

# Awareness of Forensic Odontology among Dental Practitioners –Kap Survey

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## **Abstract:**

Forensic odontology is an important branch in the field of dentistry that would assist in solving cases of abuses and deaths. Greater knowledge and awareness of forensic odontology among the dental practitioners would be required in the growing field of medicine. The aim of the study is to analyze the knowledge, attitude and practice of forensic odontology among dental practitioners. The questionnaire was designed for practicing dental practitioners, who in their day-to-day life might be encountering cases of forensic interest. A cross-sectional study was conducted among 100 dental practitioners. Data was collected in a personalized manner by means of the questionnaire. Ninety three percent dental practitioners did not maintain dental records in their clinic, and only seven percent are maintaining complete dental records. Seventy percent dentists feel that they need more knowledge about forensic odontology. Fifty percent dental practitioners did not know to identify child abuse. Twenty percent dental practitioners did not know how to estimate the age of an individual by examining the teeth. This study, conducted

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among dental practitioners regarding their awareness about forensic odontology, revealed inadequate knowledge, poor attitude and lack of practice prevailing among these study subjects.

**Keywords:** Awareness, forensics, dental.

**Introduction**

Forensic science applies science and technology to the detection and investigation of crimes and the administration of justice. It has gained worldwide acclaim as an empowering field for using science in legal proceedings. (Quarino & Brettell, 2009) Forensic odontology is a branch of forensic science that focuses largely on the teeth and involves assisting in the identification of deceased individuals and criminals. (Acharya, 2019) According to the Fédération Dentaire Internationale, forensic odontology is a branch of dentistry that deals with the proper handling of dental evidence in the interest of justice and with the proper evaluation and presentation of dental findings. The main focus is to identify deceased individuals by comparing ante-mortem and post-mortem records (Prakash et al., 2019)

Dental identification has been a vital tool for identifying deceased individuals since 66 AD. The first case of identification known to involve dentition in India occurred when Raja Jayachandra Rathore of Canouj died on the battlefield in 1191 and his body was identified by his prosthetic anterior teeth. Currently, the dearth of trained personnel, paucity of training facilities, inadequate introduction to the subject during undergraduate years, are the major hurdles in the expansion of the use of forensic odontology for the day-to-day benefit of society. Although the Indian Dental Association recommends that an individual's dental records (radiographs, models, photographs, and clinical correspondence) should be securely retained for at least the legal minimum period of 5-6 years, the

practice is yet to be enforced in all dental practices across India (Prakash et al., 2019). Even the Indian Bachelor of Dental Surgery (BDS) curriculum, which is approved by the Dental Council of India, has only incorporated Forensic Odontology since 2007. Further, the curriculum of the Indian master's program [Master of Dental Surgery (MDS)] delegates the topic to the subjects of Oral Pathology and Microbiology and a preview for branches such as Preventive & Community Dentistry & Oral Medicine and Radiology. This prevents the teaching of Forensic Odontology alongside other specialisms such as Conservative Dentistry & Endodontics, Orthodontics, Oral & Maxillofacial Surgery, Prosthodontics, Pedodontics, and Periodontics. The resultant low levels of knowledge among dental surgeons might be severely handicapping the use of ante-mortem records in legal cases.

A systematic review of recent cross-sectional studies regarding the levels of knowledge, awareness, and practical application of forensic odontology among dentists in India revealed inadequacy and considerable variation in the practice of forensic odontology among dentists (Gambhir et al., 2016). Most of these studies provided evidence that there were inadequate levels of knowledge and awareness of forensic odontology among the respondents. Accordingly, considering the importance of the topic, the aim of this survey was to assess the knowledge and practice of forensic odontology among dental practitioners.

**Methods**

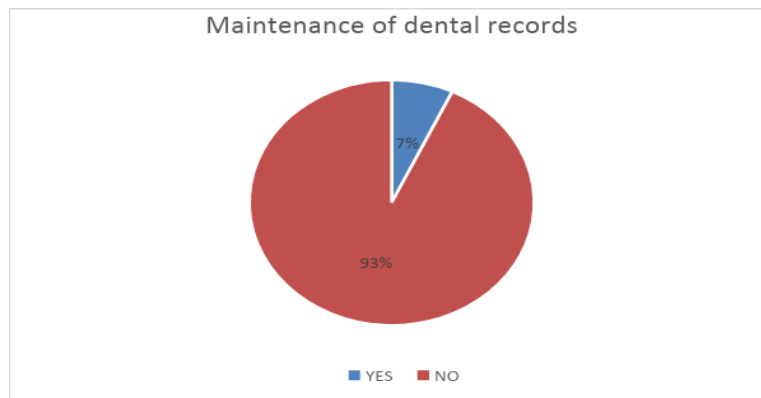
The cross-sectional study was conducted in July 2019 using a structured questionnaire with 10 close-ended questions in English. Survey validation was carried out using a pilot survey. Questions pertaining to

knowledge and awareness about forensic odontology collected and analysed.  
among dental practitioners. The responses were

### Results:

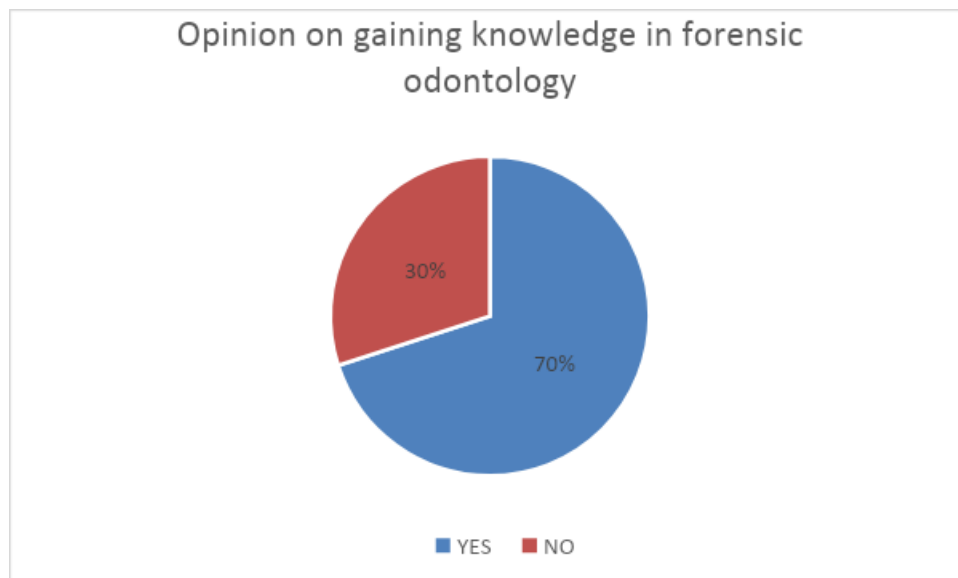
Ninty three percent dental practitioners did not percent are maintaining complete dental records (Fig maintain dental records in their clinic , and only seven 1).

Fig 1: Maintenance of dental records



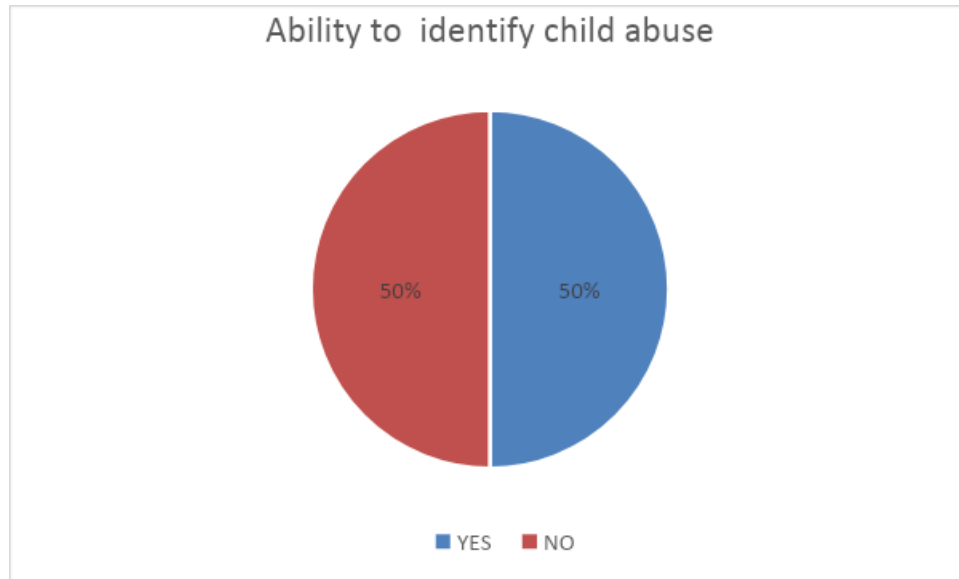
Seventy percent dentists feels that they need more knowledge about forensic odontology (Fig 2).

Fig 2: Opinion on gaining knowledge in forensic odontology



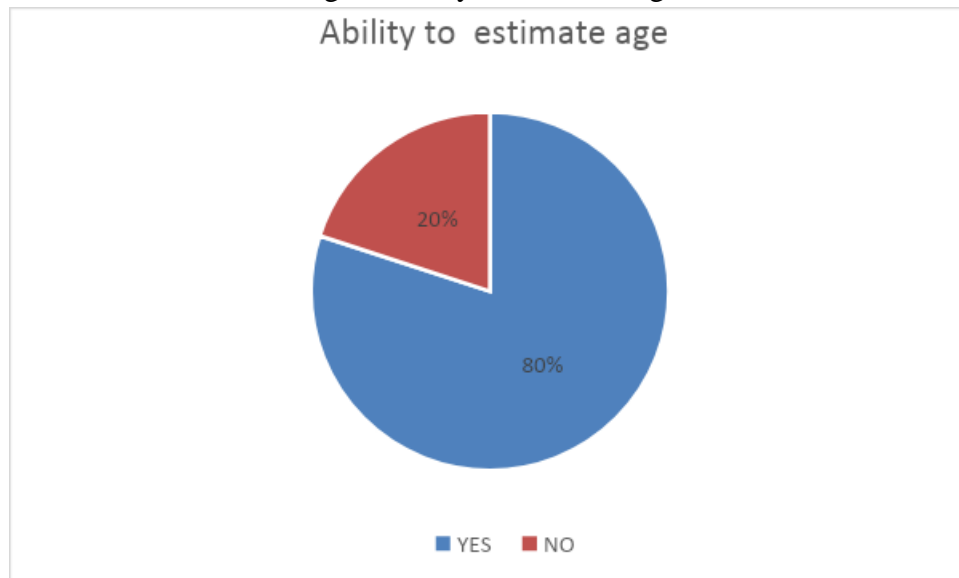
Fifty percent dental practitioners did not know to identify child abuse (Fig 3) .

Fig 3: Ability to identify child abuse



Twenty percent dental practitioners did not know how to estimate the age of an individual by examining the teeth (Fig 4).

Fig 4: Ability to estimate age



## Discussion

Ante-mortem data in the form of dental records can be used as a vital tool for confirming or disproving

identity. Relevant professional bodies, including the Indian Dental Association and the Indian Association of Forensic Odontology have been encouraging

patient record maintenance for the period of time prescribed by the law.(Clark, 1992) Irrespective of the mandated time period, many dental surgeons are still unaware of their duties regarding when their patient care responsibilities cease. A comparison of studies conducted in various cities in India showed that although there is adequate exposure to forensic odontology during undergraduate education, this exposure may not be sufficient to instill interest in or awareness of the kinds of dental records needed to support forensic work in legal cases. Moreover, the busy nature of dental practices is the biggest challenge associated with accurate and complete dental record keeping.

Regarding the international situation, according to Dental Board of Australia guidelines, forensic odontology is one of 13 registrable dental specialties. Furthermore, a survey of Australian dentists showed that the majority of undergraduate respondents recalled learning about forensic odontology during their education, but there was no exposure to this subject for postgraduates. The reasons for making errors and barriers to accurate and complete record keeping included “lack of time” and “workload” associated with busy dental practices.<sup>1</sup> The need for record keeping guidelines in dental practices (from either the registration authority or a professional association) should be explicitly taken into account (Al-Azri et al., 2016). Delattre *et al.* conducted a study to provide insight into the attitudes and practices of forensic dentists regarding ante-mortem dental records. The authors emphasized starting a dialogue among forensic dentists in order to develop standardized recommendations for the forensic dental community. Furthermore, a study based on guidelines set out in Article 9 of the patients’ rights law for practitioners in Belgium found that young male

dentists in large cities tended to use appropriate record keeping systems. However, as the age of the dentists increased, the likelihood of completing dental records decreased (Delattre, 2007).

Avon *et al.* studied the important factors in the field of forensics and highlighted another reason to maintain legible and legally acceptable records, that is, to assist legal authorities in the identification of victims and suspects. As described by Avon *et al.*, Canadian dental schools devote several hours to forensic odontology during the last 2 undergraduate years by integrating the subject into oral pathology courses. The Bureau of Legal Dentistry at the University of British Columbia offers master’s and postdoctoral programs in forensic odontology. Furthermore, the American Academy of Forensic Sciences established the American Board of Forensic Odontology in 1976 and certifies dentists qualified in forensic odontology.(Avon, 2004)

Waleed *et al.* compared the dental records kept by students in teaching hospitals with those kept by dentists in private clinics (focusing on elements that contribute to forensic identification with respect to American Academy of Pediatric Dentistry regulations). The study revealed that the students were more aware of the medico-legal purpose of dental record maintenance than the dentists.(Waleed et al., 2015)

Regarding the situation in India, a 2016 survey by Navya and Raj showed that general dental practitioners in Chennai have inadequate knowledge of and interest in forensic odontology, and these results are similar to those of a study by Preethi *et al.* in 2011.(Navya & Raj, 2016;Preethi et al., 2011). The 5-year gap between the two studies clearly did not improve the situation in southern India, raising questions about the education system and the implementation of suggestions for improvement. A study of dental practitioners in Pune, reflecting the situation in western India, revealed inadequate clinical

knowledge of forensic odontology, poor attitudes, and lack of good practice related to record keeping. Moreover, a study that included purely practitioners, purely academicians, and dentists with both roles showed that they had low levels of knowledge about the routine application of forensic odontology, indicating the need to further educate dental practitioners (Khare et al., 2013). Surprisingly, a study in Kanpur showed that practitioners had adequate levels of knowledge and good attitudes, but low levels of good practice regarding long-term dental record maintenance (Nagarajappa et al., 2014).

Sahni *et al* highlighted that success in acquiring extensive knowledge of forensic odontology would be more rational if there were better job opportunities in the field. Regarding record retention, regulations should be developed based on recommendations from professional bodies, and they should be

implemented/inculcated into the system from the institutional level to the group/individual practices. (Sahni et al., 2016) In addition, quality control protocols would be useful to ensure accuracy and completeness regarding dental record maintenance for legal purposes. The up-to-date use of electronic patient files should be an integral part of dental record keeping. Forensically valued dental records should be maintained in detail, ensuring accuracy, legibility, and accessibility. Furthermore, profession-wide strategies for teaching students and professionals about forensic odontology should be implemented, including the provision of Continuing Dental Education modules by the Indian Association of Forensic Odontology. Furthermore, emphasis should be put on increasing knowledge at the grassroots level by developing better curriculums for undergraduates and postgraduates.

## Conclusion

This study, conducted among dental practitioners regarding their awareness about forensic odontology,

revealed inadequate knowledge, poor attitude and lack of practice prevailing among these study subject

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