International Journal of Health, Economics, and Social Sciences (IJHESS)
Vol. 7, No. 1, January 2025, pp. 262~267
DOI: 10.56338/ijhess.v7i1.6857
Website: https://jurnal.unismuhpalu.ac.id/index.php/IJHESS

Regulation and Legal Ethics in the Practice of Dentistry in the Digital Age

Qonitah Nur Aslamiyah[1]*, Edi Pranoto[2]
[1] Universitas 17 Agustus 1945 Semarang, qonitah1905@gmail.com
[2]Universitas 17 Agustus 1945 Semarang, pranoto.edi@gmail.com

Article Info

Article history:

Received 10 Nov, 2024
Revised 10 Jan, 2025
Accepted 13 Jan, 2025

Keywords:

Regulation, Legal Ethics,
Dental Practice, Digital Era,
Data Privacy Protection

ABSTRACT

The advancement of digital technology has had a significant impact on various sectors, including dentistry. While technology offers convenience and enhances efficiency in healthcare services, it also brings about challenges related to regulation and legal ethics in dental practice. This article aims to provide a comprehensive review of the regulations governing dental practice in the digital era and the challenges in maintaining ethical and legal standards. The main focus of the discussion includes patient data protection, professional responsibility in the use of technology, the utilization of telemedicine, and the ethical principles that healthcare professionals must uphold. Addressing these challenges requires integrating technological advancements with the implementation of appropriate regulations and a strong awareness of legal ethics to ensure healthcare services remain safe, reliable, and in accordance with legal standards.

Corresponding Author:
Qonitah Nur Aslamiyah
Universitas 17 Agustus 1945 Semarang
Email : qonitah1905@gmail.com

INTRODUCTION

The development of digital technology has had a profound impact on nearly every aspect of human life, including the healthcare sector. One area significantly affected by this digital transformation is dentistry. With the rapid advancement of technology, dental practice has increasingly adopted digital innovations to support diagnosis, treatment, and patient care. Various digital medical devices, such as 3D imaging, electronic health record systems, and advanced diagnostic tools, are making it easier for dentists to provide more efficient, accurate, and measurable medical services. Additionally, digital technology enables telemedicine, a growing field that allows remote medical services, especially beneficial during pandemics or for patients living in remote areas.

Digital technology has undoubtedly brought many advantages to the field of dentistry, including improvements in service quality, faster diagnoses, and simplified medical administration. However, these technological advancements also present challenges that require closer attention to regulation and legal ethics. A significant challenge lies in integrating technological progress with existing professional and legal standards to ensure that the convenience and benefits offered by technology do not compromise patient interests or violate their rights.

One of the most critical issues is the protection of patients' personal data, which is increasingly recorded in electronic health records (EHR). The use of EHR offers numerous benefits in terms of efficiency

and accessibility of patient data, allowing healthcare professionals across different facilities to access the information. However, this also raises significant risks concerning the protection of patients' personal data. In an increasingly connected world, medical data linked through digital systems is vulnerable to breaches or misuse by unauthorized parties. Instances of data leaks in other sectors, such as banking and e-commerce, highlight the vulnerability of personal medical information. Therefore, it is essential for dental practices to comply with regulations governing personal data protection and electronic health records at both national and international levels.

Regulations related to personal data protection, such as Indonesia's Personal Data Protection Act (UU PDP), provide clear guidelines on the obligations of medical professionals to maintain the confidentiality of personal information, including patient medical data. In this context, dentists and other healthcare providers must ensure that patient medical data is only used for legitimate medical purposes and with patient consent. A significant challenge is the management and storage of medical data in cloud-based systems or internet-connected servers. Dental practices in the digital era must adhere to fundamental principles of personal data protection, such as transparency, fairness, and accountability, to ensure that patients feel secure and protected.

Moreover, the use of technology in dental practice raises concerns regarding the professional responsibility of healthcare providers. Advanced technologies, such as artificial intelligence (AI)-based diagnostic tools and robotic devices, offer high accuracy and convenience in dental care. However, despite the potential for improving care quality, dentists must still possess a solid understanding and clinical skills to use these technologies effectively. Technology cannot replace the knowledge and expertise of a competent dentist. Therefore, even though technology enhances diagnostics and treatment, the full responsibility remains with the dentist to ensure that all medical actions align with professional standards and the patient's medical needs.

Telemedicine is another rapidly growing technology that enables remote medical consultations. This is particularly beneficial for patients living in remote areas who may have difficulty accessing in-person dental care. Telemedicine also offers comfort and flexibility for patients with busy schedules or travel limitations. However, the use of telemedicine in dentistry raises various legal and ethical questions. One key issue concerns the validity of diagnoses made via telemedicine platforms. Medical procedures, such as direct examinations and physical diagnoses, cannot be fully replaced by remote consultations. Therefore, it is crucial to clearly define which types of care can be provided through telemedicine and which require in-person visits to the clinic.

Legal aspects of telemedicine also present important issues that must be addressed. Dental practice via telemedicine may raise concerns about the legality of medical actions performed without direct face-to-face interaction between the doctor and the patient. Regulations governing telemedicine in dentistry are still limited and need further clarification. Clear guidelines are necessary to ensure that telemedicine is conducted in a way that does not violate the law, avoids malpractice, and maintains the quality of patient care.

Additionally, the advancement of digital technology brings new ethical challenges within the dental profession. Dental ethics are not only concerned with the technical competence of the dentist but also with maintaining a professional relationship with patients and ensuring that their interests are prioritized. In digital practice, communication between dentists and patients, which was once face-to-face, is now often conducted remotely, for example, through video consultations or messaging apps. While this facilitates access, digital communication can reduce the depth of interactions that typically occur in direct conversations, which often involve important non-verbal elements crucial to diagnosis and treatment. Therefore, it is essential to ensure that, despite the dominance of technology in communication, core medical ethics principles—such as maintaining confidentiality, prioritizing patient safety, and being honest and fair—are strictly upheld.

To address these various challenges, existing regulations need to evolve alongside rapid technological advancements. Governments and dental professional organizations must collaborate to create regulations that not only protect patients but also foster technological innovation that benefits the field. Continuous education and training for dentists are also crucial to ensure that they can keep pace with technological advancements and understand the applicable regulations and ethics in the digital context.

Overall, digital dentistry presents complex challenges but also offers significant opportunities to improve the quality of dental healthcare services. To fully harness the benefits of technology without infringing on patient rights or violating professional standards, a careful and integrated approach is required. Therefore, this article aims to delve deeper into the regulations governing dental practice in the digital age, as well as the ethical and legal challenges that dental professionals must navigate in the face of rapid technological progress.

RESEARCH METHODOLOGY

This study uses a qualitative approach with a literature review method, aimed at gaining in-depth insights into the regulations and legal ethics in dental practice in the digital era. A qualitative approach is

chosen because it provides a more holistic understanding of the dynamics occurring in digital dentistry, as well as identifying various challenges and issues emerging from the perspectives of law, ethics, and the medical profession.

The literature review method is employed to collect and analyze various relevant data sources, such as regulations, dental professional guidelines, scientific articles, medical journals, books, and publications discussing the topic of digital dentistry from different viewpoints. The literature used includes sources from both Indonesia and internationally, to provide a broader perspective on the regulation and application of digital technology in dental practice. The main focus of the literature collection is to find references related to the regulations governing the use of technology in dentistry, such as patient data protection, telemedicine practice, the use of electronic health records, and relevant professional ethics guidelines.

Additionally, this research also covers literature addressing the impact of digital technology use on dental professionalism and the ethical challenges arising in the context of remote medical services. Some relevant sources of literature include reports from dental organizations, articles discussing case studies on the use of technology in dental care, and research exploring the interaction between legal regulations and technological innovations in the healthcare sector.

The data collection process involves searching for literature through various academic databases and accessible online sources, including international journals related to health law, medical ethics, and medical technology. Furthermore, the references used also include ethical guidelines published by dental associations at both national and international levels, such as the Indonesian Dental Association (PDGI) and global dental organizations like the FDI World Dental Federation.

Once the data is collected, the analysis is conducted in a descriptive and interpretive manner. Descriptive analysis is used to explain the existing regulations related to digital dentistry and to provide an overview of the challenges faced by healthcare professionals in implementing digital technology in dental practice. Interpretive analysis aims to evaluate and provide a deeper understanding of how regulations, ethical guidelines, and legal principles can be implemented in the rapidly evolving digital dental practice. This interpretive process also involves identifying gaps in policies and regulations governing digital dental practice, as well as recommendations for policy improvement or updates.

The results of this research are expected to provide a clearer picture of the importance of regulation and legal ethics in supporting safe and responsible dental practice in the digital era. Additionally, this study aims to offer recommendations for the development of dental policies that are more responsive to technological advancements, ensuring that technology is used appropriately, safely, and in compliance with applicable legal and ethical standards.

DISCUSSION

Dental practice in the digital era presents both challenges and opportunities that are interconnected in terms of regulation and legal ethics. The rapid advancement in medical technology, including the use of digital devices, electronic health records, and telemedicine, has transformed the way dental healthcare services are provided. While technology offers significant benefits in terms of efficiency and accuracy, its application must be balanced with serious attention to protecting patient rights and adhering to ethical principles and regulations. This discussion delves deeper into the challenges faced by healthcare professionals in addressing this digital transformation, focusing on four main issues: 1) Challenges in Personal Data Protection, 2) The Role of Regulation in Telemedicine and Remote Consultations, 3) The Use of Electronic Health Records in Dental Practice, and 4) Ethics and Professional Responsibility in the Use of Digital Technology.

Challenges in Personal Data Protection

Patient personal data, which is now stored digitally, is highly sensitive and must be protected. In dental practice, patient records and personal information, including medical history, current condition, treatments undergone, and other data, are crucial for providing accurate diagnosis and care. However, the storage of data in digital formats presents considerable risks, including the potential for data breaches or misuse.

One of the major challenges is how to safeguard patient medical data, which is often stored in cloud-based systems. Cloud technology facilitates efficient data storage and access, but it also increases vulnerability to cyberattacks. Cases of data breaches involving medical patient information, which have occurred in various countries, highlight the potential risks that need to be addressed. Therefore, medical data storage and management systems in dentistry must incorporate advanced security measures, such as data encryption and strict access controls. Moreover, medical devices used to access patient data must also meet established security standards.

In Indonesia, the Personal Data Protection Law (UU PDP) enacted in 2022 provides a legal framework to protect personal data, including medical information, from falling into the wrong hands.

According to this law, dentists and other healthcare professionals must maintain patient data confidentiality and ensure that the data is only used for legitimate medical purposes with the patient's consent. This underscores the importance of a deep understanding of legal obligations regarding patient data management. Furthermore, patient rights over their data, including the right to access, update, or delete their personal data in accordance with applicable regulations, must also be considered.

Additionally, technological advancements bring new challenges regarding the management of cross-border data. Since many medical data storage systems are international or cloud-based, patient data often moves between countries. In this regard, regulations such as the European Union's General Data Protection Regulation (GDPR) should be considered, as medical data held in international systems must comply with global personal data protection laws. For dental practice, it is essential for professionals to ensure that the systems they use comply with national and international regulations.

The Role of Regulation in Telemedicine and Remote Consultations

Telemedicine has become a primary option for providing healthcare services in the digital era, especially in situations that limit physical interaction, such as the COVID-19 pandemic. In dental practice, telemedicine allows for remote consultations between dentists and patients, offering comfort and flexibility, while expanding access for patients in remote areas or with mobility issues. However, despite its significant benefits, telemedicine also poses major challenges, particularly in regulation and ethics.

First, regulations related to the validity of diagnoses made via telemedicine are crucial. Dental diagnoses heavily rely on direct physical examination, such as checking the patient's oral cavity and teeth. Although digital diagnostic tools can assist in gathering additional information, a thorough diagnosis still requires a physical examination. Therefore, regulations must clearly outline the types of medical services that can be provided through telemedicine, as well as those that require in-person consultations at the clinic. More detailed guidelines on telemedicine procedures in dentistry should be developed to help dentists identify when to refer patients for face-to-face consultations, especially if treatment or diagnosis cannot be conducted remotely.

Second, issues surrounding legal responsibility in telemedicine must be carefully addressed. In cases of malpractice or diagnostic errors through telemedicine platforms, who will be held accountable? Are there differences in responsibility between in-person consultations and telemedicine consultations? Regulations must provide clear guidelines on professional standards for telemedicine practice, including the extent of a dentist's professional responsibility in offering remote healthcare services. For example, if a patient receives an incorrect or inaccurate diagnosis through telemedicine, should the dentist face sanctions or legal action for insufficient physical interaction? These questions must be answered through regulations that specifically govern digital dental practice.

Additionally, the issue of informed consent in telemedicine should be given due attention. During telemedicine consultations, patients must be provided with sufficient information about the procedures, potential risks, and available treatment alternatives. The informed consent process must still occur, even in digital interactions, in a manner that is appropriate for telemedicine contexts.

The Use of Electronic Health Records in Dental Practice

Electronic health records (EHRs) offer numerous advantages in managing patient data, enabling quick and accurate access to necessary medical information. In dental practice, EHRs allow dentists to store patient histories in an integrated system that can be accessed by other healthcare providers at various facilities, enhancing care coordination and treatment effectiveness. However, the implementation of EHRs also brings several challenges related to regulation, data management, and ethics.

From a regulatory perspective, while many countries have guidelines and laws regarding the use of EHRs, many dental practices, especially in areas with inadequate digital infrastructure, still rely on manual systems that are prone to errors and data loss. Therefore, governments should encourage wider adoption of EHR systems through incentives or policies that support small and medium-sized dental practices in replacing manual systems with safer, more efficient electronic ones. Broader EHR adoption will improve the overall quality of dental care but will also require training and education for dentists to use these systems correctly and according to established standards.

From an ethical standpoint, despite EHRs facilitating the management of medical information, privacy risks for patients remain. EHR systems must meet strict personal data protection standards to ensure that patient information does not fall into the wrong hands. Consequently, dentists and other medical staff must be trained to understand their responsibilities in maintaining patient confidentiality and to be involved in selecting and managing secure EHR systems.

Ethics and Professional Responsibility in the Use of Digital Technology

Although technology can help improve the efficiency of dental practice, it is equally important to

consider how this technology is used within the framework of ethics and professionalism. Technology should be used to enhance the quality of care, not to replace human expertise and interaction in delivering services. Dentists must always prioritize medical ethical principles, including justice, patient autonomy, and confidentiality.

Professional responsibility in using digital technology must always be guided by the core principles of medical ethics, namely safeguarding the best interests of the patient. For example, artificial intelligence (AI) technology used in diagnosis or patient treatment should be viewed as a tool to assist, not replace, medical decision-making by the dentist. Although technology can provide faster and more accurate recommendations or analyses, the final decision regarding medical action must remain with the dentist, considering clinical and ethical factors.

Furthermore, oversight of the use of technology in dentistry must be carried out carefully to prevent misuse. For example, in telemedicine, there is a potential for incomplete examinations or diagnoses, which could harm the patient. Therefore, dentists must ensure they have a solid understanding of technology's limitations and only use telemedicine for cases that align with medical and ethical guidelines.

Dental practice in the digital era requires a balance between utilizing technology and applying appropriate regulations and ethics. Protection of personal data, telemedicine regulations, use of electronic health records, and professional responsibility in using digital technology must be rigorously maintained to ensure that technological innovations do not compromise the quality of patient care or fundamental medical ethics principles. Therefore, it is crucial for medical professionals to continuously update their knowledge and skills regarding the regulations and ethics governing technology in dentistry to provide safe, efficient, and standard-compliant care.

CONCLUSION

Dental practice in the digital era offers numerous benefits but also presents significant challenges in terms of regulation and ethics. The use of digital technology, such as electronic health records, telemedicine, and cloud-based applications, facilitates efficient data management and the delivery of healthcare services. However, challenges related to the protection of patient personal data, legal responsibilities, and professional integrity in using this technology must be addressed seriously. Clear and comprehensive regulations are essential to provide a strong foundation for healthcare professionals to apply technology safely and responsibly.

The importance of protecting patient personal data cannot be overlooked in digital dental practice. Digital data storage systems must meet stringent security standards to prevent breaches or misuse of medical information. Healthcare professionals must understand and adhere to existing data protection regulations, such as Indonesia’s Personal Data Protection Law, to maintain patient confidentiality. Additionally, the use of technology in telemedicine must consider diagnosis validity, professional responsibility, and proper informed consent application. This is crucial to ensure that patients continue to receive quality care, even in remote consultations.

On the other hand, the use of electronic health records and other technologies in dental practice requires careful management and a deep understanding of medical ethics standards. Technology should be viewed as a supportive tool, not a replacement for medical decisions made by healthcare professionals. Professional responsibility in using technology must always be grounded in ethical principles that prioritize the best interests of the patient. Therefore, regulations governing the use of technology in dentistry must continuously evolve and adapt to technological advancements, providing clear guidance for healthcare professionals to maintain quality care that is safe, effective, and compliant with legal and ethical standards.

REFERENCES

Holden, A. C. L. (2018). ‘Blowing the whistle’: the ethical, professional and legal implications of raising concerns and self-regulation within dentistry. Australian Dental Journal, 63(2), 150–155. https://doi.org/10.1111/adj.12566

Holden, A. C. L. (2020). Exploring the evolution of a dental code of ethics: A critical discourse analysis. BMC Medical Ethics, 21(1), 1–7. https://doi.org/10.1186/s12910-020-00485-3

Iorgulescu, G., Cristache, C. M., Burcea, C. C., Ionescu, I., Perieanu, V. S., Marcov, N., & Burlibasa, M. (2020). Ethical and medico-legal aspects behind the use of digital technologies in dentistry. Romanian Journal of Legal Medicine, 28(2), 202–207. https://doi.org/10.4323/rjlm.2020.202

Lecture, F., Face-to-face, V., Lecture, F., & Face-to-face, V. (n.d.). Master Course Syllabus Course Name : DHYG 2153 Dental Hygiene Practice.

Noviantini, R., & Barthos, M. (2024). Legal and Ethical Perspectives of Teledentistry-Based Dental Practice in Indonesia. https://doi.org/10.4108/eai.25-5-2024.2349440

Reamer, F. G. (2017). Evolving Ethical Standards in the Digital Age. Australian Social Work, 70(2), 148–159. https://doi.org/10.1080/0312407X.2016.1146314

Simplício, A. H. de M. (2019). Social media and dentistry: Ethical and legal aspects. Dental Press Journal of Orthodontics, 24(6), 80–89. https://doi.org/10.1590/2177-6709.24.6.080-089.sar
Van de Voorde Marcel, Gunjan Jeswani (Eds.) Ethics in Nanotechnology. (2023).