



PROFESSIONALISM AND THE DIGITAL FRONTIER: A QUALITATIVE STUDY OF DENTAL RESIDENTS' KNOWLEDGE OF DIGITAL PRIVACY AND LEGAL LIABILITY IN PESHAWAR

Khadija Bibi¹, Kaisar Khan^{2*}, Zoeya Ayesha Khan³, Wasif Ali Shah⁴, Syed Gohar Hussain Shah⁵, Sharqa Yasin⁶

¹BDS, MPH, MHPE (Scholar) Lecturer, Department of Dental Education, Peshawar Dental College, Peshawar, Email: dr_khadija_bangash@yahoo.com

²BDS, MDS (Prosthodontics), MHPE (scholar) KMU, Peshawar
Email: drmalakqaiser@gmail.com

³Pre-Law student (rising senior), The University of Texas, Austin, Texas
Email: zoeyaakhan0@gmail.com

⁴BDS, MHPE (Scholar), Lecturer, Orthodontics, Institute of Dental Sciences, Kohat, Khyber Medical University Email: syed_shah183@yahoo.com

⁵BDS, MHPE (Scholar) Lecturer, Department of Dental Education, Dental Section, Abbottabad International Medical College, Abbottabad
Email: goharshah509@gmail.com

⁶BDS, House Officer, Institute of Dental Sciences, Khyber Medical University, Kohat
Email: sharqyasin510@gmail.com

***Corresponding author:** Kaisar Khan

BDS, MDS (Prosthodontics), MHPE (scholar) KMU, Peshawar
Email: drmalakqaiser@gmail.com

Abstract

Background: Professionalism in dentistry is increasingly challenged by the widespread use of mobile technology in clinical practice. In dental teaching hospitals, smartphones are commonly used for clinical photography, consultation, and academic discussion. However, these practices may pose risks to patient confidentiality and data security, particularly when healthcare professionals are unaware of relevant medicolegal regulations.

Objective: To explore dental residents' perceptions, knowledge, and practices regarding digital privacy, informed consent, and legal liability related to clinical photography and social media use.

Methods: A qualitative descriptive study was conducted in major dental teaching hospitals in Peshawar from November 2024 to April 2025. Semi-structured interviews were conducted with 12 senior dental residents recruited through purposive sampling. Interviews were audio-recorded, transcribed verbatim, and analyzed using inductive thematic analysis. NVivo 14 software was used to organize and manage the data. A total of 60 initial codes were identified, which were grouped into 20 sub-themes and categorized into five major themes.

Results: Five major themes emerged from the analysis: Digital Documentation for Education, Consent and Anonymity Ambiguity, Institutional Guideline Vacuum, Legal Knowledge Deficit, and The Social Media Paradox. Residents frequently used smartphones for clinical documentation and consultation but demonstrated limited understanding of legal regulations governing patient confidentiality and digital privacy.

Conclusion: Dental residents in Peshawar frequently prioritize educational and clinical convenience over digital privacy considerations. The absence of institutional policies and limited medicolegal awareness creates potential risks for patient confidentiality breaches. Integrating digital professionalism training and institutional guidelines into dental education is essential.

Keywords: Digital professionalism; Dental residents; Patient privacy; Clinical photography; Social media; Qualitative research.

1. Introduction

Professionalism represents a fundamental principle in healthcare practice and education. In dentistry, professionalism encompasses ethical conduct, respect for patient autonomy, confidentiality, and adherence to legal and professional standards.¹ With the rapid advancement of digital technologies, clinical practice has undergone substantial transformation, particularly through the widespread adoption of smartphones and social media platforms.

Mobile devices have become common tools in modern dental practice. Dental residents frequently use smartphones to capture intra-oral photographs, document treatment progress, and consult supervisors regarding complex cases.² Digital images can enhance clinical learning, facilitate case discussion, and support treatment planning. However, these technologies also introduce potential risks related to patient confidentiality, informed consent, and data security.

Patient privacy is a core ethical obligation in healthcare. Unauthorized disclosure of patient information may constitute a breach of professional ethics and may result in legal consequences for healthcare providers.³ Clinical photographs, even when limited to intra-oral structures, may contain identifiable features that can compromise patient anonymity if shared improperly.⁴

In Pakistan, healthcare regulation is overseen by provincial bodies such as the Khyber Pakhtunkhwa Healthcare Commission (KPHCC), which establishes standards for healthcare delivery and patient safety. Despite these regulatory frameworks, awareness of digital privacy regulations among healthcare trainees remains largely unexplored.

Previous studies in medical education have highlighted growing concerns regarding the use of smartphones and social media by healthcare professionals.⁵ Healthcare trainees may share clinical images or discuss patient cases on messaging platforms without fully understanding the ethical and legal implications. Social media platforms such as Instagram and Facebook have also become popular among dentists for professional marketing and showcasing clinical outcomes.⁶ While these platforms offer opportunities for professional networking and education, they also create ethical challenges related to patient consent and confidentiality.

In dental training environments, residents operate within high-workload clinical settings where rapid communication and documentation are essential. Consequently, informal digital practices may become normalized in the absence of clear institutional guidelines. Understanding how residents perceive digital professionalism is therefore essential for developing educational interventions and policies that protect patient privacy.

This study aimed to explore dental residents' knowledge, attitudes, and behaviors regarding digital privacy, informed consent, and legal liability related to clinical photography and social media use in dental teaching hospitals in Peshawar.

2. Methodology

Study Design and Setting

This study employed a qualitative descriptive design using in-depth semi-structured interviews. The study was conducted between November 2024 and April 2025 at major dental teaching institutions in Peshawar.

Participant Selection

Participants were recruited through purposive sampling to obtain information-rich perspectives from individuals actively involved in clinical training. A total of 12 senior dental residents (post-graduate trainees) from specialties including orthodontics, prosthodontics, and oral surgery participated in the study.

Participants were eligible if they:

- Were enrolled in postgraduate dental training
- Regularly used mobile devices for clinical documentation or consultation
- Provided informed consent to participate

Data Collection

Semi-structured interviews were conducted using an interview guide exploring:

- Use of smartphones in clinical practice
- Understanding of patient consent for photography
- Awareness of legal regulations governing patient confidentiality
- Social media use for professional purposes

Each interview lasted approximately 30–45 minutes. Interviews were audio-recorded with participant consent and transcribed verbatim.

Participants were assigned identification codes based on gender and interview order (e.g., MP1 for Male Participant 1, FP1 for Female Participant 1) to maintain anonymity.

Data Analysis

Data were analyzed using inductive thematic analysis, following the framework described by Braun and Clarke.⁷ Transcripts were coded line-by-line to identify initial concepts and patterns. A total of 60 initial codes were generated, which were grouped into 20 sub-themes and subsequently categorized into five major themes.

NVivo 14 software was used to organize transcripts, manage codes, and facilitate thematic analysis.

Data saturation was achieved when no new themes emerged during the final interviews.

Ethical Considerations

Ethical approval was obtained from the Institutional Review Board of all the institutions. Written informed consent was obtained from all participants before the interviews. Confidentiality and anonymity were maintained throughout the study.

3. Results

A total of 12 dental residents participated in the study, including six males and six females representing multiple dental specialties. Participant demographic characteristics are presented in Table 1, while the distribution of participants by gender and specialty is summarized in Table 2.

Table 1: Demographic Characteristics of Study Participants (n = 12)

Participant Code	Gender	Specialty	Year of Residency	Use of Smartphones in Clinical Practice
MP1	Male	Oral & Maxillofacial Surgery	3 rd Year	Yes
MP2	Male	Prosthodontics	2 nd Year	Yes
MP3	Male	Operative Dentistry	3 rd Year	Yes
MP4	Male	Oral & Maxillofacial Surgery	2 nd Year	Yes
MP5	Male	Orthodontics	3 rd Year	Yes
FP1	Female	Operative Dentistry	2 nd Year	Yes
FP2	Female	Orthodontics	3 rd Year	Yes
FP3	Female	Prosthodontics	2 nd Year	Yes
FP4	Female	Periodontology	3 rd Year	Yes
FP5	Female	Orthodontics	2 nd Year	Yes
FP6	Female	Oral medicine	3 rd Year	Yes
MP6	Male	Periodontology	2 nd Year	Yes

Table 2: Distribution of Participants by Gender and Specialty

Specialty	Male	Female	Total
Orthodontics	1	2	3
Oral & Maxillofacial Surgery	2	0	2
Prosthodontics	1	1	2
Operative Dentistry	1	1	2
Periodontology	1	1	2
Oral Medicine	0	1	1
Total	6	6	12

Thematic analysis generated 60 initial codes, which were organized into 20 sub-themes and subsequently grouped into five major themes describing the residents' experiences and perceptions of digital professionalism.

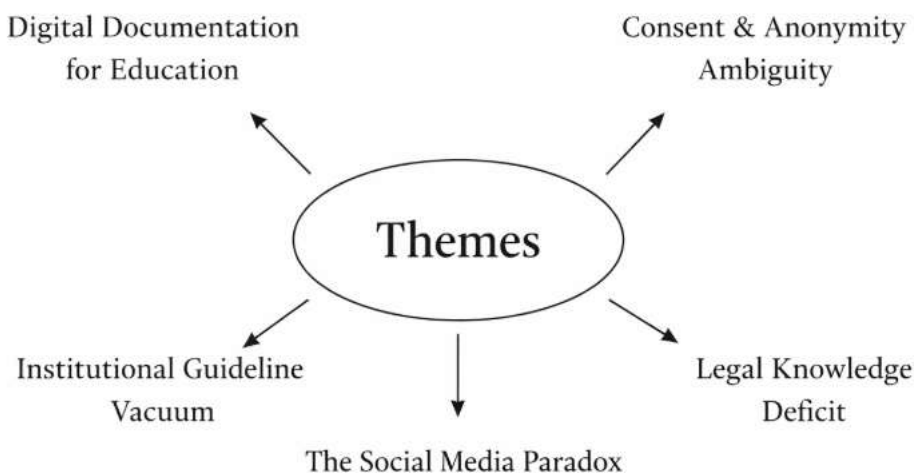


Table 3: THEMES, SUBTHEMES, AND CODES

Theme	Sub-theme	Codes	Participant original Quotes
Digital Documentation for Education	Case Portfolio Building	Photo hoarding; Archiving for thesis; Presentation material	"I take photos of every case for my thesis and presentation. If I don't, I lose valuable learning material." (MP1) "These photos are my portfolio. Without them, I have no proof of the work I did during my residency." (FP3)
	Real-time Consultation	WhatsApp consultations; Virtual mentoring; Immediate feedback	"It's just quicker to take a photo and send it to my supervisor rather than writing down the whole case." (FP3) "I send photos to my senior on WhatsApp to ask if I should extract a tooth. They reply instantly." (MP4)
	Patient Progress Monitoring	Longitudinal photography; Treatment tracking; Visual records	"I take photos at every visit to show the patient how their teeth are moving." (FP2) "It is easier to show the progress in a photo than to explain it in words to the family." (MP1)
	Peer Learning Groups	Departmental WhatsApp groups; Case sharing; Diagnostic challenges	"We have a group for oral surgery cases. We share difficult X-rays there." (MP5)

Consent and Anonymity Ambiguity			“WhatsApp groups help us learn from the mistakes of others in our department.” (FP1)
	Blurred Consent Limits	Verbal vs written consent; Assumption of consent; Implicit permission	“I know I need consent, but does taking a photo of just the teeth require it?” (FP1)
			“Patients never say no when I ask to take a photo, so I assume they are fine with it.” (MP2)
	Partial Anonymization Beliefs	Cropping photos; Removing identifiers; Digital masking	“If I don't show the patient's face, they are anonymous.” (MP2) “I crop the mouth out, so I feel safe sharing it online.” (FP4)
	Post-treatment Consent	Retrospective permission; Publication approval	“I ask for permission after I have already taken the photo.” (FP3)
			“Most patients don't care about their photos being online after treatment.” (MP3)
	Vulnerable Patient Groups	Pediatric consent issues; Guardian	“With kids, I ask the father but never think about the child's future privacy.” (FP1)

		permission; Patient incapacity	"If the patient is unconscious or in pain, I take the photo anyway because it helps treatment." (MP5)
Institutional Guideline Vacuum	Absence of Digital Policy	No formal rules; Informal practice; Policy unawareness	"There is no rulebook. We just follow what our seniors do." (MP3)
			"I haven't seen a written policy about using phones in the hospital." (FP2)
	Lack of Official Communication Channels	WhatsApp dependence; No institutional apps	"We use WhatsApp for every department." (FP2)
			"The hospital doesn't have an official platform." (MP4)
	Supervision Blind Spots	Senior endorsement; Unmonitored behavior	"My supervisor takes photos too. If they do it, it must be okay." (MP1)
			"No one checks how patient photos are stored on my phone." (FP5)
	Training Gaps	Lack of workshops; Ethics curriculum gaps	"We had one lecture on ethics, but nothing about digital privacy." (MP3)
			"No one trained us on digital ethics." (FP4)
Legal Knowledge Deficit	KPHCC Regulation Ignorance Data Ownership Confusion	Lack of regulatory awareness; Penalty ignorance	"I have heard of HCC but don't know the rules about photography." (MP2)
			"I don't know the penalty for leaking patient photos." (FP3)
		Personal device ownership; Hospital data confusion	"I paid for my phone, so the photos belong to me." (MP4)
			"If I delete the photo, the problem is solved." (FP5)
	Confidentiality Breach Misperception	Privacy misunderstanding; Identity assumptions	"Showing a tooth photo is not breaching confidentiality." (FP1)
			"Leaking a photo is bad but not a legal crime." (MP2)
	Liability Avoidance	Shifting blame; Risk minimization	"If a patient complains, it will be the hospital's responsibility." (MP5)
			"Patients will never find out their photos are online." (FP4)

The Social Media Paradox	Professional Branding Pressure	Online reputation; Instagram dentistry; Marketing	“If you are not on Instagram, you are not a modern dentist.” (FP2)
			“Patients check our profiles before visiting.” (MP1)
	Clinical Content Sharing	Before–after photos; Case promotion	“I post orthodontic results to attract patients.” (FP5)
			“Sharing cases helps me gain recognition.” (MP5)
	Ethical Dilemma	Branding vs privacy conflict	“Sometimes I feel guilty posting patient cases online.” (FP1)
			“It is difficult to balance popularity and professionalism.” (MP2)
	Audience Misinterpretation	Unrealistic expectations; Misleading outcomes	“Patients expect their treatment results to look exactly like Instagram photos.” (FP3)
			“People online don't understand treatment complexity.” (MP4)

4. Discussion

The findings of this qualitative study highlight significant gaps in dental residents' knowledge and practices regarding digital professionalism in clinical settings. Despite widespread use of smartphones for clinical documentation and communication, many participants demonstrated limited awareness of ethical and legal responsibilities related to patient privacy.

One of the most prominent findings was the extensive use of smartphone photography for educational purposes. Residents frequently captured clinical images for thesis documentation, case presentations, and consultation with supervisors. Mobile technology has become an important educational tool in healthcare training, allowing rapid sharing of clinical information and facilitating collaborative learning.⁸ However, when personal devices are used to store and share patient images without appropriate safeguards, patient confidentiality may be compromised.

The theme “Consent and Anonymity Ambiguity” revealed substantial uncertainty regarding consent practices. Although participants acknowledged the importance of obtaining consent, many believed that intra-oral photographs without facial features did not require explicit permission. This misconception highlights a critical knowledge gap. Clinical images may still contain identifiable characteristics, and ethical guidelines emphasize the need for informed consent whenever patient information is recorded or shared.⁹

The absence of clear institutional policies also played a major role in shaping residents' behaviors. Participants reported that their training institutions provided little guidance regarding the use of smartphones for clinical photography or case discussion. In such environments, trainees often adopt informal practices observed from senior colleagues. This phenomenon reflects the influence of the hidden curriculum, where professional behaviors are learned through observation rather than formal instruction.¹⁰

Another important finding was residents' limited understanding of medicolegal accountability. Many participants were unfamiliar with the regulatory role of the Khyber Pakhtunkhwa Healthcare Commission (KPHCC) and the potential legal consequences of breaching patient confidentiality. This lack of legal awareness has also been reported in studies of healthcare trainees in other countries, where digital professionalism is often insufficiently addressed in medical curricula.¹¹

The study also revealed a growing tension between professional ethics and social media engagement. Many residents described pressure to develop an online presence for professional branding and patient attraction. Social media platforms have become increasingly important for marketing dental services and showcasing clinical results.¹² However, sharing clinical images online raises ethical concerns regarding patient consent, privacy, and the potential misrepresentation of treatment outcomes.

The "Social Media Paradox" theme reflects this conflict between professional visibility and ethical responsibility. While residents recognized the risks associated with sharing patient images online, they also felt that social media engagement was necessary for career development. Similar tensions have been reported among healthcare professionals worldwide as digital platforms increasingly influence professional identity and patient engagement.¹³

The findings of this study highlight the urgent need for formal education on digital professionalism within dental training programs. Integrating training on patient confidentiality, informed consent, and medicolegal responsibility into postgraduate curricula could help residents navigate ethical challenges associated with digital technology. Institutional policies regulating clinical photography and digital communication are also necessary to ensure patient privacy and data security.

5. Conclusion

This study demonstrates that dental residents in Peshawar frequently use smartphones for clinical documentation and consultation but often lack adequate knowledge regarding digital privacy and legal liability. The absence of institutional policies and formal training contributes to inconsistent practices that may compromise patient confidentiality.

Developing institutional guidelines, integrating digital professionalism into dental education, and providing medicolegal training workshops are essential steps toward ensuring ethical use of digital technologies in clinical practice.

References

1. American Dental Association. Principles of ethics and code of professional conduct. Chicago: ADA; 2018.
2. Beauchamp TL, Childress JF. Principles of biomedical ethics. 7th ed. Oxford: Oxford University Press; 2013.
3. Braun V, Clarke V. Using thematic analysis in psychology. *Qual Res Psychol*. 2006;3(2):77-101. doi:10.1191/1478088706qp063oa
4. Ventola CL. Social media and health care professionals: benefits, risks, and best practices. *Pharm Ther*. 2014;39(7):491-520.
5. Greysen SR, Kind T, Chretien KC. Online professionalism and the mirror of social media. *J Gen Intern Med*. 2010;25(11):1227-1229. doi:10.1007/s11606-010-1447-1
6. Holden AC. Social media and professionalism in dentistry. *Br Dent J*. 2017;223(6):421-424. doi:10.1038/sj.bdj.2017.789
7. McKee R, Porter J. Ethical issues in medical photography. *Med Educ*. 2008;42(2):210-211. doi:10.1111/j.1365-2923.2007.02929.x
8. Farnan JM, Snyder Sulmasy L, Worster BK, Chaudhry HJ, Rhyne JA, Arora VM. Online medical professionalism. *Ann Intern Med*. 2013;158(8):620-627. doi:10.7326/0003-4819-158-8-201304160-00100
9. George DR, Rovniak LS, Kraschnewski JL. Dangers and opportunities for social media in medicine. *Clin Obstet Gynecol*. 2013;56(3):453-462. doi:10.1097/GRF.0b013e318297dc38

10. Wallace S, Clark M, White J. "It's on my iPhone": attitudes to the use of mobile computing devices in medical education. *BMJ Open*. 2012;2:e001099. doi:10.1136/bmjopen-2012-001099
11. Robinson L, Kersey J. Novel electronic technologies in medical education. *Med Educ*. 2008;42(9):925-927.
12. Henry RK, Molnar A. Examination of social media professionalism policies. *J Dent Educ*. 2013;77(5):620-622.
13. Thompson LA, Dawson K, Ferdig R, Black EW, Boyer J, Coutts J, et al. The intersection of online social networking with medical professionalism. *J Gen Intern Med*. 2008;23(7):954-957.
14. Chretien KC, Greysen SR, Chretien JP, Kind T. Online posting of unprofessional content by medical students. *JAMA*. 2009;302(12):1309-1315.
15. Kind T, Genrich G, Sodhi A, Chretien KC. Social media policies at US medical schools. *JAMA*. 2010;304(9):1031-1032.
16. Moorhead SA, Hazlett DE, Harrison L, Carroll JK, Irwin A, Hoving C. A new dimension of healthcare: systematic review of social media use. *J Med Internet Res*. 2013;15(4):e85.
17. Kane GC, Fichman RG, Gallagher J, Glaser J. The power of social media in healthcare. *Health Aff*. 2014;33(2):212-218.
18. Bosslet GT, Torke AM, Hickman SE, Terry CL, Helft PR. The patient-doctor relationship and online social networks. *J Gen Intern Med*. 2011;26(10):1168-1174.
19. General Medical Council. Confidentiality: good practice in handling patient information. London: GMC; 2017.
20. British Medical Association. Using social media: practical and ethical guidance. London: BMA; 2018.
21. World Medical Association. WMA statement on professional and ethical use of social media. Geneva: WMA; 2019.
22. Gagnon K, Sabus C. Professionalism in a digital age. *J Allied Health*. 2015;44(3):165-171.
23. Guseh JS, Brendel RW, Brendel DH. Medical professionalism in the age of online social networking. *J Med Ethics*. 2009;35(9):584-586.
24. Thompson DF, Lohani S. The role of mobile technology in healthcare education. *Am J Pharm Educ*. 2010;74(7):130.
25. Patel R, Chang T, Greysen SR, Chopra V. Social media use in chronic disease management. *Clin Diabetes Endocrinol*. 2015;1:3.
26. Wilkinson A, Ashcroft J, Patel A. Digital professionalism in medical education. *Clin Teach*. 2018;15(6):467-471.
27. Guraya SY. The usage of social networking sites by medical students for educational purposes. *J Taibah Univ Med Sci*. 2016;11(3):268-273.
28. Househ M. The use of social media in healthcare: organizational, clinical, and patient perspectives. *Stud Health Technol Inform*. 2013;183:244-248.
29. Chretien KC, Tuck MG. Addressing professionalism in the digital age. *Med Teach*. 2015;37(11):1013-1014.
30. Mesko B. Social media in clinical practice. Springer; 2017.
31. O'Sullivan AJ, Toohey SM. Teaching professionalism in the digital era. *Med Educ*. 2008;42(3):258-259.
32. Campbell L, Evans Y, Pumper M, Moreno MA. Social media use by physicians. *JAMA*. 2016;316(19):2017-2018.
33. Chan WSY, Leung AY. Use of social network sites for communication among health professionals. *J Med Internet Res*. 2018;20(3):e117.
34. Braun V, Clarke V, Hayfield N, Terry G. Thematic analysis. In: Liamputtong P, editor. *Handbook of research methods in health social sciences*. Singapore: Springer; 2019.
35. Creswell JW, Poth CN. *Qualitative inquiry and research design: choosing among five approaches*. 4th ed. Thousand Oaks: Sage Publications; 2018.