

Original Research

Knowledge and Awareness of Forensic Odontology amongst Dental Graduates: An Original Research

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ABSTRACT:

Aim of the study: The purpose of the study was to assess the aptitude and awareness about forensic odontology in routine use amongst dental professionals. **Methodology:** A self-administered, well-structured questionnaire consisting of 15 questions were sent to various dental professionals which dealt with Patient dental record maintenance and its importance, Attitude and knowledge of dentists toward forensic odontology amongst other relevant topics about forensic odontology. **Results:** In our study, most of the participants (93.5%) have studied basics about forensic odontology during their undergraduate studies. Around 75.3% of dentists do have a sound knowledge about the physical abuse signs in pediatric patients. 56.3% of dental professionals are able to take note of bite marks and take an impression of the same. However, around 78.4% dentists are not aware of the preservation of dental records for the purpose of forensic assessment at the time of need. **Conclusion:** The study shows clearly that there is a general lack of knowledge and practice of forensic odontology among dental practitioners in India. There are very few institutions offering formal training in forensic odontology. Most of the practitioners had no formal training.

Keywords Forensic odontology, bite marks, mass disasters, forensic training.

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INTRODUCTION

The term “forensic” is derived from the Latin word forensic, which means, “pertaining to the forum,” which means “court of law”, where trials and debates were held. Odontology refers to the study of teeth. Forensic odontology so has been defined by the Federation Dentaire Internationale as that branch of dentistry, which in the interest of justice, deals with the proper handling and examination of dental evidence and the proper evaluation and preservation of dental findings.¹ Forensic odontology has been classified into civic or noncriminal, criminal, and research. The entity of forensic dentistry comprises four areas of interest: Dental identification, Bite marks, Cheiloscropy (study of lip prints), and

Rugoscopy (study of palatal rugae patterns).² The important applications of forensic odontology include identification of human remains through dental records and assisting at the scene of crime; in cases of child or adult abuse through bite marks or physical injuries, determination of age and gender of the living or deceased and to testify as an expert witness in the court with forensic dental evidences.³

A general dentist apart from having a broad background knowledge of general dentistry, should also possess basic knowledge of the role of the forensic pathologist, methods used in autopsy, the role of a dentist in the identification of a person, and the importance of maintaining dental records of all patients.⁴ Unfortunately, in India, qualified forensic

odontologists are very few.⁵ This is probably due to the lack of proper awareness; neither the government nor the people have completely understood the role that can be played by a forensic dentist.⁶

Forensic odontology plays an important role in criminal, monetary disputes, marital, social, burial, and the identification of individuals missing for prolonged periods. Identification plays an important role in civil cases like insurance claims, matrimonial disputes, property disputes, impersonation, and issue of passports and various licenses.⁷

Human dentition is considered as hard tissue analog to the fingerprints. It is almost as unique to an individual as fingerprints.⁸ The identification of remains by dental evidence is possible because, the hard tissues are preserved after death and can even withstand a temperature of 1600°C when heated without appreciable loss of microstructure. The status of a person's tooth changes throughout the life and combination of decay, missing, filling (DMF Teeth Criteria) can be obtained from any fixed time.⁹

Recently, forensic odontology has evolved as a new ray of hope in assisting forensic medicine, but, this vital and integral field of forensic medicine is still in a state of infancy in India.¹⁰ There are not many institutions offering formal training in forensic odontology, with lack of job opportunities for qualified forensic odontologists who have obtained degrees abroad. The question always arises as to whether the dental practitioners should know about forensic odontology, the reason being that dental identification provides an accurate source of identification of the victim or the suspect. In recent times, natural and man-made disasters are occurring more frequently in India. Under these conditions, the bodies of the victims become mutilated beyond

recognition, where the vital role of dental surgeons comes into picture in the identification of such individuals.¹¹

Keeping this as the background, this study was undertaken to analyse and assess the awareness about forensic odontology among the dental practitioners.

AIM OF THE STUDY

The purpose of the study was to assess the aptitude and awareness about forensic odontology in routine use amongst dental professionals.

METHODOLOGY

A self-administered, well-structured questionnaire (Table 1) written in English language with both open and closed end questions was prepared. The questionnaire consisted of 15 questions dealing with-

- Patient dental record maintenance and its importance.
- Attitude and knowledge of dentists toward forensic odontology.
- Career preferences of dentists in the field of forensic odontology.

All the participants were asked to respond to each item. Confidentiality and ambiguity of contributors was ensured and taken responsibility of.

The questionnaire was sent by email to the participants and their responses were recorded in a spreadsheet and descriptive statistical analysis was carried out.

RESULTS

In our study, most of the participants (93.5%) have studied basics about forensic odontology during their undergraduate studies.

Table 1- Questionnaire of the present study.

S.No.	Questionnaire	Responses
1	Have you ever studied about forensic odontology?	Yes/No
2	Do you have knowledge about- <ul style="list-style-type: none"> • Bite mark pattern • Identification in mass disasters • Physical abuse of a child • Examination of a tooth for dental age • Gender examination of a deceased 	Yes/No Yes/No Yes/No Yes/No Yes/No
3	Do you preserve dental records of the patients?	Yes/No
4	Do you have an organized methodology for preserving dental records and for how many years?	Yes/No
5	Would you agree to share your patient's record data with fellow dentists and government agencies without hesitation?	Yes/No
6	Are you aware that a dentist can substantiate as an expert witness in court?	Yes/No
7	Are you versed with the legal issues associated with forensic dentistry?	Yes/No
8	Are you aware of any criminal case in India which has been identified by the virtue of forensic odontology?	Yes/No
9	Are you aware about sources of latest forensic odontology knowledge?	Yes/No
10	Are you aware about DNA analysis in relation to forensic evidence analysis?	Yes/No
11	Do you think forensic odontology should be included as an independent subject in undergraduate courses?	Yes/No
12	Would you be keen to pursue forensic odontology as a career option for life?	Yes/No
13	Do you know of any recognized institutions in India offering courses in forensic odontology?	Yes/No
14	Do you agree that the horizon of forensic odontology will grow in India in forthcoming years?	Yes/No
15	Would you suggest the recruitment of forensic dentists for jobs by the Indian government?	Yes/No

Table 2- Descriptive statistics of the present study

Questions of the present study	Yes	No
Basic knowledge about forensic odontology	95.3%	4.7%
Source of gathering latest information about forensic odontology	90% (from books and internet)	10% (from latest journals)
Knowledge about bite marks and taking impressions	56.3%	43.7%
Knowledge about child abuse signs	75.3%	24.7%
Knowledge about Expert witness in legal proceedings	22.1%	77.9%
Knowledge about preservation of dental records	13.5%	86.5%
Requirement of more jobs for forensic dentists	96.5%	3.5%
Knowledge about role of dentists in mass disaster victim identification	89%	11%
Knowledge about various institutions providing forensic odontology courses	13.5%	86.5%

Around 75.3% of dentists do have a sound knowledge about the physical abuse signs in pediatric patients. 56.3% of dental professionals are able to take note of bite marks and take an impression of the same. However, around 78.4% dentists are not aware of the preservation of dental records for the purpose of forensic assessment at the time of need. 89% dentists believe that forensic odontology helps in identification of victims in mass disasters. Around 86.5% dentists believe, that they have little knowledge of the institutions which provide forensic odontology courses. 96.5% believe that more forensic odontology government jobs should be created so that more interest is created in this field. In relation to being a legal witness in the court of law, around 77.9% have little knowledge about the same. Most of the knowledge (90%) about forensic odontology is obtained from internet sources as well as books, whereas only 10% do realize the importance of journals to keep themselves updated about this field of study. (Table 2)

DISCUSSION

Dental clinicians, as other healthcare professionals are at the forefront in spotting the signs of violence appearing on their patients. The dentist should be aware of child, elderly, or spousal abuse and bite marks when confronted with unusual oral injuries, especially in cases of persons with accompanying body injuries. Abusive trauma to the face and mouth includes fractured anterior teeth, missing or displaced teeth, fractures of the maxilla and mandible, laceration of labial frenum, bruised or scarred lips, face and neck. Kenney and Clark have cited numerous researches that suggest approximately 50% of injury in child abuse cases occur in the oral and perioral region. From legal point of view, matching of the bite marks produced on human tissues to a suspect's dentition may enable law enforcers to implicate the suspect in the crime case.¹²

Sansare & Dayal were the first in India to report forensic dental identification in 1995. They reviewed and stated that, "M. Raja Jayachandra Rathore was identified using false anterior teeth, who died in 1191 on the battlefield". In India, only few Forensic odontologists are well trained and qualified. Due to

lack the of knowledge, training, exposure, an experienced dentist fails to implicate these in their day today practice. Dentist who are attached with dental college update their knowledge constantly but their interest is dubious. Ethical and legal responsibility for patient care in our profession is by maintaining patient record, which contains subjective and objective information.¹³

The practice and importance of forensic dentistry has developed in countries across the world. But in developing countries like India, it is yet to gain full momentum. The law enforcement authorities in India usually seek the help of dental surgeons in government service rather than dental practitioners who have degrees in forensic odontology, who are not in government service. The outcome is that there is death of qualified forensic odontologists in India, which is evident by the rare instances wherein forensic odontology has been applied successfully in solving criminal cases or to identify the deceased.¹⁴

The dental record serves a purpose of future reference for the practitioners when needed, and is not always maintained for a forensic purpose. It is also maintained as consumer court evidence and for dental insurances. There has been an increasing awareness among the public regarding legal issues involving healthcare, which warrants for any dental practitioner to have a thorough knowledge of dental record issues. Whether the records maintained by practitioners are complete and useful for forensic odontology would be a valid question to consider. The majority of the dental practitioners were aware of the significance of maintaining dental records. Only very few practitioners maintain complete records and very few know the duration of dental record maintenance as stated by the law, which is a minimum of seven years to a maximum of ten years.¹⁵

The study shows clearly that there is a general lack of knowledge and practice of forensic odontology among dental practitioners in India. There are very few institutions offering formal training in forensic odontology. Most of the practitioners had no formal training. There are no fully equipped labs for forensic odontology in India. Forensic odontology was not included as a part of our academic curriculum until recently. There are very few workshops or

conferences that have been conducted in forensic odontology per year for dental surgeons, which could kindle an interest among the students to probe deeper into the subject.

CONCLUSION

The respondents had little knowledge about the practical application of forensic odontology in routine practice. To maximize dental application in forensic cases, it is necessary that dental practitioners should know the basic principles and techniques of the subject. Forensic odontology courses should be introduced as a separate course by the concerned dental council like other dental specialities to enable practitioners to specialize in the subject. Moreover, all the studies on knowledge and awareness levels regarding forensic odontology were conducted in urban areas.

REFERENCES

1. Acharya AB, Sivapathasundharam B. Forensic odontology. In: Rajendran R, Sivapathasundharam B, editors. Shafer's Textbook of Oral Pathology. 8th ed. India: Elsevier Publication; 2017, p. 716-39.
2. Avon SL. Forensic odontology: The roles and responsibilities of the dentist. *J Can Dent Assoc* 2004;70:453-458.
3. Namrata H, Swati M, Manjula H, Ul Nisa S, Darshan H. Awareness of forensic odontology among general dental practitioners in Pune – A cross sectional study. *J Adv Med Dent Scie Res* 2014;2:10-6.
4. Kumar S, Dagli N. Forensic odontology-.An area unexplored. *J Int Oral Health* 2014;6:i.
5. Sheikh S, Pallagatti S, Singla I, Gupta R. Postmortem Dental identification in the absence of anti-mortem records-a review. *J Forensic Res* 2011;2:132.
6. Shamim T. Forensic odontology. *J Coll Physicians Surg Pak* 2012;22:240-5.
7. Gambhir RS, Singh G, Talwar PS, Gambhir J, Munjal V. Knowledge and awareness of forensic odontology among dentists in India: A systematic review. *J Forensic Dent Sci.* 2016;8(1):2-6.
8. Nagarajappa R, Mehta M, Shukla N, Tuteja JS, Bhalla A. Awareness of forensic odontology among dental practitioners in Kanpur city, India: A KAP study. *J Dent Res updates* 2014;1:6-12.
9. Divakar KP. Forensic odontology: The new dimension in dental analysis. *Int J Biomed Sci* 2017;13:1-5.
10. Bagi BS. Role of forensic odontology in medicine. *J Indian Dent Assoc* 1977;49:359-363.
11. Preethi S, Einstein A, Sivapathasundharam B. Awareness of forensic odontology among dental practitioners in Chennai: A KAP study. *JFDS* 2011;3(2):63-66.
12. Isher DK, Singh Isher PP, Kaur N, Rakhra J. Knowledge, awareness and practice of forensic odontology among the dentists of Punjab. *J Indian Acad Oral Med Radiol* 2019;31:239-45.
13. Duraimurugan S et al. Awareness of Forensic Dentistry Among Dental Students And Practitioners in Andaround Kanchipuram District *International Journal of Recent Scientific Research* 2017 Apr;8(4):16749-16752.
14. Chandrasekharan P. The first human bomb. The untold story of Rajiv Gandhi assassination. *ALT Publ* 2010.
15. Neville BW, Damn DD, Allen CM, Bouquot JE. Editors. *Oral and Maxillofacial Pathology*. 2nd ed. India: Elsevier Publ; 2004.