

AWARENESS OF FORENSIC ODONTOLOGY AMONG DENTAL PROFESSIONALS

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ABSTRACT

Forensic Odontology is a significant outgrowth of Forensic Medicinal Sciences. It plays a pivotal role in identifying the individual. But awareness regarding Forensic Odontology is less among Dental Professionals. It was a cross sectional, questionnaire-based study. Four Dental Institutes of Lahore were selected for the survey. Ethical approval for this study was obtained from the ethical review committee of the University of Lahore. Participants included an assortment of house surgeons, demonstrators and postgraduate trainees of private dental teaching hospitals. A questionnaire consisting of 15 questions was used as a study tool. There were 40 (16.7%) demonstrators, 55 (22.9%) postgraduate residents and 145 (60.4%) house officers. One hundred seventy nine (74.6%) candidates knew about forensic odontology, 189 (78.9%) thought that forensic odontology is an important part of dentistry, but only 25 (10.3%) learned about forensic dentistry in their institution. 66 (27.6%) knew about cases solved by forensic odontologists, 175 (72.8%) maintained the patient record at the hospital, 121 (50.4%) knew the significance of bite mark pattern of teeth, 177 (73.7%) knew that teeth can serve as a source of DNA. Most of the dental professionals were aware of forensic odontology and its importance but were unaware whether this sulyed is being laugh or not in dental colleges. Moreover, Institutions were not providing enough information regarding Forensic Odontology.

Key words: Forensic Dentistry, dental surgeons, Dental institutes

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INTRODUCTION

Forensic Odontology is a significant outgrowth of forensic medical sciences and, in the delivery of justice,

includes apt examination, handling and demonstration of dental evidence in the court of law.¹ It plays a pivotal role in identifying the human remains of victims, not only limited to mutilated, burnt and decomposed bodies but also victims of bioterrorism and mass disasters.²

Disastrous incidents have highlighted the importance of forensic odontologists in the identification of victims from industrial blows, airline accidents, natural disasters, and terrorist attacks including that of explosive, chemical, radiological or nuclear, and may occur as a solitary catastrophe or sweeping event. Forensic odontology is essential in circumstances where habitual methods of identification, such as fingerprinting and visual recognition, cannot be performed, in cases of decomposed, charred or skeletonized corpses.³

In forensic odontology, the sources of identification are tooth print, rugae pattern, bite mark and lip print.³ The role of forensic odontology is to establish a person's identity. It has been evident from previous studies that forensic odontology plays a crucial role by presenting the pieces of evidence from the oral and maxillofacial region (including the teeth).⁴⁻⁵ These can be used in a jurisdictional settings and acknowledged by the court

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of law and the general scientific community to affirmatively and rightly separate truth from untruth.⁴⁻⁵

Despite the significance of forensic odontology, awareness of this subject remains scarce among dental professionals. This study was conducted to assess the awareness of forensic odontology among dental professionals.

METHODOLOGY

This was a cross sectional, questionnaire-based study conducted among dental-health care professionals including house officers, demonstrators and post-graduates. The data was collected from December 2018 to January 2019. The sample size was determined to be 240. The sampling technique used was non-probability, convenience sampling. A total of 240 questionnaires were distributed among four dental institutes of Lahore namely, University College of Dentistry (University of Lahore), Sharif Medical and Dental College, Lahore Medical and Dental College and Akhtar Saeed Medical and Dental College. The questionnaire consisted of 15 questions and clearly informed the respondents that participation was voluntary and nature of the responses were confidential. Ethical approval for this study was obtained from the Ethical Review Board of the University of Lahore. The data was then entered into SPSS v. 22 for analysis through descriptive statistics. Any questionnaire with incomplete responses was excluded from the data.

RESULTS

After following the exclusion criteria, a total of 240 participants were considered for the study. The participants included 40 (16.7%) demonstrators, 55 (22.9%) postgraduate residents and 145 (60.4%) house officers.

179 (74.6%) candidates knew about forensic odontology. 189 (78.9%) thought that forensic odontology is an important part of dentistry. Only 25 (10.3%) learned about forensic dentistry in their institution and their teaching curriculum included maintaining dental records at institutional level. In their practice, 66 (27.6%) knew of cases solved by forensic odontologists, while 54 (22.4%) were also aware that there was a qualified forensic odontologist in Pakistan. Out of 240 candidates, 175 (72.8%) maintained patient record at the hospital, 104 (43.5%) candidates were aware of time period for which dental records should be maintained. Out of 240 candidates, 121 (50.4%) knew the significance of bite mark pattern of teeth, 177 (73.7%) knew that teeth can serve as a source of DNA, 190 (79.3%) candidates considered forensic odontology as an efficient method to identify victims in mass disaster. In the study, 37 (15.5%) candidates were confident about their opinion in forensic odontology related cases, 20 (8.2%) candidates thought that they had adequate knowledge level about

TABLE 1: RESPONSE TO THE QUESTIONS

Questions	Yes	No
Do you know about forensic odontology?	179 (74.6%)	61 (25.4%)
Do you think forensic odontology is an important part of dentistry?	189 (78.9%)	51 (21.2%)
Have you ever learned about forensic dentistry in your institution?	25 (10.3%)	215 (89.7%)
Did your teaching curriculum includes about maintaining dental records at institutional level?	25 (10.3%)	215 (89.7%)
Do you know any case solved by forensic odontologist?	66 (27.6%)	174 (72.4%)
Are you aware of any forensic odontologist in Pakistan?	54 (22.4%)	186 (77.6%)
Are you aware of time period for which dental records should be maintained?	175 (72.8%)	65 (27.2%)
Do you know the significance of bite mark pattern of teeth?	104 (43.5%)	136 (56.5%)
According to your knowledge can a teeth serve as a source of DNA?	121 (50.4%)	119 (49.6%)
Do you consider forensic odontology as an efficient method to identify victims in mass disaster	177 (73.7%)	63 (26.3%)
Are you confident if someone ask your opinion in forensic odontology related cases	190 (79.3%)	50 (20.7%)
Do you think your knowledge level about forensic odontology is adequate	37 (15.5%)	203 (84.5%)
Do you know of any center around the world where formal training of forensic odontology is given	20 (8.2%)	220 (91.8%)
	62 (25.9%)	178 (74.1%)

forensic odontology. Out of 240 candidates, 62 (25.9%) candidates knew about the centers around the world where formal training of forensic odontology is given. (Table 1)

DISCUSSION

Forensic odontology stands as one of the most resourceful and scientifically trusted means of establishment of personal identity especially in catastrophic circumstances whereby the professionals feel themselves bound, secondary to scarcity of required biological material to serve the said purpose. For example, corpses recovered from drowning, airplane crashes,

conflagrations, natural disasters are most of the times mutilated or decomposed to such a great extent, that renders identification by traditional means unreliable³. Forensic odontology is a specialized field of dentistry in connection to investigation and probation pertinent to respective legal affairs, as odontological parameters are considered to bear immense evidentiary value for the identification of victims and suspects in mass disasters, physical/sexual abuse and other organized crimes.^{6,7}

A Dental Surgeon plays a significant role in the forensic investigation team. However, several dentists and legal professionals are quite ignorant of this fascinating aspect of forensic odontology and this gap in knowledge needs to be overcome.⁸

Age assessment is a sub-discipline of forensic sciences and is principally useful when evidence concerning the deceased is unreachable. Tooth development process varies among individuals of different genders and ethnicities. Human dentition follows a predictable developmental sequence.⁹ Consequently, this makes the dental chronological age, a crucial technique of age estimation.

Forensic odontology paves the way to gender determination out of biological remains, taking into account specific age and gender-related characteristics of teeth and skull. Physiognomical peculiarities of different genders include different topographies of teeth like crown size, shape, and root length, etc. in addition to different skull patterns. The presence or non-compliance of Y-chromatin and deoxyribose nucleic acid (DNA) analysis can confirm sexual identity by microscopic examination of teeth.¹⁰ In identifying missing individuals whose skeletal remains have been recovered, facial superimposition of skeletal and dental features through ante-mortem pictures/photos is also a useful technique.¹¹⁻¹²

Forensic odontology is a crucial science in medico-legal matters. In the last 50 years or so, forensic odontology has made great progress and has developed as a specialty.¹³

Majority of the participants in our study knew about forensic odontology as specialty in dentistry. Contrary to the recommendations of teaching this subject to students, many of the participants reported not being taught this. In our study only a small proportion (10.3%) claimed to have learnt this in their medical school while Baig et al., reported this proportion to be 0.67% in their study.⁹ A great majority of the participants reported that they maintained patient record in their hospitals. Similar results were reported in another study conducted in India by Sengupta et al. Our study quantified this proportion as 72.8% of the study participants while Sengupta et al., reported it

to be 73.2%.¹³

As far as identification of disaster victim is concerned, many agreed that it was an effective method of recognition of deceased. Our study showed 79.3% while Preethi et al., reported 58%.¹⁴ A good number of participants were aware of the significance of bitemark pattern as a source of identification. Our study showed 50.4% while Preethi et al., reported it to be 76%.¹⁴

A similar study in this context was carried out in India by Hachandani et al. who published quite elaborative findings regarding record maintenance by dental practitioners and the awareness of its significance on forensic grounds. According to their findings, 30% of the Dental practitioners did not maintain the respective dental records of their patients while 70% maintained the records. About 72% practitioners did not know about significance of bite mark patterns, 65% of the participants did not know that they could testify in pertinent matters as an expert witness in courts of law while 83% did not get due training in collecting, analyzing and presenting Odontological evidence.¹⁵ Likewise, a study published in India in 2018 revealed that about one-third of the study participants were totally unaware of the fact that they could testify for matters pertinent to odontological evidence in court as an expert witness.¹⁶

Limitations of the study are, only awareness of Forensic Odontology was assessed, the target study group was from Private Institutes and limited data was available regarding Forensic Odontology in the current Dental curriculum.

CONCLUSION

This study revealed that dental professionals were aware of Forensic Odontology as a subject. They were also aware of its importance. However, little was taught to them in their institutions. They were oblivious to the presence of this specialty in the country. It is recommended that Forensic Odontology should be effectively introduced into the BDS curriculum as a subject.

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CONTRIBUTIONS BY AUTHORS
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