What’s the deal with dental records for practicing dentists? Importance in general and forensic dentistry

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Abstract
Dental records are essential for dentist and patient protection, and its maintenance is considered an ethical and legal obligation of the dentist: Ethical, because it satisfies the duty of care that the dentist has toward his patient and legal, as it is an investment for future protection against medico-legal complications. In addition to its legal and ethical role, the dental fraternity in India is slowly waking up to its importance in forensic dentistry. Dentists could play a vital role in assisting forensic investigators in providing information that would help in the identification of perpetrators or victims of crime and natural or manmade disaster situations. This information would be easily available and accessible through well-maintained patient records under dental care.

Key words: Dental records, dentist, forensic dentistry

Introduction
The dental profession has an ethical and legal responsibility for patient care. A properly maintained patient record is a very important aspect of this patient care. In general, a “record” can be defined as information generated in the course of an organisation’s official transactions and one that is documented to act as a source of reference and a tool by which an organisation is governed.[1] The dental record is the official office document that records all diagnostic information, clinical notes, treatment performed and patient-related communications that occur in the dental office, including instructions for home care and consent to treatment.[2] The dental record is hence a legal document owned by the dentist, which contains subjective and objective information about the patient. This article will cover the general uses of a dental record, its essential components, methods to improve patient dental records and its specific importance in forensic dentistry.

Uses of Dental Records
A properly maintained dental record has several uses. Firstly, clinical records are fundamental for delivery of good dental care, for ensuring continuity and completeness of treatment. Good records enable monitoring of the patients’ state of oral health and can also be used to aid motivation in preventive oral healthcare practices. It is helpful in monitoring the success/failure of any treatment carried out. A detailed and accurate dental record is essential as it serves the dentists own best interests in the event of a malpractice suit.[3,4] A complete record also enables communication with another practitioner who may be required to provide care to the patient in the absence of the primary clinician. They are essential for dental audit,[5] which is a vital part of quality control. A dental audit critically analyses every aspect of dental care. It begins from initial entry of patient information to assessing competence of the dental professional to diagnose, treat, use resources and practice evidence-based dentistry. All these factors influence the quality of life as assessed by the patient and the professional.
Records can be used in the management and planning of health care facilities and services, for health care research and the production of health care statistics.[6] Finally, a person’s dental record can play a vital role in forensic dentistry in identification, detection and solution of a crime, in civil proceedings or in natural or manmade disaster situations.[7,8]

Despite its many uses, many practitioners in India do not maintain dental records, or, if maintained, these are of poor quality. A recent study by Astekar et al.[9] found that only 38% of the dentists in Rajasthan were aware of the importance of maintaining dental records and 62% of the dentists did not maintain any form of patient record. In another study by Preethi et al.[10] among dental practitioners in Chennai, it was found that 21% did not maintain any form of dental record and that only 12% maintained complete dental records. This trend could be reflected in other parts of the country and is a very alarming situation as most dentists are unaware of the ethical and legal implications of inadequate or improperly maintained dental records.

**What should a dental record ideally contain?**

A dental record refers to all the information that is related to the provision of dental care services, including patient records, business records include billing, claims forms, laboratory charges, scheduling etc., and drug records.[3] As the dental practitioner is solely accountable for complete and accurate patient records, there are certain basic criteria that need to be followed in writing a dental record.

**A. Patient record**

1. All entries should be either recorded in ink and not in pencil legibly or recorded in an electronic format.
2. The date of every patient visit should be entered in a chronological order.
3. Complete recording of all items in the patient’s case history form, which includes:
   a. General patient information – age, gender, birth date, place of employment, contact information that includes telephone numbers and address and any referring party.
   b. Chief complaint, past dental, medical, family, drug histories and allergies need to be updated regularly and, in case of children, the immunization status.
   c. Specific questions related to women regarding pregnancy and lactation.
   d. Clinical and radiographic findings, diagnosis, proposed treatment and prognosis.
   e. Copies of test results, instructions for home care, patient follow-up and recall examinations, fees charged and referrals.
4. Due to paucity of time, the dentist may not be able to personally record all the details in the patient’s record. Some entries may be delegated to office staff. For example, the receptionist can record telephone calls, prescription changes and appointments. The dental assistant records the patient’s comments, concerns and disposition; vital signs; medical history; radiographs and other diagnostic tools taken and used; and instructions given to the patient, etc. The dentist can then add clinical impressions, treatments performed and any pertinent information. It should be remembered that the dentist is ultimately responsible for the patient’s chart.[6]
5. All diagnostic aids, which include radiographs, study models, photographs etc., should be properly labeled and dated.
6. Established terminology, symbols and abbreviations should only be used in order to avoid misunderstandings between different members of the dental team.
7. All entries should be signed or initialed by the treating clinician.
8. Informed consent forms with patient signature for invasive procedures, sedation etc., should be taken.
9. Signature of the patient is also necessary if the patient refuses to undergo a treatment even though the clinician feels is essential for the health of the patient. Registering informed refusal is as important as noting down the patient’s informed consent.
10. Record should be objective in nature. It should contain only facts relating to the case and professional opinions in notations and not subjective interpretations for which the clinician is not trained. It should not contain any derogatory remarks regarding the patient.
11. Any mistakes in the records should be corrected with a single line drawn through the incorrect material in an honest, open manner. Deliberate obliteration or alterations of the record after the fact should not be made under any circumstances[11]
12. All communications with the patient, including emergency telephonic consultations, should be recorded[9]
13. If a patient is dissatisfied, all communications should be recorded including the problem, the attempt to deal with the problem and the solution to the problem.
14. If a patient wishes to discontinue treatment, a note of it should be made in the patient’s record along with the reason.
15. Classify all patient files into either active or inactive. Active files hold the records of patients who are at present having their dental care provided by the practice. Inactive patients are considered to be those who have not returned to the dental practice for 24 months. The most common types of errors committed in record keeping are: (1) not recording the treatment plan, (2) not documenting health history clearly or failure to update it regularly and (3) failure to document informed consent or informed refusal.[2]
B. Business record
It should include details of billing with date and amount, copies of claims forms submitted by the patient, information related to name, address, nature of the laboratory services used and laboratory charges, scheduling of appointments, etc. This information should not be kept along with the patient clinical record.

C. Drug record
Dentists prescribe certain drugs for a number of conditions related to the oral cavity. Although the number of these drugs is limited, the use of these drugs has important implications and extreme care should be taken upon prescribing to make the best use of these drugs and prevent their side-effects.

A drug record of the patient should include
1. The date and method of prescription/administration/dispensing of drug
2. Name, strength, quantity and form of drug
3. Directions for use of drug
4. Condition being treated and/or dental treatment provided
5. Prescription pads should never be presigned and should kept out of reach of patients to avoid potential misuse.

A study by Dar-Odeh et al.[12] on the analysis of clinical records of dental patients attending the Jordan University Hospital found that drug prescriptions and local anesthetic injections were poorly documented by the investigated group of dental specialists.

Dentist’s Perception of their Record-Keeping Skills
Most clinicians believe that their record keeping is adequate. In reality, a discrepancy exists between dentists’ perception of dental record adequacy and recommended structure and guidelines. This has been shown to be true when examining evidence from studies carried out in the United States, Australia, Scandinavia and United Kingdom. It was found that fundamental clinical entries that could have an impact on basic dental care provision were missing from many records. The frequency of recording for patients whose treatment was funded under government regulations was significantly worse than for patients whose treatment was privately funded.[13,14] In a study by Osbourne et al.[11] to determine Minnesota dentists’ perception of the adequacy of their dental record documentation, 85% dentists felt their record documentation was adequate while in reality, 9-87% of the time information was found to be absent when compared with the American Dental Association (ADA) criteria.

These shortcomings observed in several studies can be reduced significantly by following the universally accepted record keeping format – SOAP.[15] SOAP is an acronym for-

Subjective data
This section contains information about the reason for visit to the dentist, which includes the patient’s chief complaint/s and symptoms.

Objective findings
This section records all the findings obtained from the clinical examination and diagnostic tests in an unbiased manner.

Assessment
Diagnostic and therapeutic judgment is reached based on subjective data and objective findings.

Plans
In this stage, the assessment is converted into action. Herein, the various treatment options along with their pros and cons, economic and time considerations, home care instructions, appropriate use of prescribed medication and consequences of unwillingness to undergo treatment are explained to the patient so that he/she can make an informed decision regarding their course of treatment.

Dental records and the ethical principle of confidentiality
Ethics guides the moral consciousness of the health care profession, and confidentiality is one of its core principles. The relationship of a dentist and patient is based on trust. Every dental record is therefore made under the basic premise that the health information of the patient would be kept confidential not only by the dentist but also by every member of the dental team. This information should be protected from any unauthorized use or disclosure even to family members except when required by law or where the patient has given their express consent, ideally in writing. All dental records should be stored in a safe place and never left unattended. If an electronic system is used for entering patient records, then it should have a login and password to access data. Backup of all records should be performed on a removable medium that will enable data recovery in the event of a systems failure.[3] A breach of confidentiality occurs when private information that the clinician has learned within the patient is divulged to a third party without the patients consent or a court order.

Garbin et al.[16] found that although dentists declared to be aware of professional confidentiality, nearly half of the respondents acted unethically by talking about the clinical cases of their patients to their friends or spouses. Violation of professional ethics, no matter how minor, will result in problems to both the clinician and the patient.

Access to records
Patients do not have the right to possess their original records. But, they have the right to access and possess a copy of their complete dental record and dentists are obligated to provide such copies even in the event of disagreements.
or nonpayment of fees. Request for medical records by the patient or the authorized attendant should be acknowledged and documents issued within 72 h according to Section 1.3.2 of the Medical Council of India (MCI). There is a strong perception among health care practitioners that allowing patients to access their records may be harmful to them. A study conducted by Fisher and Britten[17] found that most patients were able to judge for themselves if they wanted access or not and that patients who chose to look at their records found it helpful and reassuring even if the news was bad.

Ownership of dental records
The owner of the dental practice is usually the legal owner of the records. The records should never be released by the dentist unless by the express wish of the patient. There are several exceptions to this rule:[18]

1. When referring cases to another physician either for consultation or treatment
2. When demanded by the court in cases of medicolegal issues, occupation-related or road traffic accidents requiring compensation – the original records should be submitted. It is essential to keep a photocopy of the same
3. On request of the police
4. When asked for by income tax authorities or insurance companies.

A dentist leaving or selling a practice should ideally give patients advance written notice about the change of ownership. If the outgoing dentist is unable to do so, the incoming dentist should notify patients that he or she is now the new owner of the practice and is therefore in possession of their records.

Duration of retention of records
Different countries have different guidelines regarding the duration for preservation of records.

According to The Department of Health (DH) for National Health Service (NHS) organisations in England, community dental records should be maintained for a period of 11 years for adults and children or until the patient is 25 years old, whichever is longer. Hospital records need to be maintained for 8 years in adults and until the patient is 25 years old in children, or if sooner, 8 years after their death.[19]

According to the guidelines adopted by the Provincial Dental Board of Nova Scotia,[20] the basic time period is 2 years following treatment completion. There are exceptions to this rule, e.g., in the event a judge permits action even after the 2-year basic period. For minors and persons of unsound mind, the time period does not begin until a child reaches the age of majority, i.e., 19 years, or the person is certified to be of a sound mind, respectively. Hence, a good basic rule for the dental profession would be to retain records for a period of 10 years, excluding the above exceptions.

In India, there are no clear cut guidelines or law regarding retention of records. According to the MCI regulations 2002,[21] every physician shall maintain medical records pertaining to his/her indoor patients in a standard proforma for 3 years from commencement of treatment (Section 1.3.1 and Appendix 3).

According to the Indian Council of Medical Research, in case of research-related records, it is recommended that all records must be safely maintained after the completion/termination of the study for a period of 3 years if it is not possible to maintain the same for more than that due to lack of resources and necessary infrastructure.[22]

The Clinical Establishments (Registration and Regulation) act, 2007, reintroduced in 2010, is an act aimed at streamlining public and private clinical establishments in India by their registration and regulation. This act shall be applicable to all union territories and four states, which include Mizoram, Sikkim, Arunachal Pradesh and Himachal Pradesh, while other states may adopt the same. As a condition for registration and continuation, every clinical establishment shall fulfill the provisions for maintenance of records and reporting as may be prescribed (under clause [iii] of sub-section [1] of section 12 of the 2010 act). No further details regarding the manner of record maintenance or duration of retention of records is made in the act as it is probably left to the discretion of the state governments.

As part of good practice, it is recommended that the patient files be stored for a periodic term as follows:

1. For outpatient records – 5 years
2. For inpatient records – 7-15 years
3. For medicolegal cases – 15 years or more.

Records can also be stored indefinitely and made available anytime by scanning and digitizing them.

Release and Transfer of Records
All the original records of the patient are the sole property and responsibility of the treating dentist and should be in his custody. If the patient moves to a different dental practice, a copy of the records should be transferred to the new practitioner. A minimum fee can be charged by the dentist for copying of the records provided the patient is made aware of the charges.[3]

Disposition or Purging of Records
At the end of the retention period, records must be disposed of in a manner that protects patient confidentiality and maintains physical security of the information. Methods include:[4,20]
• The records can be returned to the individual or dealt with in accordance with patient’s instructions
• Controlled physical destruction of records such as shredding or incineration
• Confidential transfer to another agency that will provide appropriate services to destroy the information
• The process used to destroy electronic records must render them unreadable and eliminate the possible reconstruction of the records in whole or in part
• For secure cast and model destruction, all identifying information on casts and models must be removed prior to disposal.

Dental Records and Forensic Implications

Dentists could play a vital role in assisting forensic investigators in providing information that would help in the identification of perpetrators or victims of crime and natural or manmade disaster situations. This information would be easily available and accessible through well-maintained patient records that are under dental care.

A dental record repertoire of a patient could consist of regularly updated dental charts wherein the dentist records all the oral and perioral hard and soft changes taking place over time. Additionally, radiographs, photographs, casts, impressions and dentures could also be a part of the patient record. Practicing dentists can become valuable members of the dental identification process by developing and maintaining good records that would be invaluable in regard to the identification of human remains solitary or mass fatalities, biting injuries and child abuse.\[27\]

Identification of the deceased helps families to get a sense of closure and come to terms with their loss. It helps the police apprehend the perpetrators of the crime and build a strong legal case against them. The dental records can therefore play a vital role in the ways described below.

Teeth used as weapons

Teeth are often used as weapons either in an attack or to ward off an attack. Such attacks leave behind marks that can be used for comparison of tooth shapes, sizes and arch patterns. Presence of features like spacing, rotations, fractured teeth, mesiodens, peg laterals, micro or macrodonts, malocclusions, etc., support a positive identification.\[28\] Delattre\[7\] found that the three most frequently recorded identifying dental features, other than caries and restorations, were diastemata, displaced or rotated teeth and dental anomalies. DNA evidence can also be collected from traces of saliva deposited at the site of the bite mark during the attack.

Teeth in age determination

Teeth are also useful for determination of chronologic age, especially in young children, by comparing them with dental eruption charts and are accurate to about 1.5 years. Accurate age estimation of older individuals presents some difficulties. Eruption of third molar, periodontal disease progression, tooth wear, multiple restorations, extractions, bone pathologies and complex restorative work could indicate an older individual. These markers have an accuracy of ±10-12 years.\[8\]

Identification via rugal pattern

Palatine rugae are stable landmarks in the oral cavity and can be considered as unique as fingerprints, remaining stable throughout the life of an individual. The rugal patterns can be used for identification of victims of panfacial trauma as in case of road traffic accidents or burns where facial identification may fail.\[29,30\]

Identification using dental prosthesis/appliances

Dental prosthesis and appliances, like complete or partial removable dentures, single or multitunit fixed partial dentures, implants, orthodontic appliances, etc., can be used to identify their owner. These can be considered to be custom-made devices as they are fabricated under the prescription of a registered dentist and are intended for the sole use of a specific patient. Such devices therefore provide the dentist with a unique opportunity of directing the dental laboratories for placing labels/markings for the identification of the user. Ling et al.\[31\] have suggested the use of a copper vapor laser (CVL) to produce very fine markings of a few microns to label the cobalt–chromium components of dentures and metal restorations easily, and legibly. Other methods like denture barcoding,\[32,33\] radiofrequency identification tags (RFITs) and microchips, etc., are also available. Although these methods have the advantage of being resistant to high temperatures and disinfectants, they are expensive and require specialized equipment and technicians to perform the procedure. Other less-expensive methods like embedding acrylic dentures with paper strips or titanium foil,\[33\] or lead foil ID bands,\[34\] are more preferable.

Despite the advantages of denture marking, Alexander et al.\[35\] in his study found that no practitioner labeled dentures routinely, citing reasons of cost, lack of awareness of standards and recommendations and a belief that it was of little importance.

Identifying victims of mass disaster

In victims of mass disasters – air or rail accidents, building collapse, terrorist attacks, natural disasters like tsunamis and earthquakes – when other means of recognition become less effective, the dental structures may serve as a means of identification. When facial features are obliterated or become unidentifiable, facial reconstruction and superimposition using photographs and radiographs available as part of patient record can be used.\[36\] A study by Petju et al.\[37\] found that dental records were the primary identifiers for 46.2% of the victims of the Indian Ocean tsunami disaster in Thailand in 2004.

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A study by Valenzuela et al. among human burn victims of a bus accident in Spain found that it was possible to establish dental identification in 57% of the cases, and its success increased when patients were less than 20 years of age. These studies confirm the usefulness of dental records in victim identification.

**Role of a Dental Patient in Maintaining a Good Dental Record**

A dentist–patient relationship is like two sides of a coin. Every patient has a right to expect access to good dental care, dental information, privacy and confidentiality from his dentist. It is also the patient’s right to expect that his dentist has his best interests at heart. One way in which a dentist expresses this is by maintaining good dental records as it safeguards not only the dentist but also the patient. The dental patient can play a valuable role in helping the dentist fulfill this obligation by considering it his duty and responsibility:

- To provide updated, accurate information (including name, mailing address, phone number and any other requested information) and for meeting the financial commitment agreed to with the dentist
- To provide, to the best of their knowledge, accurate and complete information regarding their medical status from the very first appointment and also updating changes in status at each succeeding appointment
- To participate in discussions about their plan of care, ask questions and to inform the care provider if they do not understand the proposed treatment
- To see that an informed consent/refusal form, especially for invasive procedures, is signed by them preferably in the presence of a witness and duly appended in their dental record
- For following the treatment plan to which they agreed, including any recommended follow-up instructions
- To make and keep appointments, arrive on time, stay for the entire time scheduled and provide a minimum of 24 h notice to change or cancel appointments
- To request for some form of identification for removable or fixed dental appliances
- To request for transfer of dental records in the event of change of dental care provider in order to maintain continuity and completeness of the record.

**Conclusions**

Dental records are a part and parcel of dental practice. Maintaining a dental record repertoire in the form of dental charts, radiographs, photographs, impressions, casts, etc., is an ethical and a legal obligation on the part of the dentist. These records can play an important role in forensic dentistry as findings of postmortem examinations are compared with antemortem dental findings that have been entered into the records. Every practitioner should therefore make it part of routine dental practice to construct a baseline charting of all the conditions observed in the patient at the time of the first dental visit and continue updating the chart regularly.

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