

Original Research Article

# Forensic Dentistry and its Importance in General Dental Practice; Knowledge and Attitude of Undergraduate and Postgraduate Dental Students of Riyadh Elm University

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**Introduction:** As a dental student, it is important to recognize cases with abuse and report them to concerned authorities as it is a part of their moral obligation. Awareness of these signs related to abuse and neglect should be provided to the dental students. **Materials and methods:** This study was done in Riyadh Elm University campuses using an online closed-ended questionnaire. A validated survey was constructed and distributed to all clinical students. **Results:** A total of N=420 participants filled out the survey, which included n=270 males (64%) and n=150 females (46%). We also divided the sample on the basis of their educational levels, which included n=121 (29%) level 9, n=94 (22%) level 10, n=80 (19%) level 11, n=89 (21%) level 12 and n=33 (8%) postgraduate dental students. The Cronbach's alpha value was 0.615, which shows moderate reliability of the survey. **Conclusion:** There is a need for adding forensic dentistry courses in the undergraduate level especially when the students begin their clinical training.

**Keywords:** Forensic dentistry, Record maintenance, Knowledge, Attitude, Dental students.

## INTRODUCTION

There have been significant advancements in dentistry over the past decades. From esthetics to pain-free dentistry as well as advanced prosthesis to laser dentistry, things have changed markedly. One of these milestones includes the merging of forensic medicine into dentistry, hence it's now known as forensic dentistry. For over more than a century, forensic dentists have been playing a vital role in assisting the courts in order to provide best possible judgment to the public and law enforcing agencies (Verma et al, 2014).

Speaking of courts and law-related functions of forensic dentistry; it has been involved in solving criminal cases such as rape, murder, and child abuse. Bite marks identification and identifying the bodies are the major applications of forensic dentistry in bringing the criminals to justice. Furthermore, evidences can be acquired from saliva and lip marks as well in addition to estimating the dental age of the victim and gender determination (Singh et al, 2012).

It might occur to many dental professionals that only a qualified forensic dentist is responsible for the above-mentioned support provided in solving crime cases. That is not true; a general dentist may also play an important role in assisting the law enforcing agencies. Dental records are a part of legal documentation that may be utilized in serving justice; therefore it is imperative for the general practitioner to keep a

record of his patients for a long time as it might be required anytime. Maintenance and transfer of dental records are convenient now a day as many dentists are using the digital systems and they can maintain it for a longer period of time (Avon, 2004).

Moreover, dentists may also be alert and attentive in identifying cases of child or spouse abuse in families visiting their clinics. Neglect is also associated and linked with child abuse where there is a need of parental counseling. As a dental student, it is important to recognize these cases and report them to concerned authorities as it is a part of their moral obligation. Awareness of these signs related to abuse and neglect were found to be deficient in Croatian dental students (Jordan et al, 2012).

Another investigation conducted by Hashim & AL-Ani (2013) revealed that the knowledge among dental students regarding the signs of abuse was poor. They need to be educated in this important matter. Furthermore, information on forensic dentistry should be added to the curriculum of both undergraduate as well as postgraduate. The basic reason was the lack of knowledge among dental students in this field. This was proven by Saraswathi & Gayathri (2015), when they revealed a poor level of knowledge and attitude among the undergraduate and postgraduate dental students in India.

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## AIMS OF THE STUDY

- To measure the knowledge and attitude of undergraduate and postgraduate dental students.
- To look for a significant comparison between undergraduate and postgraduate students.
- To identify a comparison between male and female students.

## MATERIALS AND METHODS

This study was done in Riyadh Elm University campuses using an online closed-ended questionnaire. A validated survey was constructed and distributed to all clinical students. We aimed to reach 600 survey participants to achieve the best possible results.

The survey included questions related to demographics, knowledge, and attitude about forensic dentistry and signs related to child abuse, points related to the maintenance of office records and knowledge about legal involvement in forensic dentistry. The options were categorical in nature and were analyzed using SPSS version 19. Descriptive analysis was done alongside the comparisons being conducted by Chi-square test with the value of significance being kept under 0.05.

## RESULTS

The online survey was sent out to male and female undergraduate as well as postgraduate students of Riyadh Elm University. A total of N=420 participants filled out the survey, which included n=270 males (64%) and n=150 females (36%). We also divided the sample on the basis of their educational levels, which included n=121 (29%) level 9, n=94 (22%) level 10, n=80 (19%) level 11, n=89 (21%) level 12 and n=33 (8%) postgraduate dental students. The Cronbach's alpha value was 0.615, which shows moderate reliability of the survey.

Male students (20%) revealed that they had received information about forensic dentistry from their curriculum as compared to females (13%), with this comparison being statistically significant (p-value: 0.016). However, no significant difference was found between gender when inquired about the general practitioners needing to have knowledge about forensic dentistry (p-value: 0.349). Majority of the male students (58%) believed that maintaining patients' records is a vital part of forensic dentistry as compared to females (48%), with this comparison being statistically significant (p-value 0.009). Once again, the male students reported a positive attitude towards the importance of noticing physical abuse marks on patients (51%) as compared to females' 40%, with the comparison found to be statistically significant (p-value 0.045).

Furthermore, 20% of the male participants believed their knowledge regarding forensic dentistry is excellent as compared to females' 11%. 52% of males were highly interested in learning more about forensic dentistry as compared to females' 38%. Both of the above-mentioned comparisons were found to be statistically significant (p-values 0.004 and 0.011 respectively).

As far as the levels of dentistry were concerned, lower level of dental students (24%) believed they received enough information on forensic dentistry through lectures as compared to postgraduate students (3%), with this comparison being statistically significant (0.004). However, 69% of the postgraduate students reported that it was important to notice physical abuse marks on patients as compared to other levels of students. The difference between them was also found to be statistically significant (p-value: 0.003).

Similar findings were recorded when inquired about noticing cuts and lacerations in patients' oral cavity as 76% of postgraduate students believed it as highly important as compared to undergraduate students. This comparison was also statistically significant (p-value: 0.000).

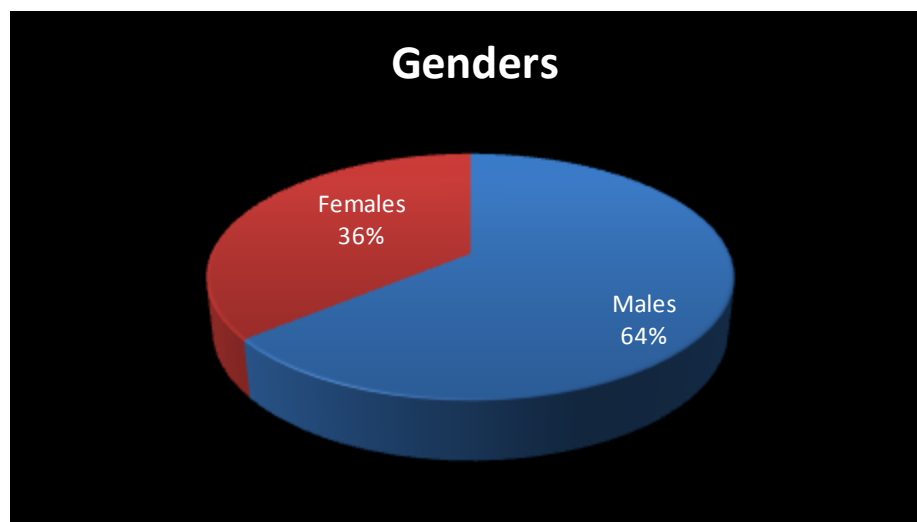
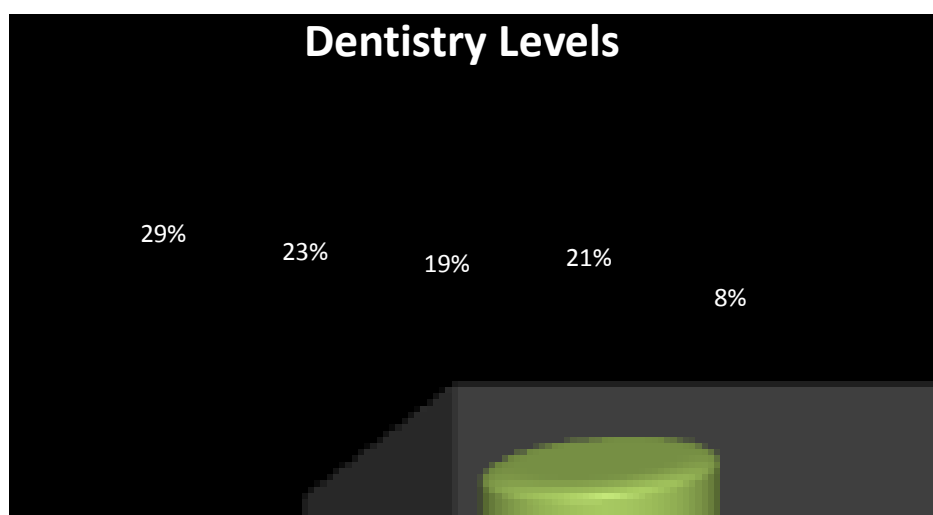


Figure 1: Gender ratio of the study participants



**Figure 2:** Distribution of participants on the basis of dentistry levels

**Table 1:** Reliability of survey

Reliability Statistics	
Cronbach's Alpha	N of Items
.615	9

**Table 2:** Survey responses and their comparisons by males and females

Item	Males	Females	P-value
Received information on forensic dentistry in dental curriculum?	No information: 25% Little information: 54% Enough information: 20%	No information: 19% Little information: 69% Enough information: 13%	<b>0.016</b>
GP should have knowledge about forensic dentistry?	Not important: 7% Somewhat important: 50% Very important: 43%	Not important: 4% Somewhat important: 55% Very important: 41%	<b>0.349</b>
Maintaining patients' records is a part of forensic dentistry?	Not important: 6% Somewhat important: 36% Very important: 58%	Not important: 2% Somewhat important: 50% Very important: 48%	<b>0.009</b>
Important to notice physical abuse marks on patients?	Not important: 12% Somewhat important: 37% Very important: 52%	Not important: 13% Somewhat important: 47% Very important: 40%	<b>0.045</b>
Importance to notice cuts and lacerations in oral cavity?	Not important: 12% Somewhat important: 42% Very important: 46%	Not important: 8% Somewhat important: 63% Very important: 29%	<b>0.000</b>

Patients' records can be used as legal evidence?	No: 2% Maybe: 30% Yes: 68%	No: 1% Maybe: 40% Yes: 69%	<b>0.108</b>
Informed consent is an important part of treatment?	Not important: 4% Somewhat important: 39% Very important: 57%	Not important: 6% Somewhat important: 60% Very important: 34%	<b>0.000</b>
My overall knowledge regarding forensic dentistry?	Poor: 37% Average: 43% Excellent: 20%	Poor: 30% Average: 59% Excellent: 11%	<b>0.004</b>
Interested in learning more about forensic dentistry?	Not interested: 13% Somewhat interested: 35% Highly interested: 52%	Not interested: 13% Somewhat interested: 49% Highly interested: 38%	<b>0.011</b>

**Table 3:** Dentistry levels and their responses to the survey questions

Item	Level 9	Level 10	Level 11	Level 12	Post graduate	P-value
Received information on forensic dentistry in dental curriculum?	No information: 26% Little information: 50% Enough information: 24%	No information: 19% Little information: 61% Enough information: 20%	No information: 13% Little information: 69% Enough information: 20%	No information: 25% Little information: 63% Enough information: 12%	No information: 42% Little information: 54% Enough information: 3%	<b>0.004</b>
GP should have knowledge about forensic dentistry?	Not important: 3% Somewhat important: 46% Very important: 51%	Not important: 6% Somewhat important: 54% Very important: 40%	Not important: 8% Somewhat important: 53% Very important: 39%	Not important: 4% Somewhat important: 53% Very important: 43%	Not important: 15% Somewhat important: 51% Very important: 34%	<b>0.236</b>
Maintaining patients' records is a part of forensic dentistry?	Not important: 5% Somewhat important: 38% Very important: 57%	Not important: 8% Somewhat important: 45% Very important: 47%	Not important: 1% Somewhat important: 50% Very important: 49%	Not important: 3% Somewhat important: 38% Very important: 59%	Not important: 6% Somewhat important: 18% Very important: 75%	<b>0.055</b>
Important to notice physical abuse marks on patients?	Not important: 12% Somewhat important: 41% Very important: 47%	Not important: 15% Somewhat important: 43% Very important: 42%	Not important: 22% Somewhat important: 44% Very important: 34%	Not important: 4% Somewhat important: 38% Very important: 58%	Not important: 10% Somewhat important: 21% Very important: 69%	<b>0.003</b>
Importance to notice cuts and lacerations in oral cavity?	Not important: 15% Somewhat important: 40% Very important: 45%	Not important: 16% Somewhat important: 62% Very important: 22%	Not important: 3% Somewhat important: 58% Very important: 39%	Not important: 8% Somewhat important: 49% Very important: 43%	Not important: 6% Somewhat important: 18% Very important: 76%	<b>0.000</b>
Patients' records can be used as legal evidence?	No: 2% Maybe: 29%	No: 2% Maybe: 36%	No: 0% Maybe: 39%	No: 1% Maybe: 38%	No: 0% Maybe: 16%	<b>0.277</b>

	Yes: 69%	Yes: 62%	Yes: 61%	Yes: 61%	Yes: 84%	
Informed consent is an important part of treatment?	Not important:4%	Not important:11%	Not important:4%	Not important:2%	Not important:0%	<b>0.000</b>
	Somewhat important:42%	Somewhat important:56%	Somewhat important:58%	Somewhat important:40%	Somewhat important:12%	
	Very important:54%	Very important:34%	Very important:38%	Very important:58%	Very important:88%	
My overall knowledge regarding forensic dentistry?	Poor:31%	Poor:43%	Poor:21%	Poor:39%	Poor:45%	<b>0.000</b>
	Average:42%	Average:43%	Average:65%	Average:53%	Average:36%	
	Excellent:27%	Excellent:14%	Excellent:14%	Excellent:8%	Excellent:18%	
Interested in learning more about forensic dentistry?	Not interested:13%	Not interested:17%	Not interested:14%	Not interested:9%	Not interested:6%	<b>0.187</b>
	Somewhat interested:35%	Somewhat interested:39%	Somewhat interested:49%	Somewhat interested:43%	Somewhat interested:30%	
	Highly interested:52%	Highly interested:44%	Highly interested:45%	Highly interested:48%	Highly interested:64%	

## DISCUSSION

The attitude and awareness of forensic dentistry was found to be higher in postgraduate students and male dental students as far as the gender comparison was concerned. However, the overall knowledge was observed to be on the lower side and inadequate as the majority of the respondents were not sure of the correct responses to the questions we asked. Similar findings were reported by Preethi, Einstein, and Sivapathasundharam (2011), which revealed an unsatisfactory knowledge and attitude of dental professionals towards forensic dentistry.

Another investigation conducted in India by Hannah et al (2017) revealed a positive attitude and practice of forensic odontology among the undergraduate dental students. The results demonstrated that 83% of the participants were highly interested in learning more about this topic, whereas 80% exhibited good knowledge. As far as our findings were concerned, a very low percentage of participants had better knowledge as well as those willing to learn more about forensic dentistry.

One of the components of our survey was the knowledge of dentists regarding the record keeping of patients' details. It is important in regard to forensic dentistry that the photographs, casts and other records for the patients are kept by the dentists. One of the researches in Australia focused on this crucial issue and found out inadequate preservation of dental records by the dentists. It was also noted that the dentists believed the record maintenance was not required as far as legal protocols were concerned (Al-azri, Harford and James, 2015). As far as our study findings are concerned, the postgraduate students tend to exhibit a higher level of knowledge regarding the above-mentioned topic.

We need to expand the scope of this research by incorporating more data in the form of increasing sample size. It can be noted that the number of postgraduate students participating in this study was very low as compared to the undergraduate groups. This might affect the overall findings of our study, therefore being a limitation of this study.

## CONCLUSIONS

- Male students exhibited better knowledge and awareness regarding forensic dentistry.
- Postgraduate students showed much better awareness and attitude towards the record maintenance and forensic dentistry in general.
- There is a need for adding forensic dentistry courses in the undergraduate level especially when the students begin their clinical training.

## CONFLICT OF INTEREST

There is no conflict of interest among the authors.

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