ISSN. 2338-7475
E-ISSN. 2620-7869
Hearty
Jurnal Kesehatan Masyarakat
Beriman, Tulus, Sepenuh Hati,Berbesar Hati, Jujur, Sehat dan Kuat
Vol. 14 No. 2, April 2026, Hal. 611-621

THE ROLE OF CONSERVATIVE DENTAL RECORDS IN SUPPORTING FORENSIC ODONTOLOGY IDENTIFICATION: A PUBLIC HEALTH PERSPECTIVE

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Abstract

Forensic odontology plays an important role in the identification of individuals, particularly in situations where other identification methods are no longer applicable. Conservative dentistry generates comprehensive clinical data, including restorations, radiographic images, and treatment history, which have the potential to support forensic identification processes. This study aims to analyze the role of conservative dental records in supporting forensic odontological identification from a public health perspective. The method used is a narrative review based on scientific literature published between 2020 and 2026 that is relevant to the topic. The results indicate that dental records serve as reliable and individualized antemortem data, contributing significantly to the accuracy of identification, especially in mass disaster scenarios. However, their utilization remains limited due to challenges such as lack of standardization, inconsistent documentation quality, and absence of integrated database systems. Advances in digital dentistry and artificial intelligence offer opportunities to improve the efficiency and accuracy of identification processes, although ethical and regulatory aspects must be carefully considered. In conclusion, strengthening the quality, standardization, and integration of dental records is essential to support effective forensic identification systems and public health frameworks.

Keywords: Forensic Odontology, Dental Records, Public Health, Artificial Intelligence, Conservative Dentistry

Introduction

Forensic odontology has emerged as a crucial discipline within forensic science, particularly in the identification of individuals in medico-legal contexts, mass disasters, and criminal investigations. Teeth and oral structures are considered highly durable and resistant to environmental changes, making them reliable sources of identification when other biological markers such as fingerprints or facial features are no longer viable. The process of forensic identification largely relies on the comparison between antemortem and postmortem dental data, emphasizing the critical role of accurate and comprehensive dental records in clinical practice [1].

Conservative dentistry, which focuses on the prevention, diagnosis, and management of dental caries and tooth structure preservation, generates a substantial amount of patient data, including clinical findings, restorative treatments, and radiographic records. These records serve as valuable antemortem data that can significantly enhance the accuracy of forensic identification. Unique dental characteristics

Submitted: February-2026 Received: February-2026 Available Online: April-2026

such as restorations, tooth morphology, missing teeth, and pathological conditions provide individualized markers that can be matched with postmortem findings. Studies have demonstrated that dental restorations and radiographic features are among the most reliable indicators in forensic identification due to their uniqueness and long-term stability [2].

Standardization of dental records are essential for strengthening forensic identification systems at the population level. Public health systems aim to ensure not only the prevention and management of diseases but also the protection of individual identity and human rights, particularly in disaster victim identification (DVI) scenarios. However, several challenges remain, including inconsistent record-keeping practices, lack of standardized odontograms, and limited awareness among dental professionals regarding the forensic value of dental records. These issues can hinder the effectiveness of forensic identification processes, especially in countries prone to natural disasters, where rapid and accurate identification is critical [3].

Recent advancements in digital dentistry, including the use of electronic dental records, 3D imaging, and artificial intelligence (AI), have significantly improved the efficiency and accuracy of forensic odontology. Digital systems enable better storage, retrieval, and analysis of dental data, facilitating faster comparisons between antemortem and postmortem records. Moreover, AI-based tools have shown promising results in automating dental identification processes, including age estimation, bite mark analysis, and radiographic interpretation. These technological developments highlight the growing importance of integrating modern dental practices with forensic applications [4].

Despite the growing body of literature on forensic odontology and advancements in digital dentistry, significant gaps remain in the integration of conservative dental records into forensic identification systems, particularly from a public health perspective. Most existing studies focus on individual case analyses or technological developments, with limited emphasis on the role of routine clinical dental records in population-based identification systems. Furthermore, inconsistencies in dental record documentation and the lack of standardized protocols across healthcare settings continue to hinder the effective use of dental data for forensic purposes.

In addition, current evidence is often derived from heterogeneous study designs and is predominantly based on data from developed countries, which may limit its applicability to other healthcare contexts. Therefore, this review aims to explore the role of conservative dental records in supporting forensic odontological identification within a public health framework, while addressing existing gaps and highlighting future directions for research and policy development.

This review provides a distinct perspective by emphasizing the role of routine conservative dental records as a population-based resource within public health systems, rather than limiting the discussion to case-based forensic applications or technological innovations. While previous studies have primarily focused on forensic techniques or digital advancements, the integration of everyday clinical dental documentation into large-scale identification systems remains underexplored. By addressing this gap, the present review highlights the potential of conservative dentistry to contribute not only to individual identification but also to the development of sustainable and integrated forensic-public health frameworks.

The Role of Conservative Dental Records in Forensic Identification

Conservative dental records play an important role in supporting forensic identification, particularly through the availability of detailed antemortem data that can be compared with postmortem findings [5]. In many forensic situations, especially those involving severe trauma, advanced decomposition, or mass disasters, conventional methods such as fingerprinting or facial recognition may no longer be applicable. In such cases, dental structures remain one of the most reliable sources of identification because of their resistance to environmental factors such as heat and physical damage.

This makes dental records an essential component in medico legal investigations and disaster victim identification processes [6].

Radiographic documentation further strengthens the contribution of conservative dental records in forensic identification. Dental radiographs provide detailed images of internal structures, including root morphology, pulp chamber configuration, and surrounding bone patterns. These features offer objective information that can be compared accurately between antemortem and postmortem data. Unlike written records alone, radiographs provide visual evidence that is more difficult to misinterpret. The increasing use of digital radiography has also improved the efficiency of data storage and retrieval, making it easier to access and analyze dental records when needed for forensic purposes [7].

The usefulness of dental records in forensic identification is strongly influenced by the quality and completeness of the documentation. Accurate charting, clear recording of treatments, and regular updates are essential to ensure that the data can be reliably used for comparison. However, in many clinical settings, documentation practices are still inconsistent. Incomplete records, lack of standardized odontograms, and variations in recording systems can limit the effectiveness of dental data in forensic identification. These challenges indicate that improving the quality of dental record keeping in everyday practice is not only important for patient care but also for its broader forensic implications [8].

The availability of well documented dental data supports identification efforts in disaster situations and contributes to the protection of individual identity. Dentists therefore have an important responsibility that extends beyond clinical treatment. Through proper documentation, they contribute to both healthcare delivery and forensic systems. Strengthening the integration between routine dental practice and forensic identification processes will enhance the effectiveness of identification at both individual and population levels.

Clinical Dental Records in Conservative Dentistry

Clinical dental records in conservative dentistry are an essential part of everyday practice, supporting not only patient care but also broader clinical, legal, and interdisciplinary functions. These records serve as a structured repository of patient information, including personal identification, medical and dental history, clinical findings, diagnosis, treatment planning, and procedures performed. The availability of well documented clinical data allows dentists to monitor disease progression, evaluate treatment outcomes, and ensure continuity of care over time. In this context, dental records are not merely administrative documents, but integral components of evidence based clinical decision making [9].

In conservative dentistry, clinical records often reflect a detailed history of tooth preservation procedures, such as restorations, caries management, pulp therapy, and preventive interventions. These records provide insight into both the current condition of the oral cavity and the cumulative effects of previous treatments. Each restorative procedure contributes to a unique clinical pattern that distinguishes one patient from another. For example, the type of restorative material, its location, and its morphology can vary significantly between individuals, creating a distinctive dental profile. This highlights the importance of maintaining accurate and consistent documentation, as even small clinical details may have significant implications beyond routine care [9].

Radiographic records form another critical component of clinical documentation in conservative dentistry. Imaging techniques such as periapical radiographs, bitewing radiographs, and panoramic imaging provide valuable information that complements clinical examination. These images allow for the assessment of internal structures, including root anatomy, pulp chamber configuration, and bone patterns, which cannot be evaluated visually. The integration of radiographic findings into clinical records enhances diagnostic accuracy and supports more comprehensive treatment planning. Furthermore, radiographs serve as objective documentation that can be revisited and reinterpreted over time, contributing to both clinical and research applications [10].

The quality of clinical dental records is closely related to their usefulness. High quality records are characterized by accuracy, completeness, clarity, and timeliness. Accurate documentation ensures that recorded findings reflect the actual clinical situation, while completeness guarantees that all relevant information is included. Clarity allows other practitioners to understand the records easily, which is essential in multidisciplinary care, referrals, or medico legal situations. Timely recording, ideally performed immediately after treatment, reduces the risk of missing or incorrect information. These aspects are fundamental in ensuring patient safety and maintaining professional accountability [10].

The development of electronic dental records has introduced new opportunities to improve the structure and accessibility of clinical data. Digital systems allow for standardized data entry, integration of clinical notes with radiographs and images, and easier retrieval of patient information. These systems also support data sharing across healthcare providers, which can improve continuity of care and facilitate interdisciplinary collaboration. As digital dentistry continues to evolve, the role of clinical dental records is expected to expand, reinforcing their importance not only in patient care but also in research, public health, and forensic applications [10].

Role of Radiographic Imaging in Forensic Identification

Radiographic imaging plays a central role in forensic identification, particularly within the field of forensic odontology, where accurate comparison between antemortem and postmortem data is essential. In many medicolegal situations, especially those involving advanced decomposition, burning, or fragmentation of human remains, traditional identification methods such as fingerprints or visual recognition may not be applicable. In such conditions, dental radiographs provide a reliable and objective source of information that can be used to establish identity. Radiographic comparison remains one of the most widely accepted and scientifically supported methods in forensic identification due to its ability to capture detailed anatomical structures that are resistant to environmental changes [11].

One of the main advantages of radiographic imaging is its ability to record internal dental and skeletal structures that are not visible during clinical examination. Features such as root morphology, pulp chamber configuration, trabecular bone patterns, and the presence of restorations can be clearly visualized through radiographs. These characteristics are highly individualized and remain relatively stable over time, making them suitable for identification purposes. Radiographs also allow for precise comparison of anatomical details between antemortem and postmortem records, increasing the accuracy of identification and reducing the likelihood of error [12].

Advancements in digital imaging and three dimensional technologies have further expanded the role of radiographic imaging in forensic identification. The transition from conventional film based radiography to digital systems has improved image quality, storage capacity, and accessibility of dental records. In addition, the use of three dimensional imaging techniques, such as cone beam computed tomography and 3D superimposition methods, allows for more precise analysis of anatomical structures and spatial relationships. These technologies enable more accurate comparisons and have been increasingly applied in complex forensic cases [13].

Artificial intelligence has also begun to influence the use of radiographic imaging in forensic identification. Machine learning algorithms can analyze radiographic data, detect patterns, and assist in matching antemortem and postmortem images with a high level of accuracy. Automated systems have demonstrated the ability to process large databases and identify individuals based on dental radiographs, reducing the time and subjectivity associated with manual comparison [4]. Despite these advantages, several challenges remain in the use of radiographic imaging for forensic purposes. Variations in image quality, differences in angulation, and the absence of comparable antemortem records can limit the effectiveness of radiographic comparison. In addition, the lack of standardized imaging protocols across different clinical settings may introduce inconsistencies that affect interpretation. These limitations

highlight the need for improved standardization, better record keeping practices, and integration of digital imaging systems within healthcare and forensic frameworks.

Public Health Perspective: Population Based Dental Data

Population based dental data plays an increasingly important role in bridging clinical dentistry and public health systems, particularly in supporting identification processes and improving overall healthcare planning. In the context of public health, dental records are no longer viewed solely as individual clinical documents, but also as valuable datasets that reflect the oral health status of communities. These data can provide insights into disease patterns, treatment distribution, and access to care across populations, while simultaneously serving as a foundation for identification systems in forensic contexts. The integration of dental data into public health frameworks highlights its dual function as both a clinical and population level resource [14].

The systematic collection of dental records enables the development of large scale databases that can be used for surveillance, research, and identification. Public health surveillance systems often rely on aggregated data to monitor the prevalence of dental caries, periodontal disease, and tooth loss, which are among the most common oral health conditions worldwide. When these datasets are properly structured and standardized, they can also support identification processes by providing reference data that reflects population specific characteristics. This is particularly relevant in diverse populations, where variations in dental morphology, treatment patterns, and oral health behaviors may influence identification accuracy [15].

The concept of dental identification systems at the population level has gained increasing attention in recent years. These systems aim to integrate dental records into centralized databases that can be accessed during medico legal investigations or disaster victim identification processes. Innovations such as digital record systems, prosthetic identification markers, and electronic databases have been proposed to enhance the efficiency of identification processes. In addition to improving identification accuracy, these systems offer broader public health benefits, including better coordination between healthcare providers and improved data management across institutions [14].

Another important aspect of population based dental data is its relevance in disaster preparedness and emergency response. In countries that are prone to natural disasters, the availability of well organized dental databases can significantly improve the speed and accuracy of victim identification. Public health systems play a critical role in ensuring that such data are systematically collected, maintained, and accessible when needed. This requires collaboration between dental professionals, public health authorities, and forensic teams, as well as the establishment of standardized protocols for data recording and sharing. Without such coordination, the potential of dental data in large scale identification efforts may remain underutilized [1].

Several challenges limit the effective use of population based dental data. One of the main issues is the lack of standardization in dental record systems across different regions and healthcare settings. Variations in documentation practices, data formats, and terminology can hinder data integration and comparison. In addition, concerns related to data privacy, ethical considerations, and legal regulations must be carefully addressed when developing large scale dental databases. The need to balance accessibility and confidentiality remains a key challenge in the implementation of such systems [14].

Advances in digital health technologies and artificial intelligence offer promising opportunities to overcome these challenges. Digital dental records enable more efficient data storage, retrieval, and analysis, while artificial intelligence can assist in identifying patterns within large datasets. These technologies can enhance the usability of population based dental data in both public health and forensic applications. However, their successful implementation requires strong infrastructure, standardized data systems, and appropriate regulatory frameworks to ensure ethical and effective use [16].

Challenges in Utilizing Dental Records for Forensic Purposes

Despite the recognized importance of dental records in forensic identification, several challenges limit their effective use in practice. One of the most significant issues is the incomplete or poor quality of dental records. In many clinical settings, documentation may lack essential details such as precise charting, radiographic evidence, or updated treatment history. This can significantly reduce the reliability of antemortem data when compared with postmortem findings. Studies have shown that inadequate record management reflects not only gaps in documentation practices but also broader issues in the quality of dental care systems, ultimately affecting the success of forensic identification processes [17].

Another major challenge is the lack of standardization in dental record systems. Variations in terminology, charting methods, and recording formats across different clinics and regions make it difficult to interpret and compare data consistently. In forensic contexts, where accuracy and reproducibility are essential, inconsistencies between antemortem and postmortem records can lead to delays or even misidentification. The absence of universally accepted standards for dental documentation remains a persistent limitation in forensic odontology, particularly in regions with diverse healthcare systems [18].

The limited availability of dental records also presents a significant barrier. Not all individuals have comprehensive dental documentation, especially those from underserved or marginalized populations. In such cases, the absence of antemortem records makes dental comparison impossible, regardless of the quality of postmortem findings. This issue is particularly relevant in large scale disasters or in populations with limited access to routine dental care, where record keeping may not be consistently practiced. As a result, the potential of dental identification remains underutilized in many real world scenarios [12].

Technical challenges further complicate the use of dental records in forensic identification. Differences in radiographic angulation, image quality, and recording techniques can make direct comparisons difficult. Even when records are available, variations in how images are captured or documented may introduce discrepancies that require careful interpretation by forensic experts. In addition, environmental factors such as decomposition, thermal damage, or trauma can alter postmortem dental structures, further complicating the comparison process. These technical limitations highlight the need for standardized imaging protocols and improved documentation practices [8].

Human factors also play an important role in limiting the effectiveness of dental records. Errors in documentation, misinterpretation of findings, and lack of training in forensic principles can all affect the accuracy of identification. The interpretation of dental evidence often depends on the expertise of the practitioner, which introduces a degree of subjectivity into the process. Inconsistent training and limited awareness among dental professionals regarding the forensic importance of dental records may contribute to these challenges, emphasizing the need for education and professional development in this area [12].

In recent years, digital technologies and artificial intelligence have been proposed as potential solutions to overcome some of these limitations. Digital dental records improve data storage, accessibility, and standardization, while artificial intelligence can assist in pattern recognition and automated matching of dental data. However, these technologies also introduce new challenges, including issues related to data privacy, system interoperability, and ethical considerations. Furthermore, the integration of digital systems into existing healthcare infrastructures remains uneven, particularly in low resource settings [12].

Digital Dentistry and Artificial Intelligence

The development of digital dentistry has significantly transformed modern dental practice, including its applications in forensic identification. Digital technologies have enabled the transition from conventional manual methods to more advanced systems that allow for efficient data collection, storage, and analysis. Tools such as intraoral scanners, cone beam computed tomography, and digital radiography have improved the accuracy and reproducibility of dental records. These technologies provide high resolution images and three dimensional representations of dental structures, which are essential for detailed analysis and comparison in forensic contexts [19]. As a result, digital dentistry has become an important foundation for improving the quality and usability of dental data in both clinical and forensic settings [1].

One of the key advantages of digital dentistry is its ability to integrate different types of data into a single system. Digital records can combine clinical notes, radiographic images, intraoral photographs, and three dimensional scans into a unified platform. This integration enhances data accessibility and facilitates more comprehensive analysis. In forensic identification, the availability of well organized digital data allows for faster comparison between antemortem and postmortem records, reducing the time required for identification. Furthermore, digital systems enable easier data sharing across institutions, which is particularly important in disaster victim identification scenarios where collaboration between multiple agencies is required. [20].

Artificial intelligence has further expanded the capabilities of digital dentistry by introducing automated analysis and decision support systems. Machine learning algorithms can process large volumes of dental data and identify patterns that may not be easily detected through manual analysis. In forensic odontology, artificial intelligence has been applied in several areas, including dental age estimation, sex determination, bite mark analysis, and radiographic interpretation. These systems can improve diagnostic accuracy, reduce human error, and enhance consistency in interpretation. In addition, artificial intelligence can assist in matching antemortem and postmortem dental records, making the identification process more efficient and objective [21].

Despite these advancements, the integration of digital dentistry and artificial intelligence also presents several challenges. One of the main concerns is the availability and quality of data used to train artificial intelligence systems. Incomplete or inconsistent datasets can affect the performance and reliability of these models. In addition, issues related to data privacy, ethical considerations, and legal regulations must be carefully addressed. The use of patient data for artificial intelligence applications requires clear guidelines to ensure confidentiality and informed consent. Furthermore, the implementation of digital systems and artificial intelligence technologies remains uneven across different regions, particularly in low resource settings where infrastructure and technical expertise may be limited [22].

Ethical and Legal Considerations

The use of dental records in forensic identification raises important ethical and legal considerations that must be carefully addressed to ensure responsible practice. While dental data provide valuable information for identification, their use involves sensitive personal information that is subject to ethical principles such as autonomy, confidentiality, and justice. In clinical dentistry, maintaining accurate records is not only a professional obligation but also a legal requirement, as these records serve as evidence in both clinical and medico legal contexts. The dual function of dental records highlights the need to balance their use for identification purposes with the protection of patient rights and privacy [23].

One of the central ethical issues in the use of dental records is patient confidentiality. Dental records contain personal and medical information that must be protected from unauthorized access or misuse. In forensic situations, particularly in disaster victim identification, these records may need to

be shared across institutions and agencies. This creates a potential risk of data breaches or misuse if appropriate safeguards are not in place. Ethical frameworks emphasize that the use of such data should be limited to legitimate purposes and handled with strict confidentiality to protect both the individual and their family. Concerns regarding privacy become even more complex in the digital era, where large volumes of data can be stored and transferred electronically [1].

Informed consent is another critical aspect of ethical practice. Patients should be aware that their dental records may be used not only for treatment but also for secondary purposes such as research, education, or forensic identification. In many cases, however, patients are not fully informed about these potential uses. Ethical standards require that consent should be obtained in a clear and transparent manner, ensuring that patients understand how their data may be used and shared. This is particularly relevant in the context of digital dentistry and artificial intelligence, where dental images and records may be used to train algorithms without explicit patient awareness [16].

The use of dental records in forensic identification is governed by regulations that vary across jurisdictions. Legal frameworks typically recognize dental records as valid evidence in identification processes, particularly in disaster victim identification systems. However, the implementation of these regulations often faces challenges, including the lack of standardized documentation systems and limited awareness among healthcare professionals. In some countries, despite the existence of legal provisions supporting forensic identification, the practical use of dental records remains suboptimal due to gaps in policy implementation and institutional capacity [23].

The integration of artificial intelligence into dental and forensic practices introduces additional ethical and legal complexities. Issues such as algorithmic bias, transparency, and accountability must be considered when using automated systems for identification. Artificial intelligence models rely on large datasets, and if these datasets are not representative, the results may lead to biased or inaccurate conclusions. Furthermore, the lack of clear regulatory frameworks governing the use of artificial intelligence in forensic contexts raises concerns about the admissibility of such evidence in legal proceedings. Ensuring that these technologies are used as supportive tools rather than sole decision makers is essential to maintain ethical and legal standards [24].

Discussion

The findings of this review highlight the central role of conservative dental records as a bridge between clinical dentistry, forensic identification, and public health systems. The integration of clinical dental data into forensic applications is not merely a technical process but reflects a broader shift toward recognizing dental records as valuable interdisciplinary resources. The results presented in this study are consistent with previous research indicating that dental structures, restorations, and radiographic features provide highly individualized and durable markers that support accurate identification, particularly in cases where other biological identifiers are no longer viable [1].

The discussion of conservative dental records demonstrates that routine clinical documentation has a dual function. On one hand, it supports diagnosis and treatment planning; on the other, it provides essential antemortem data for forensic comparison. This dual role aligns with findings from recent studies that emphasize the importance of integrating clinical dental practice with forensic systems. However, while previous research has largely focused on technological advancements or individual case analyses, this review extends the discussion by emphasizing the importance of routine clinical records in a population based context. This highlights a gap in current literature, where the contribution of everyday dental practice to large scale identification systems remains underexplored [20].

The role of radiographic imaging further strengthens the connection between clinical dentistry and forensic identification. Radiographs provide objective and reproducible data that enhance the accuracy of comparisons between antemortem and postmortem records. This finding is consistent with

existing literature, which identifies radiographic comparison as one of the most reliable methods in forensic odontology. However, the discussion also reveals that the effectiveness of radiographic analysis is highly dependent on image quality, standardization, and availability of comparable data. This supports previous studies that emphasize the need for standardized imaging protocols and improved documentation practices to reduce variability and enhance reliability [25].

The findings indicate that dental records have significant potential beyond individual patient care. The concept of population based dental data introduces a broader framework in which dental records can contribute to surveillance systems, disaster preparedness, and national identification databases. This aligns with recent public health studies that advocate for the integration of oral health data into wider health information systems. However, this review also identifies a critical limitation, namely the lack of standardized and centralized dental record systems across different regions. This inconsistency limits the ability to utilize dental data effectively at the population level and highlights the need for policy development and system integration [17].

The challenges identified in this review, including incomplete documentation, lack of standardization, and limited accessibility of dental records, are consistent with findings from previous research. These challenges suggest that the issue is not solely technological but also systemic and educational. The gap between recommended standards and actual clinical practice reflects the need for improved training, awareness, and institutional support. In this context, the role of dental professionals becomes particularly important, as they are responsible for ensuring the quality and completeness of dental records in routine practice.

The discussion also highlights the growing impact of digital dentistry and artificial intelligence in addressing some of these challenges. Digital systems improve data storage, accessibility, and integration, while artificial intelligence offers new possibilities for automated analysis and pattern recognition. These findings are in line with recent studies demonstrating the potential of artificial intelligence to enhance the efficiency and accuracy of forensic identification. However, this review also emphasizes that technological advancements alone are not sufficient. Issues related to data quality, ethical considerations, and legal frameworks must be addressed to ensure responsible implementation.

Ethical and legal considerations further reinforce the complexity of using dental records in forensic contexts. The need to balance data accessibility with patient confidentiality reflects an ongoing challenge in both healthcare and forensic systems. This discussion is consistent with recent literature highlighting concerns related to informed consent, data protection, and the ethical use of artificial intelligence. The absence of clear and standardized regulations in many regions underscores the need for stronger governance frameworks that support both ethical practice and effective identification processes [26].

Conclusion

Conservative dental records play a significant role in supporting forensic odontological identification within a public health context. Routine clinical documentation, including restorative records, radiographic imaging, and treatment history, provides reliable antemortem data that can enhance the accuracy of identification, particularly in situations where other biological methods are no longer applicable. The findings highlight that conservative dentistry contributes not only to patient care but also to the formation of individualized dental profiles that are essential for forensic comparison. From a broader perspective, the integration of dental records into public health systems offers important opportunities to support population-based identification, disaster preparedness, and coordination between healthcare and forensic institutions. However, the effectiveness of these applications is strongly influenced by the quality, completeness, and standardization of dental records, which remain inconsistent in many clinical settings. In addition, limitations such as unequal access to dental care, lack

of centralized databases, and variability in documentation practices continue to hinder the optimal use of dental data for forensic purposes. The development of digital dentistry and artificial intelligence provides promising solutions to improve data management, analysis, and accessibility, yet their implementation requires adequate infrastructure, standardized systems, and clear regulatory frameworks. Ethical and legal considerations, including patient confidentiality, informed consent, and data protection, must also be carefully addressed to ensure responsible use of dental information. Strengthening documentation practices, promoting standardization, and enhancing interdisciplinary collaboration are therefore essential steps to maximize the contribution of conservative dental records in forensic identification, while also reinforcing the role of dentistry within public health systems and medico legal frameworks.

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