

# Awareness and Attitude of Forensic Odontology among Undergraduate Dental Students in Kabul University of Medical Sciences, Afghanistan

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## Abstract

**Aims and Objectives:** The aim of the study is to assess the knowledge, attitude, and practice of forensic odontology among undergraduate dental students at Kabul university of medical science, Kabul, Afghanistan after adding this subject in their curriculum

**Material and Methods:** This cross-sectional study is conducted among 150 undergraduate dental students of Kabul University of medical sciences aged 18 and 23 years during the period from December 2020 to February 2021. A questionnaire of Abdul et al. (2019) study was used; the questionnaire consisted of 19 questions that assessed the knowledge, attitudes, and practice of the participants. The questionnaire is divided into three parts: knowledge, attitude and practice. The collected data were analyzed using SPSS-24 software, chi-square test.

**Results:** Ninety percent of the participants were aware of the branch of science called forensic dentistry. All the included participants welcomed the idea of adding a module on forensic odontology to the current undergraduate curriculum. Almost 88.7% of the participants were aware that dental record help for identification of deceased person's age however, The most of undergraduate dental students (90.7%), claim that they have lack of the knowledge related forensic odontology. Most of participants were willing to maintain dental record in their future clinics.

**Conclusion:** Our study showed that the knowledge, attitude, and practice in undergraduate dental students are better since it's added into curriculum of Kabul University of medical science. However, there are no workshops, seminars, and continuing dental education programs for dental students. There is a need for further exposure and formal training to bring awareness among all health-care providers.

**Keywords:** Knowledge and Attitude, Forensic odontology, Students

## Introduction

Forensic odontology can be defined as a branch of dentistry by the Federation Dentaire International (FDI)

which in interest of; justice, deals with the proper manipulation and examination of dental evidence with the proper evaluation, and presentation of dental findings<sup>(1)</sup>.

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Forensic odontology is a challenging and attractive branch of forensic science that includes the use of dental science in identifying deceased people by comparing

pre- and post-mortem records<sup>(2)</sup> Forensic odontology focuses largely on the teeth and involves assisting in the identification of deceased individuals and criminals and the specialists should have basic skills and knowledge about forensic odontology and be aware of how to manage dental records, dental DNA analysis, radiography, dental morphology and anatomy<sup>(3)</sup>.

Teeth are resilient to conditions such as high temperatures, immersion and decomposition and are classified as one of the primary identifiers by Interpol. Moreover, teeth are the cheapest, quickest, and easiest methods of human identification when compared to fingerprinting and DNA<sup>(4)</sup>.

Dental records play important role in cases where corpses have been severely damaged, impossible, or difficult to identify. This is attributed to the fact that dental tissues and dental restorations are resistant in nature, which make them the most reliable source of DNA, that will help for any individual identifying case<sup>(5, 6)</sup>. Despite the importance of this field in criminal justice, the literature shows that forensic odontology has been underestimated in many countries<sup>(7)</sup>. Furthermore, there is no universal acceptance path for forensic odontology education and requirement in each country<sup>(8)</sup>.

The aim of this study was conducted to assess undergraduate dental students' knowledge, attitude, and practice of Kabul University of medical science

in Kabul, Afghanistan after adding this subject in their curriculum.

## Materials and Methods

This cross-sectional study is conducted among 150 undergraduate dental students of Kabul University of medical sciences aged 18 and 23 years during the period from December 2020 to February 2021.

A questionnaire of Abdul et al. (2019)<sup>(9)</sup> study was used; the questionnaire consisted of 19 questions that assessed the knowledge, attitudes and practice of the participants. The questionnaire written in English and Persian language distributed among 150 undergraduate dental students. All included participating was willing to participate in the research process. Males 60 (40%) and females 90 (60%) were included. Information was collected from demographic data of participant following: age, gender, education level. The questionnaire is divided into three parts: knowledge, attitude and practice. The collected data were analyzed using SPSS-24 software, chi-square test.

## Results

A total of 150 undergraduate dental students, Males 60 (40%) and females 90 (60%) aged between 18 and 23 years were included. The questionnaire was self-administered by a convenience. According to descriptive findings, 58% of respondents were over 21 years old and 42% were under 21 years old. (Table 1)

**Table 1. Frequency of age and sex**

		Frequency	% frequency
Age	<21	87	58
	>21	63	42
Gender	Male	60	40
	Female	90	60

**Question 1-9 were knowledge-based, questions on forensic odontology. (Table 2)**

Q1: In our study, 90% of the participants were aware of the branch of science called forensic dentistry and about 10% of the participants were unaware of it.

Q2: 69 %of undergraduate dental students were aware that teeth serve as a source of DNA

Q3: Ninety-six percent of the participants were aware that forensic dentistry helps to investigate criminals and dead persons.

Q4: 76.6% of the participants were aware of age estimation in children and adults by an eruption pattern of teeth. The remaining participants answered that histological and biochemical methods were used to identify the dental age.

Q5: Almost 88.7% of the participants were aware that dental record help for identification of deceased person's age. However, 10.7% of the participant were thinking fingerprint can help in this situation.

Q6: Nearly, 46.7% of the participants were not aware they mark don't know option, only 26.7 % of participants were able to mark the correct answer.

Q7: Most of the study participants (73.3%) were aware of teeth bite mark pattern significance.

Q8: Proportion of this study participants marks the source of their knowledge book and internet respectively.

Q9: The most of undergraduate dental students (90.7%), claim that they have lack of the knowledge related forensic odontology.

**Table 2. Question 1-9 knowledge-based, on forensic odontology**

Question	Components	Frequency	%percent
1. Do you know about forensic odontology as a branch in dentistry?	Yes	135	90
	No	15	10
2. Can teeth serve as source of DNA?	Yes	104	69.3
	No	1	0.7
	Don't know	45	30
3. Is forensic odontology useful in identifying criminals and the dead people?	Yes	144	96
	No	5	3.3
	Don't know	1	0.7
4. How do you identify the dental age in children and adults?	Eruption patterns and calcification	115	76.6
	Histological methods	24	16
	Biochemical methods	10	6.7
	Don't know	1	0.7

**Cont... Table 2. Question 1-9 knowledge-based, on forensic odontology**

5. How will you identify a deceased person's age and gender in mass disasters like fire, stampede and accidents?	Reconstruct the fragmented deceased body	1	0.7
	Dental records	133	88.7
	Fingerprints	16	10.7
	Don't know	0	0
6. What is the study of lip prints in forensic odontology called?	Lipology	30	20
	Cheiloscopy	40	26.7
	Dermatoglyphics	10	6.6
	Don't know	70	46.7
7. Are you aware of the significance of bite mark pattern of teeth?	Yes	110	73.3
	No	40	26.7
8. What is the source of your knowledge about forensic dentistry?	Books	59	39.3
	Internet	50	33.3
	I don't have knowledge	3	2
	Scientific articles/journals	2	1.3
	Workshops	2	1.3
	Seminars	0	0
	Undergraduate lectures	34	22.7
9. Do you think your knowledge and awareness about Forensic odontology is enough?	Yes	6	4
	No	136	90.7
	Don't Know	8	5.3

**Questions 10–13 were attitude-based questions on forensic odontology (Table 3)**

Q10: 63.3% of participant replied that they are willing take forensic dentistry as a diploma or postgraduate course if introduced. However, 36.7% study population did not show interest.

Q11: About 53.3% of students reported their interest to select forensic dentistry as a profession and 46.7 % of student refused the question.

Q12: Nearly, eighty percent of this study participant showed interest to attend in workshops and seminars in forensic odontology but, 20 percent ignore it.

**Q13: Almost 86.7% of participants were willing to maintain dental record in their future clinics.**

**Table 3. Questions 10–13 attitude-based on forensic odontology**

Question	Components	Frequency	%frequency
10. Are you willing to take courses in forensic odontology, if introduced as a diploma or postgraduate course?	Yes	95	63.3
	No	55	36.7
11. Are you interested to join forensic odontology as a profession?	Yes	80	53.3
	No	70	46.7
12. Are you interested to participate in workshops and seminars in forensic odontology?	Yes	120	80.0
	No	30	20.0
13. Do you will maintain dental records in your clinic?	Yes	130	86.7
	No	20	13.3

Questions 14-19 were practice-based questions on forensic odontology (Table 4)

Q14: About 76.7 % of participants were aware that child abuse can identify according all above option which includes physical injuries, scars, clothing, and behavioral changes.

Q15: Over 50% of participants were in favor of reporting to police, however less than 50 % of participants were willing to report for their parents.

Q16: Almost 98.7 % of participants had not attended in any formal training related to forensic odontology.

Q17: All of included participant agreed that, forensic odontology is as part of their curriculum.

Q18: About 73.3% of the participants agreed to have limited resources to study forensic dentistry in Afghanistan.

Q19: Only 46.7 percent of the participants were aware that the dentists have to testify as an expert witness in the court of law with forensic dental evidence and 53.3% of them were not aware of it.

**Table 4. Questions 14-19 practice-based on forensic odontology**

Question	Components	Frequency	%frequency
14. How will you identify physical/neglected/sexual/psychologically abused child patient?	Physical injuries	26	17.3
	Behavioral changes	3	2.0
	Clothing	0	0
	Any scars	3	2.0
	All the above	115	76.7
	Don't know	3	2.0
15. What action would you take, if you identify child abuse?	Inform police	90	60.0
	Inform parents	60	40.0
	Take no action	0	0
16. Do you have any formal training related to forensic odontology?	Yes	2	1.3
	No	148	98.7
17. Do you have forensic odontology as part of your curriculum or course outline?	Yes	150	100.0
	No	0	0
18. Do you think Afghanistan has very limited resources/equipment to study forensic science?	Yes	110	73.3
	No	40	26.7
19. Are you aware that you can testify as an expert witness in the court to present forensic dental evidence?	Yes	70	46.7
	No	80	53.3

## Discussion

This study was conducted to assess undergraduate dental students' knowledge, attitude, and practice of Kabul University of medical science in Kabul, Afghanistan and gives an insight into the significance of this field in reducing the crime rate, illegal birth rates, illegal immigrants, and identification of individuals in

mass disasters and pilgrimages in Afghanistan.

There are many studies carried out on forensic odontology in other countries, but no study was conducted in the Afghanistan among dental students. Therefore, this is the first study of forensic odontology in Afghanistan, which targets undergraduate dental students. However, the limitations of this study should

be considered when interpreting the findings; the sample utilized was drawn from one educational institution, therefore, it does not represent all dental students in Afghanistan.

Our study showed that the knowledge, attitude, and practice in undergraduate dental students are better since it is added into curriculum of Kabul University of medical sciences. These findings were consistent with the results of Al-Azri et al.<sup>(10)</sup> in Australia showed that knowledge Students and dentists are well versed in forensic dentistry and many of them are aware of the field of work and the type of specialization in this field.

In the present study revealed that 90% of the participants were aware of the purpose of dentists in mass disaster, which, in contrast to other studies that showed only 31.6% and 59.4% awareness in this expression the adding forensic accounting course to their curriculum. However, the participants were reported their lack of seminars and workshops regards forensic odontology. Furthermore, the poor information regarding Lipology and Cheiloscopy could be due to a lack of awareness and insufficient knowledge about the aspects and use of these techniques.

Dental records are considered as an essential aid in identification of persons who are victims of an illegal act. The dental record might act as a future reference for the dentist when needed, but unfortunately, it is not constantly preserved for a forensic purpose<sup>(11)</sup>. In the current study, most of dental students agreed that maintaining dental records is an essential component in human identification. This insufficient knowledge highlights the necessity for proper education and further training<sup>(12)</sup>. Dentists should know not only the importance of preparing an accurate dental record but also the importance of preserving these records. Almost half of the students reported that their source of information in forensic odontology is from the Media. Media plays a definitive role in creating awareness among the public<sup>(13)</sup>. The same holds true for the present study. Additionally, journals and seminars continue to remain as one of the most reliable and correct sources

of this knowledge. However, the focus should be on the worrying finding that the majority of students in this study think that they do not have adequate knowledge or confidence in handling forensic dental cases. However, 100% of the students welcomed the idea of adding a module on forensic odontology to the current undergraduate curriculum.

This study provides a baseline for the upcoming studies in the Afghanistan. Findings from this study might be considered as a reference for endorsing the area of forensic odontology in the undergraduate training of dental students. Thus, the undergraduate program must be improved by including preclinical lectures on forensic odontology, followed by clinical training and a field slips to forensic departments. This suggests that These recommendations might have a positive impact on students' knowledge and awareness concerning forensic odontology and Students should be aware of this specialty and be encouraged to participate in research and identification teams and consider it as their specialty. Further studies should be carried out at other dental colleges in Afghanistan.

## Conclusion

Our study showed that the knowledge, attitude and practice in undergraduate dental students are better since it's added into curriculum of Kabul University of medical science. However, there are no workshops, seminars, and continuing dental education programs for dental students. There is a need for further exposure and formal training to bring awareness among all health-care providers.

## Conflicts of Interest: Non

Research involving Human Participants and/or Animals: The study protocols were approved by the Regional Committee for Medical Research Ethics.

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## References

1. Shamim T. Forensic odontology. *J Coll Physicians Surg Pak*. 2010;20(1):1-2.
2. Prasad S, Sujatha G, Sivakumar G, Muruganandhan J. Forensic dentistry-what a dentist should know. *Indian J Multidiscip Dent*. 2012;2(2):443-7.
3. Pramod JB, Marya A, Sharma V. Role of forensic odontologist in post mortem person identification. *Dent Res J (Isfahan)*. 2012;9(5):522-30.
4. Adams C, Carabott R, Evans S. *Forensic odontology: an essential guide*: John Wiley & Sons; 2013.
5. Krishan K, Kanchan T, Garg AK. Dental Evidence in Forensic Identification - An Overview, Methodology and Present Status. *Open Dent J*. 2015;9:250-6.
6. Shekar BC, Reddy C. Role of dentist in person identification. *Indian Journal of Dental Research*. 2009;20(3):356.
7. Avon SL. Forensic odontology: the roles and responsibilities of the dentist. *Journal-Canadian Dental Association*. 2004;70(7):453-8.
8. Lorkiewicz-Muszyńska D, Przysańska A, Łabęcka M, Kruszelnicki A. Current status of forensic odontology education—the underestimation of needs? *Dental and Medical Problems*. 2013;50(2):217-22.
9. Abdul NS, Alhazani L, Alruwail R, Aldres S, Asil S. Awareness of forensic odontology among undergraduate, graduate, and postgraduate dental students in Riyadh, Saudi Arabia: A knowledge-, attitude-, and practice-based study. *J Forensic Dent Sci*. 2019;11(1):35-41.
10. Al-Azri AR, Harford J, James H. Awareness of forensic odontology among dentists in Australia: are they keeping forensically valuable dental records? *Australian dental journal*. 2016;61(1):102-8.
11. Charangowda BK. Dental records: An overview. *J Forensic Dent Sci*. 2010;2(1):5-10.
12. Charangowda B. Dental records: An overview. *J Forensic Dent Sci*. 2010;2(1):5.
13. Dwivedi PK, Pandey I. Role of media in social awareness. *Humanities & Social Sciences Reviews*. 2013;1(1):67-70.