

# Receptiveness of Maintaining Dental Records for Forensic and Other Matters

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## ABSTRACT

**Background:** Dental records assume a significant part as these might be utilized in identification of dead or missing humans, as proof in court and in criminological dentistry as discoveries of posthumous assessments are contrasted with antemortem dental evidence that have been well-maintained.

**Aim:** To evaluate the awareness regarding significance of dental records and receptiveness of the practitioner toward maintenance in proper pattern.

**Method:** This cross sectional descriptive was carried out between September and December, 2019 at established dental institution of Lahore. A questionnaire containing 16 close ended question was formulated and distributed to all the participants. We seek approval from ethical committee of Lahore Medical & Dental College. Statistics was investigated through SPSS version 20; Pearson correlation coefficient was utilized.

**Results:** A total of 350 dental practitioners took part in this study, statistics revealed that 68.3 % were familiar with importance of maintaining records. Though 96 % dental professionals record the full name, age and gender of patients, 94% explore medical history, 78% record various developmental dental anomalies and 39 % notice decayed, missed or filled teeth; but in general 55.4% percent maintain the patient-related correspondence. Amongst them 33.5% of dental professionals preserve the dental file, 40% percent conserve the radiographs, 29% photographs of the patients, and just 10% of the dentists preserve the casts. Duration of conserving dental records found inconstant; 40% sustain all the patient-related correspondence for a month or less, 21.20 % for a half year, 18.4 % for a year, 6.4% as long as 5 years and just 1 % for around 10 years.

**Conclusion:** Information and receptiveness of maintaining records among the dental professionals of Lahore is inadequate, improvement can be accomplished by education and training.

**Keywords:** dental records, identification, forensic dentistry, patient chart.

## INTRODUCTION

A dental record is an authoritative archive that contains all abstract and target data about the patient and it is in the ownership of the dental specialist. It contains the patient's historical backdrop of disease and related fundamental ailment, clinical assessment, dental diagrams, conclusion, the treatment done, and notes on ensuing follow-up<sup>1</sup>. A dental proforma gives data about the refinements of the apparent crowding of teeth present in the mouth, dental anomalies, teeth present or missing, restorative efforts, pathologies like caries, furcation inclusion, root pieces, and periodontal health<sup>2</sup>. The dental record likewise establishes radiographs, including skull and all-encompassing radiographs, CT study and treatment outlines, impressions, research facility, examination reports, clinical photos, consultancy and reference reports, composed notes, drug prescriptions, and patient identification data including dental replacement and implant labeling<sup>3</sup>. Any set of experiences or recognition of child exploitation or household maltreatment ought to be recorded properly<sup>4</sup>. These records play an important role in communication, identification of dead or missing, as evidence in court or to justify the claim submitted by insurance companies and to promote teaching and research<sup>5-7</sup>.

Forensic dentistry aids in identification of people who are visually distorted or within the absence of fingerprints due to devastating coincidences where bodies are completely disintegrated; as dental tissues are able to withstand prolonged decomposition additionally as high degrees of temperature, humidity and pressure<sup>8-10</sup>. This can be highly captivated with the ante mortem dental records, a post mortem dental record is compiled from the autopsy and accustomed compare the characteristics of a personal<sup>11</sup>. Forensic odontology has played important role in identification of humans and was also used to effectively recognize 80% of the Tsunami victims in South East Asia in December 2004<sup>12-15</sup>.

Dental record is significant in light of the fact that it might be utilized as proof in court or in an administrative activity. An appropriately reported dental record can be utilized to counter an objection from patient, with regards to charges of carelessness, or to legitimize handling<sup>16</sup>. The Health Insurance Portability and Accountability Act (HIPAA) of 1996, has exaggerated the dental record for wellbeing and patient security<sup>17</sup>. Dental records are additionally proof of the work performed and could be important to get paid by insurance agencies. In the event that the outline does not legitimize the case presented, an insurance agency may reject installment or requested repayment. In these circumstances, insurance agencies could review the archives or even account to the concerned organization, maintaining great information avoids this surplus pressure. Each individual from the dental group is similarly

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answerable for recording appropriate realities about a patient's visit on the outline. Dental specialists ought to counsel their lawyer, preceding changing the records over to any of the strategies. Original records are never to be delivered, including radiographs, to any gathering. Regardless of how formal a request for the originals may seem, just duplicates should be sent<sup>18</sup>.

Collectively medical and monetary archives, drug and lab prescriptions must be sustained for about a decade afterward the completion of treatment; on account of a minor, these records must be saved until patient reaches adulthood, or whenever possible up to age of twenty-five years. Regarding orthodontic models, initial and final must be reserved for a period of five years; without preserving the transitional modles<sup>19</sup>.

A large portion of the organizations and dental expert of developing nations still save the records on paper because of nonavailability of gadgets at larger part territories, additionally they feel it is more convenient and modest technique. To store the records electronically consume fewer space when compare to paper records and more data can be protected for prolong time<sup>20</sup>. In case where it is difficult to preserve patient's files, medical reports and models; such stuff can be preserved by taking images. Electronic dental records also contribute to the capabilities of tele-dentistry. Tele-dentistry involves live video meetings and correspondence between dentist and patient using mobile electronics such as phone, tablet, and computer<sup>21,22</sup>.

The intention of this study is to appraise the information regarding the cruciality of dental records and approach of the dental experts toward possession of these records in proper instance.

**MATERIALS AND METHODS**

This cross-sectional descriptive study was carried out between September and December, 2019 at established dental institution of Lahore after approval from Ethical Committee. A questionnaire containing 16 close ended question was formulated and study was completely discussed with ethical and examination group of Lahore Medical & Dental College; the inquiries were short recorded and selected precisely to feature our point. An ideal dental record report was accumulated and utilized as a correlation archive; this include inquiries regarding the age, gender, work experience, awareness, court witness, practice of keeping records, documents they preserved and mode of keeping those records. The dental professionals were visited on a solitary day after the endorsement from ethical boards of every one of these institutions. The questionnaire was delivered to all available dental professionals, confidentiality and anonymity of the members was guaranteed. Analysis of this investigation was carried out by using version 20 of SPSS; the Pearson correlation coefficient was applied; level of importance was set to  $p \leq 0.01$ .

**RESULTS**

A total of 350 dental professionals from various recognized dental institutions of Lahore took part in this study. 139(39.71%) of our participants were males, 211(60.29%)

were females. All the participants were in the age range of 26-51 years; with a mean age of 34 years. We grouped study populace into three types; there were 136(39%) general dental surgeons, 112(32%) postgraduate residents and 102(29%) consultants. The participants were questioned about their information related to importance of maintaining records and their attitude towards it. Study displayed that approximately 51% of the general dental surgeons, 68% of the postgraduate residents and 91% of consultants were aware of maintaining records in regard that this information can be utilized; in identification of dead or missing humans, in court as an expert witness of suspect or victim of child abuse, domestic violence, rape, suicide (Table 1).

Receptiveness of sustaining the dental records in our study group found to increase with practice and accountability; the postgraduates were found more motivated toward keeping the records as compare to general dentists, study has showed 49% of general dental surgeons, 51% of postgraduate residents and 73% faculty sustain the records of their patients. As an entire 55% professionals maintained the patient related correspondence whereas 45% did not (Table 2).

Table 1: Awareness of significance of maintaining dental record

Designation	Are you familiar with significance of maintaining dental records?		Total
	Yes	No	
General Dental Surgeons	70 (51.47%)	66(48.53)	136
Postgraduate Residents	76(67.85%)	36(32.15%)	112
Consultants	93(91.18%)	11(8.82%)	102
Total	239(68.29%)	111(31.71%)	350

Table 2: Maintenance of dental records

Designation	Do you maintain dental records of your patients?		Total
	Yes	No	
General Dental Surgeons	62 (48.52%)	74(51.475)	136
Postgraduate Residents	57(50.89%)	55(49.11%)	112
Consultants	74(72.55%)	28(27.45%)	102
Total	193(55.42%)	157(44.56%)	350

In our investigation group who maintained records, 96% dental professionals record the full name, age and gender of patients, 58% record e-mail or postal addresses of the patients, half record patient's calling contact number. 74% about the recently done treatment techniques, 44% record marital status with number of youngsters, and just 28% notice about the socioeconomic status of the patient, 94% the professionals included in the study record, the various preexisting systemic ailments such as heart complaints, high or low blood pressure, diabetes, asthma, and allergy if any. Every one of them queried about the historical backdrop of pregnancy in female patients, 87% probe about the history of epilepsy, endocrine problems, congenital problems, liver or kidney diseases. Eighty-three percent notice the endorsed medicines in the dental record while 17% do not specify the recommended drugs in the document. 78 percent of dental experts record various

developmental dental anomalies like microdontia, rotations, supernumerary teeth, congenitally absent teeth, abnormal shape, and diastema. Fifty percent register about torus maxillaris/mandibularis, only 39 % mentioned they notice (DMFT) decayed, missed or filled teeth (Figure.1).

Regarding the preservation of data; only 34% of dental professionals preserve the dental file of the patients. Out of the complete dental professionals who keep up dental records, 83% of them record case history physically in preprinted structures though 6% of the professionals record it physically on a clear page, while the rest of 11% record the case history digitally. Regarding radiograph 40% percent dental practitioners conserve the radiographs

whereas 18% preserve digital radiographs as a soft copy. 29% of the dentists told that they preserve soft copies of the photographs. Ninety percent of dentists did not preserve the casts and models after completion of treatment, and only 10% of the dentists preserve the casts after crown/bridge cementation and orthodontic treatment (Table 3).

At the point when we queried about the life span of conservation of dental records ;40.09% of study populace used to save records for not exactly a month, 21.20% save for a half year, 18.4% for a year, 6.4% as long as 5 years and just 1% for around 10 years (Fig. 2).

Figure 1: Information stated on the dental file.

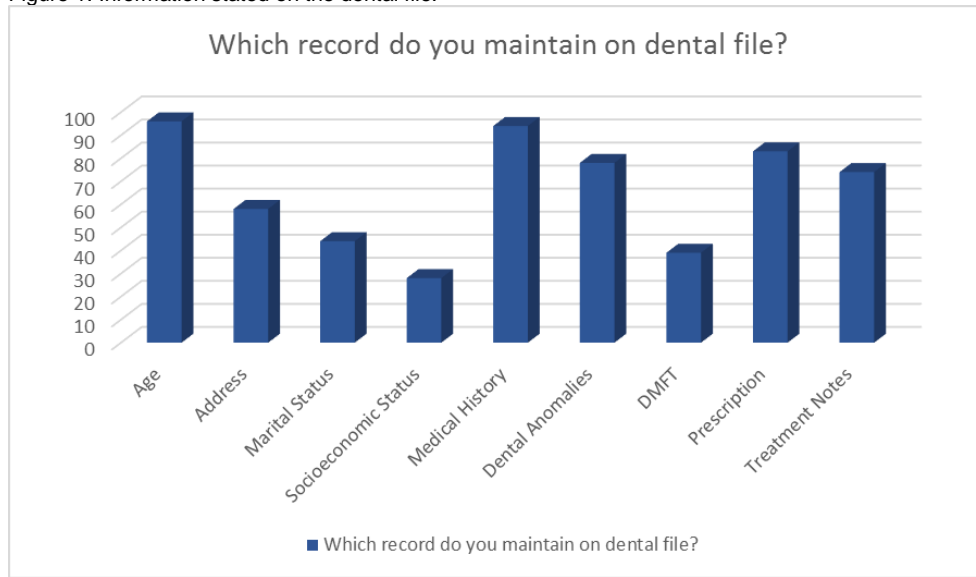
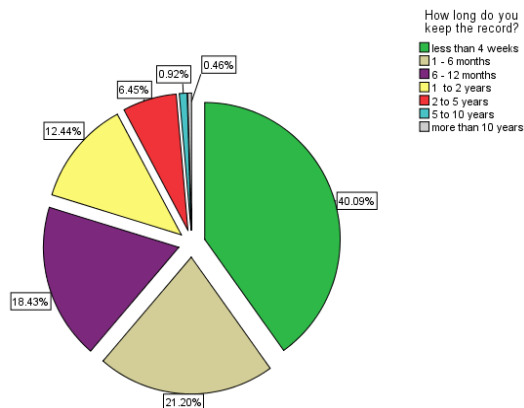


Fig. 2: Length of maintaining records

Designation	How do you maintain dental records of your patients?				Total
	Dental file	Radiograph	Photograph	Cast	
General Dental Surgeons	13	24	8	5	136
Postgraduate Residents	52	56	42	14	112
Consultants	49	60	53	16	102
<b>Total</b>	<b>144(33.57%)</b>	<b>140(40%)</b>	<b>103(29.42%)</b>	<b>35(10%)</b>	<b>350</b>



## DISCUSSION

Keeping up a dental record report as dental charts, radiographs, photos, impressions, casts and so on, is a moral and a legitimate commitment with respect to the dental professionals. These records assume a significant part as the dental record might be utilized in identification of dead or missing humans, as proof in court and in criminological dentistry as discoveries of posthumous assessments are contrasted and antemortem dental detections that have been conserved into the records.

This investigation was directed among the dental professionals of Lahore to survey their insight with respect to the significance of dental records and keeping them in authentic instance. Study has displayed that approximately 51% of the general dental surgeons, 68%% of the postgraduate residents and 91% of consultants were aware of maintaining records

Fifty five percent of practitioners mentioned that they conserve the dental records whereas forty five percent practitioners did not keep up any dental records of their patients. Receptiveness of sustaining the dental records in our study group found to increase with practice and accountability; the consultants found to be most particular towards preserving records (73%); 51% of post graduate residents have maintained records, whereas general dental surgeons showed up the least attention (49%). A past report completed by Preethi et al. derived that solitary 12% kept up a total dental record and 21% did not keep up any record, while 93% dental specialists did not save a record for more than 7 years<sup>23</sup>. Astekar et al. found that only 38% of dentists retain records whereas 62% did not maintain any record of the patients<sup>24</sup>.

The significance and estimation of radiographs should never be thought little of as they assume a significant function in recognition by getting positive identifiable proof, just as they assume a part in age assessment, by the quantity of teeth erupted<sup>25</sup>. Waleed et al. carried out a comparative study between students and dentists, and found out that 100% of students maintained intraoral periapical radiographs whereas 8% of students and 6% of dentists obtained bitewing radiographs<sup>26</sup>. In our survey we found that 35% practitioners retain the radiographs whereas 55% do not conserve the radiographs but 26% of them mentioned that they note the findings of the radiographs in the case history form which could help to correlate and compare antemortem and postmortem interpretations.

Photos are significant in the distinguishing proof of an individual outwardly as the Countess of Salisbury has been recognized outwardly by her gold dental replacement. Waleed et al found only 8% of dentists and 28% of students maintain photographs of the patient<sup>26</sup>. Shakira found that 100% dentists preserve the soft copy of photographs<sup>27</sup>. In our study 30% dentists mentioned that they took photographs for their patients; 20% for every case while 10% of dentists took photographs only for special or rare cases.

Cast and study models are extremely valuable in recognizing a person through rugoscopy; as each person on the planet has a novel example and is considered as a solid technique in posthumous cases. In this way, experiencing projects and study models can be truly important<sup>28</sup>. Waleed et al. observed 49% of students obtained cast and study models of their patients whereas only 21% of the dentists retrieved them<sup>26</sup>. In our case only 10% of dentists preserve the casts after crown/bridge cementation or orthodontic management till first follow-up whereas 90% of dentists did not.

Different particulars utilized in the study assist us with assessing the nature of record that the experts keep up. Through the review we discovered 95% of dental specialists use ink for record composing, 5% referenced the utilization of ink or pencil according to the accessibility during the register of the case history. Strangely, we additionally found that couple of dental specialists have begun keeping up records carefully in personal computers. It was seen through our overview that lone 11% professionals of Lahore recorded case history digitally. The attention to keeping up record digitally should be expanded

as it is the most effortless route as to support for a more drawn out timeframe and requires less space too<sup>29</sup>.

In our investigation the life span of conserving dental records found inconstant ;40.09% of study populace used to save records for not exactly a month, 21.20 % save for a half year, 18.4% for a year, 6.4% as long as 5 years and just 1 % for around 10 years. American Dental Association expressed that dormant dental records must be saved for in any event seven years and for a situation of youngsters keep up it until the time of twenty-eight years.<sup>30</sup> In India 93% of the dentists retain their dental records for less than seven years<sup>31,32</sup>.

Different inquires utilized in the survey assist us with assessing the nature of record that the experts keep up. Extra dental anomalies, for example, formative variation in the size, shape, and number of teeth like microdontia and turned teeth were referenced by 78% of the professionals. This can demonstrate as one of the significant antemortem rules in the support of record which would assume a significant function from the crime scene investigation perspective in the recognizable proof of the people in question<sup>33</sup>. We found that 70% of experts notice the chronic number of an implant; this is again a significant guideline as it can hold in the oral cavity for a broad term<sup>34</sup>. We likewise saw that there is no single framework followed for tooth numbering, and this could make an issue in future for uncovering the particulars of the patients' records or while counseling another expert<sup>35</sup>.

## CONCLUSION AND RECOMMENDATIONS

This study revealed that the information and exercise regarding proper record maintenance among these study subjects is insufficient. More awareness is required to evaluate its potential use for the cases of forensic importance and its implication for identification of victims in mass disasters.

Dental practitioners should be skilled to keep great archives in future that would be precise for both treatment and dento-legitimate reasons. Charts and recording frameworks must be standardized; clear guidelines ought to specify from the dental experts in Pakistan for dental construal framework and having emphasis to implication.

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