

Awareness of Forensic Dentistry among Dental Practitioners

Smita Dutta

Assistant Professor, Department of Endodontics, College of Dentistry, Qassim University KSA

Abstract

Background- Dental identification has proved its importance in identifying deceased individuals, and recently it has evolved as a new ray of hope in assisting forensic medicine, but its importance and role in forensic medicine is still in a state of infancy in India. Very less institutions offers formal training in forensic odontology, with the lack of job opportunities for qualified forensic odontologists who have obtained degrees abroad.

Materials and Methods-A cross-sectional study was conducted among 70 dental practitioners of Jaipur, Rajasthan. Data were collected with the help of a questionnaire (Based on Attitude, Knowledge and Practice criteria.) Questionnaire used in study. Informed consents were obtained.

Results-A total 70 dental practitioners responded to the questionnaire out of these 20% not maintain dental records in their clinic, 77% maintained dental records, 3% participants did not answer the question.

Conclusion- For an efficient forensic investigation, we need a dental team, comprising personnel from all branches of dentistry, working in close association with experts from other branches of forensic science. The government has a social obligation to recover, identify and hand over the remains of a deceased person to the relatives and every effort must be made to achieve this.

Key words: *Dental identification, forensic investigation, forensic dentistry.*

Introduction

Forensic dentistry a branch of forensic science is a challenging and fascinating branch that deals with the identification through the comparison of ante- and post-mortem records. Dental identification has proved its importance in identifying deceased individuals, and recently it has evolved as a new ray of hope in assisting forensic medicine, but its importance and role in forensic medicine is still in a state of infancy in India. Very less institutions offers formal training in forensic odontology, with the lack of job opportunities for qualified forensic odontologists who have obtained degrees abroad.^[1] This branch can be defined as a branch of dentistry, which deals with the proper handling and examination of dental evidence and with the proper evaluation and presentation of dental findings in the interest of the justice.” Assisting the legal authorities by examining dental evidence in different situations is a first job of a forensic odontologists. The three major areas of activity currently in forensic odontology are examination and

evaluation of injuries to teeth, jaws, and oral tissues resulting from various causes.^[2] The examination of marks with a view to subsequent elimination or possible identification of a suspect as the perpetrator.^[3] The examination of dental remains from unknown persons or bodies with a view to the possible identification of the latter.^[2] Dental identification takes place for number of different reasons and in number of different situation such as for the body of victim during different types of crime. In some cases body can be disfigured to such an extent that identification by a family members is not possible. Bodies of people who have been deceased for some time before discovery and those found in water also present unpleasant difficulties in identification. Through the speciality of forensic dentistry, dentist can play a vital role in this process. By identifying the victims of crime and disaster through guidelines and standards, a dentist can assist those involved in crime investigation.^[2]

Materials and Methods-

A cross-sectional study was conducted among 70 dental practitioners of Jaipur, Rajasthan. Data were collected with the help of a questionnaire (Based on Attitude, Knowledge and Practice criteria.) [Table 1] Questionnaire used in study. Informed consents were obtained.

Questionnaire

1. Are you aware of the significance of maintaining dental records to identify the individuals?

- For diagnosis or ongoing treatment procedure & long-term follow-up care of the
- patient Administrative or any other purpose
- Evidence against litigation
- Case review purpose
- Compare post & ante-mortem dental data
- Legal settlements of estates where a death certificate needed

- Following details regularly maintained

2. Do you maintain dental records? (Yes/No)

3. Dental records regularly maintain? (Yes/No)

4. Duration of maintenance of dental records? (The health insurance portability & accountability act (HIPAA) require all dental records kept for at least 6 year after the patient's last visit.)

5. Patients details (Name, Age, Sex, Address)

- Medical history
- Family history
- Dental history

6. Do you maintain treatment details of the patients?

- Clinical finding
- Treatment plan
- Treatment log/payment details

7. Following methods you used for diagnosis

- a. Clinical photograph
- b. Study cast/diagnostic cast For treatment planning
- c. Radiograph – Forage estimation
- d. Investigation finding-

1. Hematological investigation

2. Biopsy

8. Are you familiar with the subject of forensic – odontology & its relation to dentistry? (Yes/No)

9. Are you aware that you can testify as an expert witness in the court to present forensic evidence? Yes/no

10. Have you ever contributed to the identification of victims in mass- disasters? (Yes/No)

11. If called on to do so would you share your patient's dental records with a government agency to help identify victims of mass disasters? (Yes/ No)

12. At undergraduate level have you studied the subject "forensic odontology"? (Yes/No)

13. Which of the following is the most accurate & sensitive method to identify an individual?

- Visual identification
- Fingerprints
- DNA comparison
- Serological comparison in individuals
- Physical anthropological examination of bones & teeth

14. How can you estimate the dental age of an individual by examining the teeth?

- Radiograph to assess Tooth calcification
- Morphological & histological changes

15. Can you identify the Races of the individuals like:-

- Mongoloid (Nepal – Assam)

- Caucasoid
- Negros

16. Are you aware of importance Bite mark?

- Human/animals teeth Orientation & locations of the mark

- Types of injury

- Color, size & shape Contour, texture & elasticity of the bite site

- Difference between upper & lower arch Bite mark patterns may be–

- Abrasion

- Bruises

- Laceration

17. Are you aware of the method of palatoscopy/ palatal rugoscopy used for sex determination in individuals? Yes/No

18. Are you aware of methods of PCR (polymerase chain reaction) used for identify the genetic relationship between individuals? Yes/No

19. Are you aware of an advanced method like ameloglyphics (tooth print)

20. Have you had any formal training in collecting, evaluating & presenting dental evidence? Yes/No

21. Would you like to do training course in forensic dentistry if given chances. YES/No

Results

A total 70 dental practitioners responded to the questionnaire out of these 20% not maintain dental records in their clinic, 77% maintained dental records, 3% participants did not answer the question [Fig.1]. 60% dental practitioners did not know to identify child abuse, while 40% said they would identify by physical injuries, scars, behavior, clothing, and nourishment. Sixty percent dental practitioners use the appropriate method for diagnosis, while rest are not [Fig 2]. 35% dental practitioner did not know the significance of bite-mark patterns of the teeth only 4% participants said that they were part of a forensic team in their respective cities, about 70% dental practitioners did not aware that they could testify as an expert witness in the court of law. Only 10% dental practitioners have formal training in collecting, evaluating and presenting dental evidence. Seventy percent of dental practitioners are not confident to deal with forensic cases.[fig. 3]

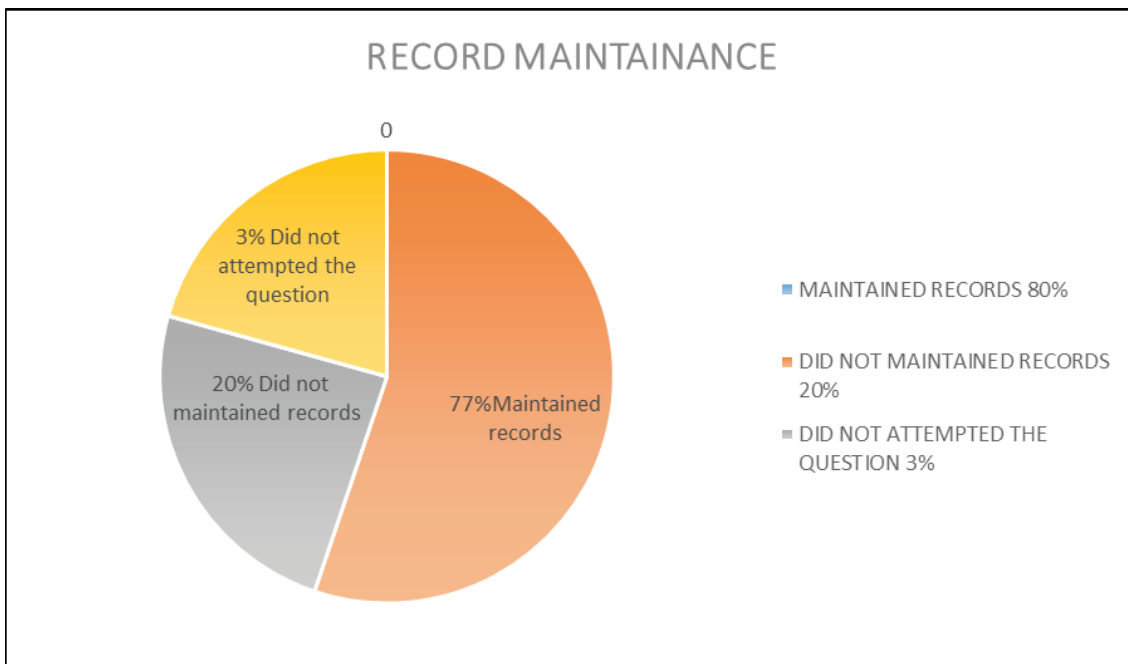


FIGURE 1: Pie chart showing percentage of subjects maintaining record

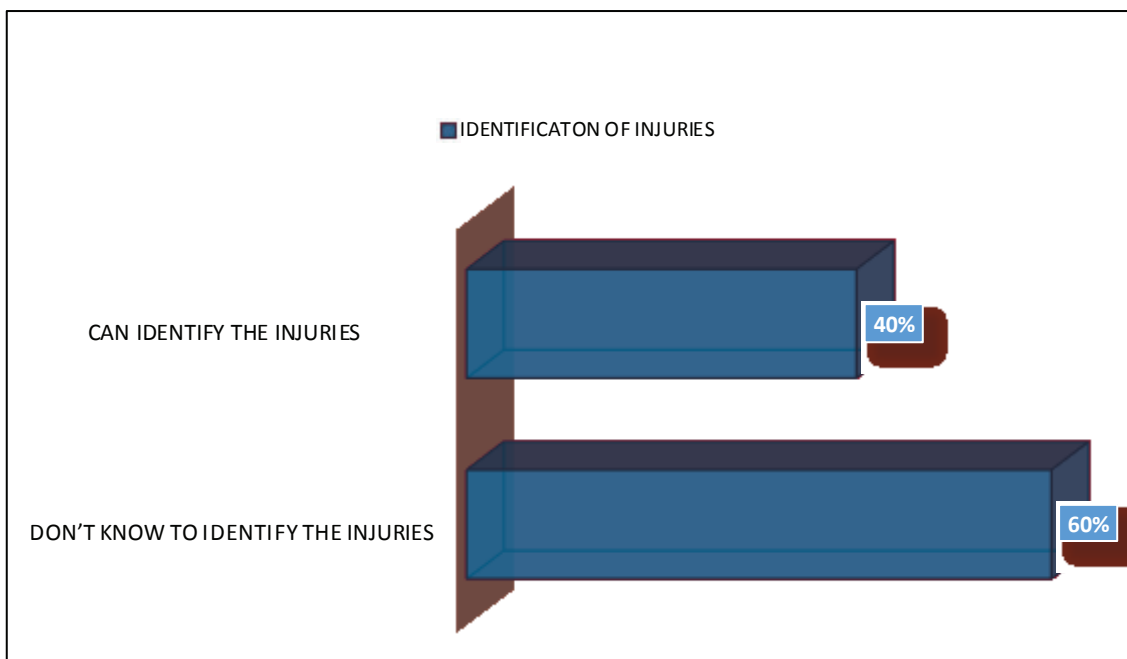


FIGURE- 2: Graph showing knowledge of individuals to identify injuries

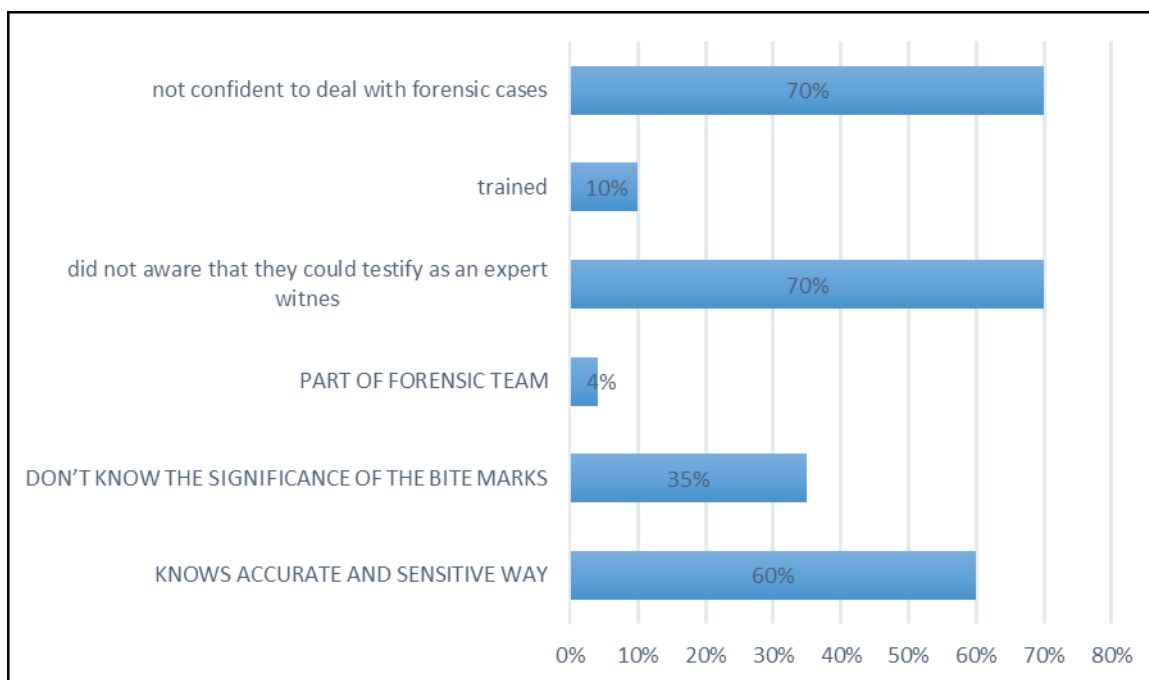


FIGURE 3: Knowledge of dental practitioners regarding forensic investigations

Discussion

Forensic odontology is an important branch of the study 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

practice of forensic odontology has gained importance in a number of developed countries across the world. However, in developing countries like India, it is yet to gain full momentum. The death toll in India due to the tsunami in 2004 was more than 15,000, but it is a question left unanswered, whether all victims were identified. This could have been made possible if there

were adequate forensic odontologist for identification of the victims. The establishment of forensic odontology as a unique discipline has been attributed to Dr. Oscar Amoeda (Father of Forensic Odontology), who identified the victims of a fire accident in Paris, France in 1898.

Today forensic odontology is considered to be a specialized and reliable method of identification of the deceased, particularly in multiple fatality incidents. Although this reputation has been gained from the application of forensic odontology in both individual identification as well as disaster situations over a number of years, the professional nature of the discipline and its practices have evolved only recently.

Therefore, success of forensic dentistry can be achieved totally only if the dental specialist and the dental institutions maintain antemortem records of their own patients with information such as name, age, sex, number of teeth present, filled teeth, dentures, and other restorations, morphological variations of teeth and mucosa with photographs and radiographs. This antemortem record will help to identify deceased persons and criminals by comparing with the postmortem records prepared by examining deceased persons during investigations, in homicide and mass disasters.^[4]

This study was conducted among the dental practitioners to assess their awareness about forensic odontology [Figure 3].^[1] The results show that the knowledge of forensic odontology among the dental practitioners is not adequate (Based on Questionnaires).

Teeth can be used as a weapon of attack or defense. Dentistry has much to offer to law enforcement agencies in the uncovering and solution of crime. The permanent teeth develop throughout the first two decades of life, and physiologic variations, pathologies, and effects of dental therapy may be recorded in the hard tissues of the remaining dentition throughout life and beyond. It is the role of the dentist to help extract this information and use it in the identification of the unknown body.^[5] Human teeth and dental restorations have proven to remain stable during a long time as well as in extreme situations such as fire. Therefore, dentist can play an important part in the identification of severe mutilated bodies of unknown persons. The teeth may also be used as weapon and under certain circumstances, may leave information as to the identity of the biter. Analysis of bite

marks is the second major responsibility of the forensic dentist. The dental practitioner has a major role to play in providing them accurate dental records on which much of forensic activity is based.^[3] There is increased need for dental surgeons to have a good knowledge about forensic odontology as it is useful in identification of an individual and also discover abuse among all ages. Dentists are the health-care professionals who routinely assess the head and neck of the patients and have a great chance in identifying the signs of abuse and neglect. Every dentist has to understand the forensic implications associated with their practice. There is always a lack of involvement among dentists because of lack of training and experience, and due to their limited knowledge in this branch of dentistry. There is also a fear of litigation among dentist which commonly discourages them. "Any physician who fails to identify and report a child with historical, physical and radiological findings that indicate abuse is guilty of professional negligence."^[6] There is always a lack in availability and accuracy of dental records which has a great influence in determining the success of identification.^[7]

Present study showed clearly that that there is a general lack of practice of forensic odontology among dental practitioners in India.

Isher, et al also observed lack of knowledge, awareness, and practice of forensic dentistry amongst the dentists of Punjab.^[8]

Baad R conducted study among dental practitioners of western Maharashtra, India and found that adequate knowledge of forensic odontology. They observed lack of formal training, inadequate forensic laboratories, poor attitude and lack of interest among dentists.^[9] Another study conducted by Rahman J et al among among dental surgeons in Bhubaneswar, East India also observed that there is adequate level of knowledge and awareness regarding forensic odontology in all the groups investigated.^[10]

Poor knowledge has been reported in another study conducted by Alshaqqaq et al outside the India in Riyadh city of Saudi Arabia.^[11]

This could be owing to multiple reasons. There are very few institutions offering formal training in forensic odontology. Most of the practitioners had no formal

training. There are no fully equipped laboratories for forensic odontology in India. Forensic odontology was not included as a part of our academic curriculum until recently. There are very few workshop conferences that have been conducted in forensic odontology per year for dental practitioners, which could kindle an interest among the students to probe deeper into the subject.

Conclusion

For an efficient forensic investigation, we need a dental team, comprising personnel from all branches of dentistry, working in close association with experts from other branches of forensic science. The government has a social obligation to recover, identify and hand over the remains of a deceased person to the relatives and every effort must be made to achieve this. Academicians, law-enforcing authorities, statutory bodies, and government have to get together and coordinate an action plan.

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Ethical Clearance: Ethical clearance has been taken from Institutional Ethical Committee

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