-4.00) $^{\alpha}$	
	Interns	12 (14.7%)	8 (9.8%)	10 (11.6%)	9 (10.9%)	8 (9.8%)	11 (13.3%)	23 (27.3%)	10 (11.6%)	8 (9.5%)	2.00 (2.00-2.00) $^{\beta}$	
	Undergraduate	16 (8.7%)	8 (4.6%)	12 (6.6%)	10 (5.6%)	12 (6.6%)	18 (9.9%)	25 (13.9%)	16 (9.1%)	11 (5.9%)	1.00 (1.00-1.00) $^{\gamma}$	
Snapchat	Faculty	15 (19.8%)	12 (15.6%)	9 (11.8%)	12 (14.9%)	12 (15.1%)	13 (16.1%)	40 (50.8%)	15 (18.7%)	22 (28.1%)	2.00 (2.00-2.00) $^{\alpha}$	<0.001*
	Postgraduates	22 (20.1%)	23 (20.8%)	14 (12.5%)	17 (15.2%)	23 (20.9%)	22 (19.9%)	73 (66.9%)	23 (21.1%)	37 (33.5%)	2.00 (2.00-2.00) $^{\alpha}$	
	Interns	8 (9.8%)	6 (7.7%)	8 (9.7%)	6 (6.6%)	8 (9.8%)	6 (7.6%)	39 (46.6%)	11 (12.5%)	6 (7.7%)	1.00 (1.00-1.00) $^{\beta}$	
	Undergraduate	14 (7.6%)	10 (5.8%)	12 (6.6%)	8 (4.6%)	14 (7.5%)	10 (5.5%)	74 (41.1%)	18 (9.8%)	10 (5.5%)	1.00 (1.00-1.00) $^{\beta}$	

*[a]Frequencies with percentage are calculated relative to the total number of participants within each row (affiliation category: faculty(n)=78, postgraduates(n)=109, interns(n)=84, undergraduates(n)=180); Different Greek symbols signify significant differences among the participant groups within the column of each social media platforms. IQR: Interquartile range; The statistical test used: Kruskal Wallis test followed by Dunn's post-hoc test (with Bonferroni correction); Level of significance: *P ≤ 0.05 is considered statistically significant.*

Table 3. Social media addiction scores according to various affiliations.

Question[‡]		**Faculty**	**Postgraduates**	**Internship**	**Undergraduates**	***p*-value**
1. How often do you find that you stay on-line longer than you intended?	Mean ± SD	2.23 ± 0.51	2.84 ± 0.43	3.92 ± 0.88	4.26 ± 0.73	0.001*
	Median (IQR)	2.00 (2.00-3.00) $^{\alpha}$	3.00 (3.00-3.00) $^{\beta}$	4.00 (4.00-4.00) $^{\gamma}$	4.00 (4.00-5.00) $^{\gamma}$	
2.How often do you refer to on-line content?	Mean ± SD	2.27 ± 0.45	2.89 ± 0.39	3.61 ± 0.89	4.07 ± 0.83	0.001*
	Median (IQR)	2.00 (2.00-3.00) $^{\alpha}$	3.00 (3.00-3.00) $^{\beta}$	4.00 (4.00-4.00) $^{\gamma}$	4.00 (4.00-5.00) $^{\delta}$	
3.How often do others in your life complain to you about the amount of time you spend on-line?	Mean ± SD	1.87 ± 0.86	2.06 ± 0.82	3.37 ± 0.90	4.15 ± 0.80	0.001*
	Median (IQR)	2.00 (1.00-3.00) $^{\alpha}$	2.00 (1.00-3.00) $^{\alpha}$	4.00 (2.00-4.00) $^{\beta}$	4.00 (3.00-5.00) $^{\gamma}$	
4.How often do you check your social media alerts?	Mean ± SD	2.21 ± 0.54	2.63 ± 0.75	3.49 ± 0.91	3.92 ± 0.74	0.001*
	Median (IQR)	2.00 (2.00-3.00) $^{\alpha}$	3.00 (3.00-3.00) $^{\beta}$	4.00 (3.00-4.00) $^{\gamma}$	4.00 (3.00-4.00) $^{\delta}$	
5.How often does your job performance or productivity suffer because of the internet?	Mean ± SD	1.73 ± 0.78	2.44 ± 0.80	3.69 ± 0.76	4.12 ± 0.75	0.001*
	Median (IQR)	2.00 (1.00-2.00) $^{\alpha}$	3.00 (2.00-3.00) $^{\beta}$	4.00 (3.00-4.00) $^{\gamma}$	4.00 (4.00-5.00) $^{\gamma}$	
6.How often do you lose sleep due to late-night log-ins?	Mean ± SD	1.54 ± 0.96	2.20 ± 0.88	3.80 ± 0.72	4.19 ± 0.65	0.001*
	Median (IQR)	2.00 (1.00-2.00) $^{\alpha}$	2.00 (1.00-3.00) $^{\alpha}$	4.00 (4.00-4.00) $^{\beta}$	4.00 (4.00-5.00) $^{\beta}$	
7.How often do you find yourself saying “just a few more minutes” when on-line?	Mean ± SD	1.82 ± 0.80	2.51 ± 0.69	3.55 ± 0.97	4.22 ± 0.76	0.001*
	Median (IQR)	2.00 (1.00-2.00) $^{\alpha}$	3.00 (2.00-3.00) $^{\beta}$	4.00 (3.00-4.00) $^{\gamma}$	4.00 (4.00-5.00) $^{\delta}$	
8.How often do you try to cut down the amount of time you spend on-line and fail?	Mean ± SD	1.78 ± 0.82	2.35 ± 0.83	3.72 ± 0.90	4.31 ± 0.79	0.001*
	Median (IQR)	2.00 (1.00-2.00) $^{\alpha}$	3.00 (2.00-3.00) $^{\alpha}$	4.00 (3.00-4.00) $^{\beta}$	5.00 (4.00-5.00) $^{\gamma}$	
9.How often do you choose to spend more time on-line rather than discussing with your colleagues?	Mean ± SD	1.58 ± 0.88	2.39 ± 0.84	3.36 ± 0.91	4.31 ± 0.72	0.001*
	Median (IQR)	2.00 (1.00-2.00) $^{\alpha}$	3.00 (2.00-3.00) $^{\beta}$	4.00 (2.00-4.00) $^{\gamma}$	4.00 (4.00-5.00) $^{\delta}$	
10.How often do you fear that life without internet would be boring, empty and joyless?	Mean ± SD	0.23 ± 0.43	0.25 ± 0.44	0.44 ± 0.50	0.61 ± 0.49	0.001*
	Median (IQR)	0.00 (0.00-1.00) $^{\alpha}$	1.00 (0.00-1.00) $^{\alpha}$	0.00 (0.00-0.75) $^{\beta}$	0.00 (0.00-0.00) $^{\beta}$	

*SD: Standard deviation; IQR: Interquartile range; All values are expressed as mean ± SD and median (IQR); Different Greek symbols signify significant differences among the participant groups within the rows; The statistical test used: ‡Kruskal Wallis test followed by Dunn’s post-hoc test (with Bonferroni correction); Level of significance: *P ≤ 0.05 is considered statistically significant.*

Table 4. Binary logistic regression results showing predictors of professional social media usage across platforms.

Social media platforms	Affiliations	Social media usage *(Professional vs personal & Never [b])*		Nagelkerke Pseudo R^2	Likelihood Ratio Test (LRT) χ^2 (*p*-value)
		aOR (95% CI)	*p*-value		
Professional connect and learning platforms					
LinkedIn	Undergraduates [a]	1			
	Internship	2.89 (1.59–5.26)	0.001**	0.198	70.67 (0.001**)
	Postgraduates	7.75 (4.42–13.60)	0.001**		
	Faculty	6.33 (3.46–11.56)	0.001**		
ResearchGate	Undergraduates [a]	1			
	Internship	2.49 (1.38–4.48)	0.002*	0.190	67.70 (0.001**)
	Postgraduates	7.55 (4.34–13.14)	0.001**		
	Faculty	5.19 (2.88–9.37)	0.001**		
Google scholar	Undergraduates [a]	1			
	Internship	2.87 (1.64–5.03)	0.001**	0.231	85.54 (0.001**)
	Postgraduates	9.53 (5.44–16.67)	0.001**		
	Faculty	6.41 (3.56–11.54)	0.001**		
YouTube	Undergraduates [a]	1			
	Internship	2.51 (1.21–5.23)	0.014*	0.124	37.73 (0.001**)
	Postgraduates	5.68 (2.97–10.85)	0.001**		
	Faculty	4.82 (2.40–9.67)	0.001**		
Communication and recreational platforms					
Instagram	Undergraduates [a]	1			
	Internship	1.73 (0.58–5.16)	0.329	0.038	6.61 (0.158)
	Postgraduates	2.49 (0.94–6.60)	0.066		
	Faculty	1.94 (0.65–5.83)	0.237		
Facebook	Undergraduates [a]	1			
	Internship	0.85 (0.37–1.93)	0.695	0.043	11.10 (0.025*)
	Postgraduates	1.86 (0.96–3.59)	0.066		
	Faculty	1.76 (0.86–3.62)	0.124		
Snapchat	Undergraduates [a]	1			
	Internship	0.87 (0.17–4.60)	0.872	0.005	0.48 (0.975)
	Postgraduates	1.06 (0.25–4.60)	0.934		
	Faculty	0.96 (0.182–5.09)	0.963		
Twitter	Undergraduates [a]	1			
	Internship	1.42 (0.45–4.46)	0.552	0.059	11.11 (0.025*)
	Postgraduates	3.36 (1.33–8.51)	0.010*		
	Faculty	2.68 (0.96–7.47)	0.060		
WhatsApp	Undergraduates [a]	1			
	Internship	1.41 (0.45–4.45)	0.561	0.049	9.32 (0.054)
	Postgraduates	2.98 (1.16–7.63)	0.023*		
	Faculty	3.01 (1.11–8.16)	0.031*		

Binary logistic regression models adjusted for gender were run for each social media platform; Predictor: participant category (Faculty, Postgraduates, Interns vs. [a] Undergraduates [reference]); Outcome: Type of usage (Professional vs. [b] Personal/Never [reference]). Nagelkerke Pseudo R^2 and Likelihood Ratio Test (LRT) were included to assess model fit; Statistical significance: *P ≤ 0.05; ***P ≤ 0.001*; Abbreviations: aOR: adjusted odds ratio; CI: confidence interval; χ^2: Chi square.

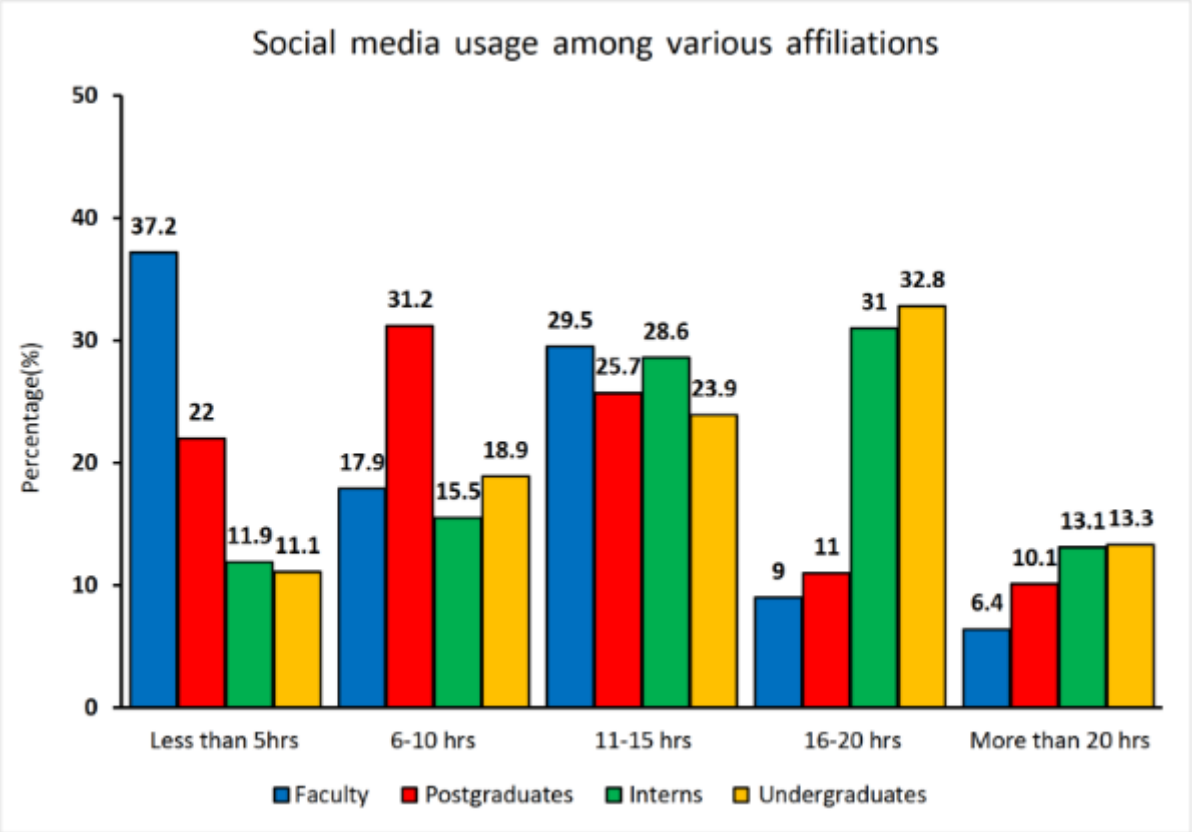

Figure 1. Social media usage weekly among various categories.

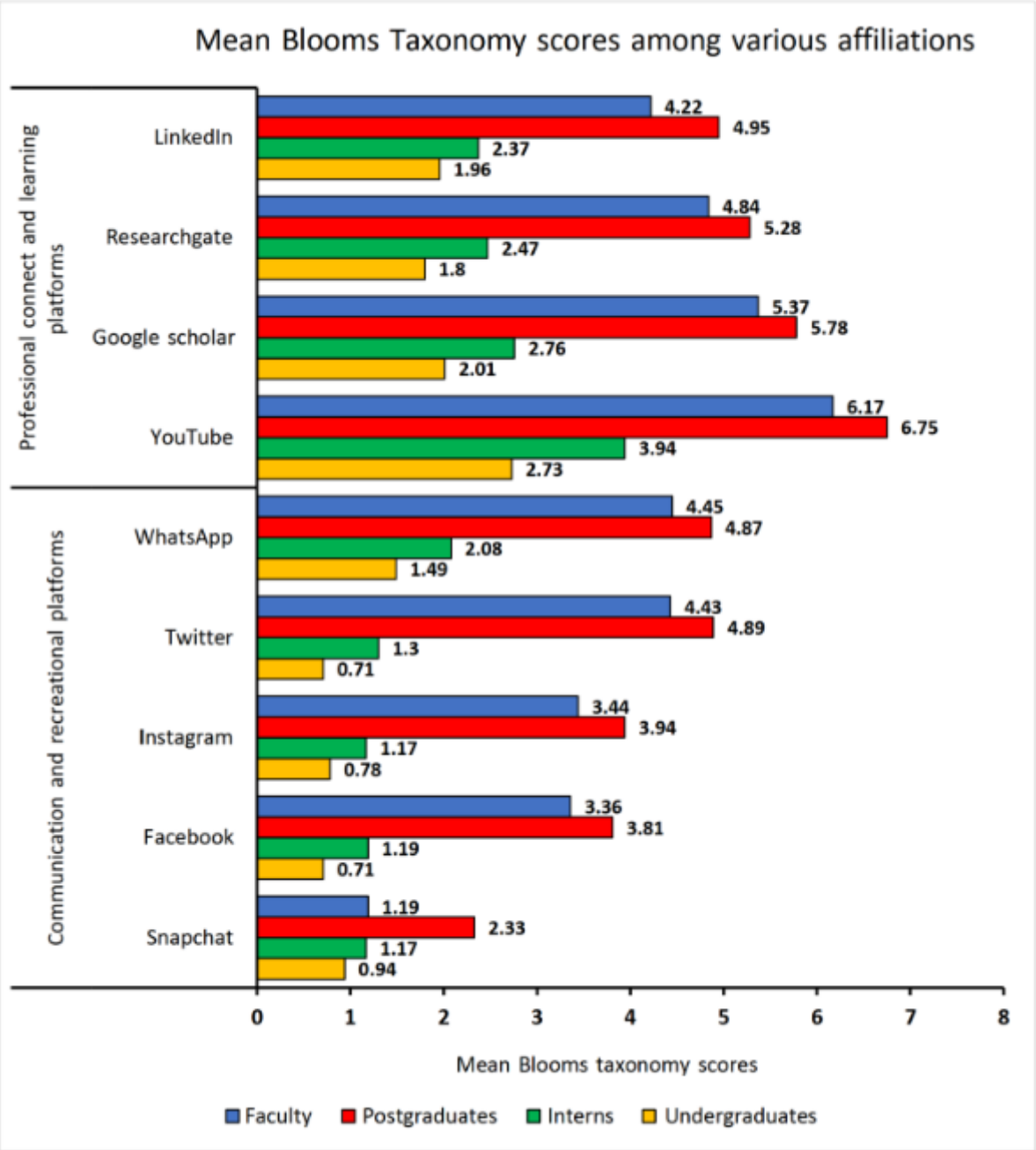

Figure 2. Mean Bloom's Taxonomy scores of various social media platforms usage among different affiliations.

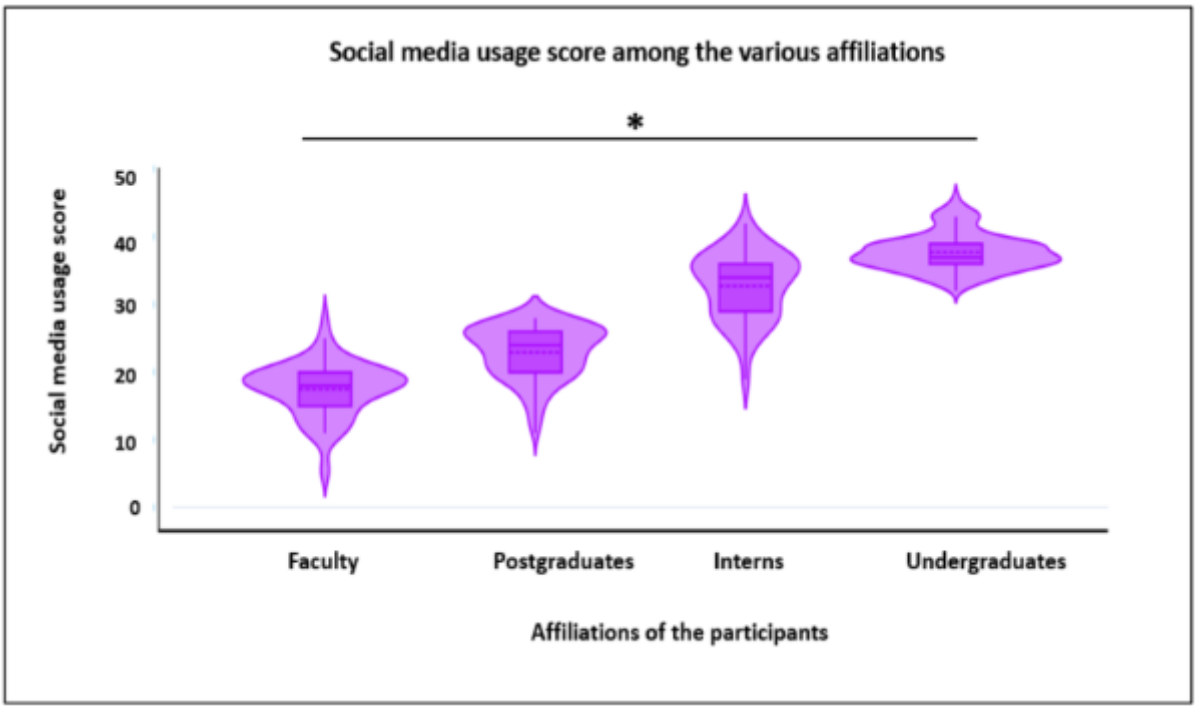

Figure 3. Social media usage among various affiliations. The statistical test used: Kruskal-Wallis test, level of significance: *P ≤ 0.05 considered statistically significant.