

To evaluate the knowledge, attitude and perception of an orthodontist towards maintaining orthodontic records in dental clinic: A cross-sectional survey

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Abstract:

Aim: To evaluate the knowledge, attitude, and perception of orthodontists toward maintenance of orthodontic records in clinical practice.

Materials and Methods: A cross-sectional questionnaire-based survey was conducted among 413 orthodontists and postgraduate students across India. The questionnaire assessed awareness, types of records maintained, storage methods, and duration of record retention. Data were analysed using descriptive statistics.

Results: All participants (100%) recognized the importance of orthodontic records. The majority (96.4%) retained records for more than five years. Pre-treatment records were maintained by 90% of respondents, whereas during-treatment and post-treatment records were maintained by 40% and 60%, respectively. Handwritten records were used by 54.9% of participants, followed by digital (30%) and printed formats (15.8%). Despite high awareness, only 40% demonstrated practices above the median level, indicating a gap between knowledge and implementation.

Conclusion: Although orthodontists exhibit strong awareness and a positive attitude toward record maintenance, variability in clinical practice persists. Standardization of protocols and increased adoption of digital record systems are recommended to enhance efficiency and medico-legal compliance.

Keywords: Orthodontic record maintenance: Questionnaire study: Dentist perception.

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INTRODUCTION:

Storage of records when it comes to the field of orthodontics is such an essential aid that it cannot be ignored. Orthodontic diagnosis is based on reliable and accurate orthodontic records. These records that are vital for diagnosing a specific malocclusion and

formulate a treatment plan comprise mainly of study models, clinical photographs, radiographs, and clinical examination.¹ Orthodontic record consists of regular updating of dental charts which include the examination of the comprehensive oral and perioral hard and soft tissue transformation made in the particular period of treatment. This documentation comprises of communication emerges between

orthodontist and patient and these records are highly useful in safeguarding against the legal interest of all the parties. A study on record taking concluded that radiographs, photographs and then casts form an integral part of the patient record taking.² Technology plays a key role in influencing the impact of every aspect of Orthodontic practices. Many studies assessed the Orthodontic practices, application of computer technology in various tools like digital photographs and then cone-beam computed tomography followed by virtual study models, communication, virtual reality software and network-attached storage devices³⁻⁵

Orthodontic treatment has the highest clinical risk of malpractices and litigation due to long period of treatment. The overriding message for the clinician is to practice the Orthodontics with the philosophy of prevention and avoidance.^{6,7} The practice of having dental record is not only for forensic application but also for legal regulations for claiming insurance and consumerism⁸

The study models are the very first to be acquired in the order of records and are of two types: (1) Physical or plaster models, which are made from well-extended good quality alginate impressions and (2) Digital models or E models which are developed from either 3D scanners or 3D CT.⁹ Orthodontic photography records includes: (1) Extraoral photographs and (2) Intraoral photographs taken according to the guidelines devised by the American Board of Orthodontics.¹⁰

Radiographs essential for orthodontic diagnosis and treatment planning include intraoral periapical radiographs (IOPAR), orthopantomogram (OPG), cephalogram (lateral and frontal), and other supplemental radiographs (hand wrist, TMJ views, MRI, CBCT, etc.)¹¹

Retention of these records has been done by several methods but in the current literature very little information has been provided regarding the success of these methods, the problems being faced, and the latest methods being followed in terms of developing technology. Therefore, the trends in various methods of storage of orthodontic records form a crucial part from an ethical and professional standpoint as they would give information regarding the current methods of storage which could help secure the

records without any problems for the long term. The aim of this study was to understand awareness and practices of orthodontic record maintenance among orthodontists.

MATERIALS AND METHODS:

The necessary permissions for the study were obtained and protocol for the study was also approved. The sampling technique adopted for the study was non-probability sampling in which convenience sampling was chosen. The questionnaire was designed and circulated through social media platforms. The Statistical software, namely SPSS 22.0, and R environment ver.3.2.2 was used for the analysis of the data and Microsoft Word and Excel have been used to generate graphs, tables etc. Descriptive and inferential statistical analysis has been carried out in the present study. Results on continuous measurements are presented on Mean (Max) and results on categorical measurements are presented in Number (%). Significance is assessed at 5 % level of significance.

RESULTS:

A total of 413 orthodontists and postgraduate students participated in the study.

All respondents (100%) acknowledged the importance of maintaining orthodontic records in clinical practice. With regard to record retention, 96.4% of participants reported storing records for more than five years, indicating a strong awareness of long-term documentation requirements. (Fig.1)

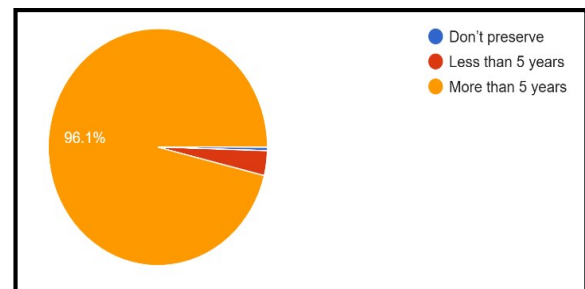


Fig. 1: How long orthodontic record is stored?

Evaluation of the types of records maintained showed that pre-treatment records were routinely documented by 90% of participants. In contrast, only 40% maintained records during treatment, while 60% documented post-treatment records, suggesting a relative decline in documentation during active treatment phases. (Fig.2)

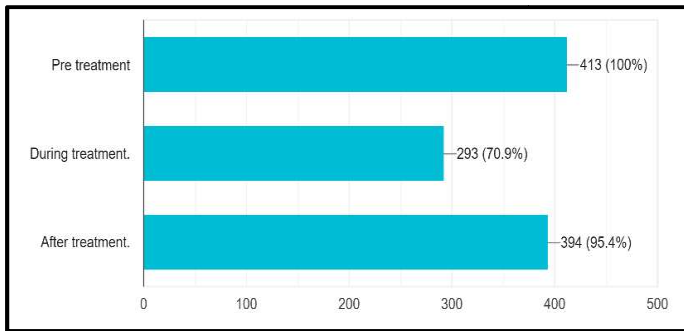


Fig. 2: Preference of taking orthodontic

Radiographic records, including lateral cephalograms and orthopantomograms, were commonly utilized, though not universally recorded in all cases. Intraoral periapical radiographs were the least consistently maintained among radiographic records. (Fig.3)

Photographic documentation was widely practiced, with pre-treatment photographs recorded by most participants. However, documentation during treatment was less consistent compared to pre- and post-treatment stages. Post-treatment photographic records were maintained by a majority of clinicians. (Fig 3)

Study models were routinely preserved before treatment, while their use during treatment was less frequent. Post-treatment models were again maintained by a significant proportion of participants. (Fig 3)

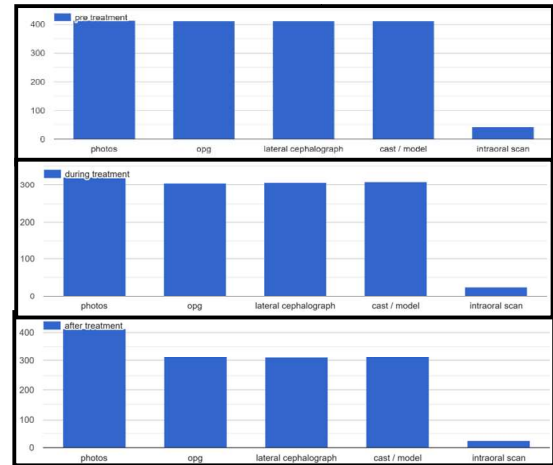


Fig. 3: Orthodontic records taken pre, during and after treatment

The majority of participants preferred cervical vertebral maturation (93.9%) for predicting patient growth, followed by hand and wrist radiographs (83.3%). In contrast, very few respondents relied on serial lateral cephalograms (6.1%) or growth charts (2.4%). (Fig.4)

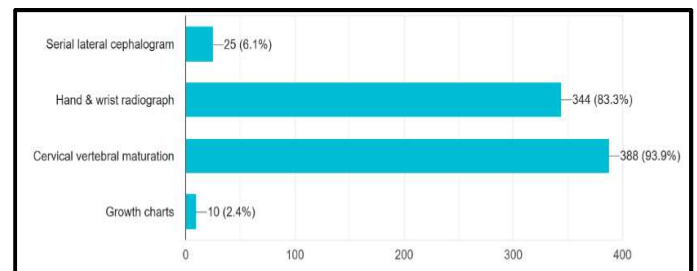


Fig 4: Record taken to predict growth of patient

Regarding methods of record maintenance, 54.9% of participants relied on handwritten records, 30% used digital systems, and 15.8% utilized printed formats, indicating a predominance of conventional methods with gradual adoption of digital technologies. (Fig 5)

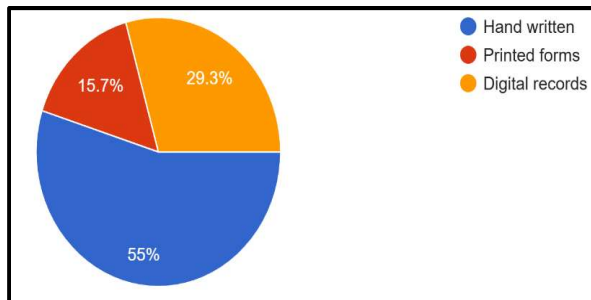


Fig 5: Method of Record maintenance

In terms of storage practices, all participants reported maintaining patient records. Most respondents recognized the legal obligation of record keeping. Records were commonly stored using customized serial numbering systems, followed by alphabetical or date-based organization.

The duration of storage varied, with most clinicians retaining records of active and completed patients for more than one year, while records of inactive patients were more commonly stored for shorter durations. Records related to medicolegal cases were predominantly preserved for longer periods.

Participation in continuing dental education programs on record maintenance was limited, with 65% of respondents reporting no prior attendance.

Overall, comparison of knowledge and practice scores indicated that although awareness of orthodontic record keeping was high, only 40% of participants demonstrated practices above the median level, while 60% fell below the median, reflecting a gap between knowledge and clinical implementation.

DISCUSSION:

The present study demonstrated a high level of awareness among orthodontists regarding the importance of record keeping, with all participants acknowledging its clinical and medico-legal significance. This finding is consistent with previous studies, which have reported good knowledge and awareness among practitioners; however, similar to earlier reports, a gap persists between knowledge and its implementation in routine clinical practice.

Knowledge:

All participants (100%) demonstrated awareness regarding the importance of maintaining orthodontic records. Patient details and oral health status were universally documented, indicating strong foundational knowledge of essential record components.

Radiographic records, including lateral cephalograms and orthopantomograms, were commonly utilized, reflecting awareness of their diagnostic value.

Photographic records were widely recognized as essential, with most respondents obtaining pre-treatment photographs. Similarly, study models were routinely preserved before treatment. Postgraduate students were actively involved in cephalometric tracing for all patients, indicating comprehensive academic training.

Attitude:

Participants exhibited a positive attitude toward orthodontic record maintenance. A vast majority (96.4%) reported retaining records for more than five years, demonstrating an understanding of the importance of long-term documentation. Dental practitioners are considered to be the legal owner of the dental records.¹² A good practitioner keeps the record for 10 years.¹³ Astekar stated in his study it is mandatory for the dentists to store the records for 5 years.¹⁴ Indian Council of Medical Research states that all records should be maintained carefully for 3 years.¹⁵

All respondents reported maintaining patient records in their clinical practice, and most acknowledged the legal obligation associated with record keeping. Records related to medico-legal cases were predominantly preserved for extended durations, further reflecting awareness of their legal significance.

Perception (Practice Patterns):

Pre-treatment records were maintained by 90% of participants, indicating strong compliance at the diagnostic stage. However, documentation during treatment was less consistent, with only 40% maintaining regular records. Post-treatment records were maintained by 60% of respondents, suggesting improved documentation after treatment completion compared to the active phase.

Photographic documentation followed a similar pattern, with high prevalence of pre-treatment records but reduced consistency during treatment. Post-treatment photographs were maintained by a majority of clinicians. Study models were predominantly preserved before treatment, less frequently during treatment, and more commonly after treatment.

In terms of record-keeping methods, 54.9% of participants relied on handwritten records, 30% used digital systems, and 15.8% utilized printed formats. These findings indicate that conventional methods remain predominant, although digital adoption is increasing.

Overall, the findings indicate that while orthodontists possess adequate knowledge and a positive attitude toward record keeping, there is a clear need for standardization of practices and greater integration of digital technologies to ensure comprehensive and consistent documentation.

CONCLUSION:

Orthodontists demonstrate a high level of awareness and a positive attitude toward record maintenance; however, inconsistencies persist in clinical practice, particularly during treatment documentation. The findings highlight the need for standardized protocols and greater adoption of digital record-keeping systems to ensure comprehensive, efficient, and legally compliant orthodontic care.

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