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Original Article

Understanding Forensic Dentistry: A Survey of Dental Students and Faculty at a Cypriot Dental School

Fatma Mahmoud[1]*, Mohamed Ali[2], Sara Youssef [1]

[1]Public Health and Community Medicine department, Faculty of Medicine, Assiut University, Assiut, Egypt.
[2]Oral Radiology department, Faculty of Dentistry, Beni-Suef University, Beni-Suef, Egypt.

***E-mail** ✉ fmahmoud@yahoo.com

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ABSTRACT

The present investigation explored how well dental students and teaching staff in Cyprus understand and apply concepts in forensic odontology. A descriptive, cross-sectional online study was carried out in November 2022 using a modified questionnaire distributed to all members of the European University Cyprus (EUC) School of Dentistry, including both students and faculty. The form gathered demographic details and assessed respondents' knowledge, attitudes, and practical behaviors regarding the field. A total of 47 faculty and 304 students completed the survey, corresponding to response rates of 66.2% and 80%, respectively. Data were analyzed statistically through Kendall's tau and chi-square (χ^2) tests, while Cramer's V determined the intensity of any significant association; the significance threshold was fixed at $\alpha = 0.05$.

According to the analysis, 87% of staff and 65% of students were aware of forensic odontology. In addition, 94% of faculty and 85% of students recognized teeth as reliable DNA sources. Likewise, 98% of faculty and 89% of students understood the role of forensic odontology in identifying both deceased persons and offenders. Awareness of age estimation using dental eruption was found in 85% of staff and 81.6% of students. Among professionals, 80% of faculty reported that they routinely maintain dental records, while 78% of students agreed on the importance of record-keeping for care quality. Furthermore, 57% of students and 64% of faculty knew that dentists may act as expert witnesses. A large majority—95.7% of faculty and 85% of students—linked physical injury, scarring, or behavioral changes with possible child abuse.

The overall pattern suggests high awareness across both groups. The findings highlight the need for faculty participation in specialized workshops and for reinforcing documentation standards to ensure forensic utility. These outcomes point toward strategies for curriculum enhancement in Cyprus, supporting professional growth and accurate dental record management for forensic purposes.

Keywords: Forensic odontology, Dental education, Cyprus, European University Cyprus, Faculty awareness, Forensic dentistry

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Introduction

Forensic odontology is a dynamic and expanding branch of forensic science that focuses on the interpretation of dental evidence for legal identification and investigation [1, 2]. Drawing from multiple dental disciplines—such as oral surgery, radiology, restorative dentistry, and orthodontics [3]—this specialty contributes directly to the judicial process [4–6]. In modern forensic teams, forensic odontologists have become integral experts assisting in the recognition of human remains and the analysis of bite marks or trauma [6–8].

Because hard oral structures are among the most durable biological materials, dental evidence frequently serves as a key factor in human identification. The unique configuration of each

person's dentition ensures individuality, even under conditions of severe trauma or decomposition [9, 10]. Factors such as tooth morphology, size differences, restorations, anomalies, wear, coloration, loss, and spatial arrangement—including rotation or crowding—help establish a distinct dental signature [11]. Comparing ante-mortem and post-mortem dental records remains one of the most accurate identification methods in forensic contexts [12]. When such records are lacking, tooth-based assessments can still indicate an individual's age, sex, ancestry, and habitual activities, providing valuable identification clues [13].

Within dental education, emphasis on precise and thorough record-keeping is essential for both clinical quality assurance and legal accountability. These records not only support patient management but also have critical forensic implications [14]. Introducing undergraduate students to forensic odontology cultivates ethical responsibility in documentation and underscores the forensic value of dental information in cases of abuse, trauma, or crime, including child maltreatment [8, 15]. Although formal instruction in forensic odontology has existed for over a century [8, 16], studies show that many students possess limited understanding and little hands-on experience in this field [17]. Providing structured undergraduate training equips future dentists to aid in victim identification and protection of vulnerable populations [18].

Historically, the Republic of Cyprus, an EU member state, lacked a domestic dental education program, and forensic odontology was not offered locally. As a result, related forensic investigations were typically performed by coroners, with consultation from specialists abroad, mainly from Greece. In 2017, the European University Cyprus launched its Dentistry Department within the School of Medicine, which evolved into an independent School of Dentistry in 2022. Today, it remains the only accredited dental school in the country. The Bachelor of Dental Surgery (BDS) program includes a fourth-year elective titled *"Legal and Forensic Dentistry."*

The current work sought to analyze the knowledge, attitudes, and practices associated with forensic odontology among dental students and faculty at EUC. The null hypothesis stated that no statistically significant difference would exist between the two groups in terms of awareness, attitudes, or practices. Ethical clearance for the project was obtained from the Institutional Committee on Bioethics and Ethics at European University Cyprus.

Materials and Methods

The present dataset originates from a cross-sectional questionnaire-based investigation that included 382 undergraduate dental students and 71 faculty members (both full-time and part-time) who were enrolled or employed at the European University Cyprus (EUC) School of Dentistry during the study period.

Upon obtaining informed consent, participants received two separate English-language questionnaires via email—one version for students and another for faculty. Each form contained two distinct sections. The faculty version comprised Part I, including five demographic questions, and Part II, with fifteen items addressing knowledge, attitudes, and practices related to forensic odontology. The student version contained Part I with three demographic items and Part II with the same fifteen study-related questions. The only variation between the two instruments appeared in question 11, where faculty were asked whether they maintained patient dental records, whereas students were queried about their belief in the significance of accurate record-keeping for quality clinical care. All items were multiple-choice, except question 15, which was an open-ended prompt inviting suggestions for increasing awareness of forensic odontology among students, dental practitioners, and other health professionals.

The questionnaires were adapted from Abdul *et al*. [17] and Jayakumar *et al*. [11], ensuring relevance to the Cypriot dental education context. These previously validated instruments were chosen for their comprehensive coverage of core topics in forensic odontology and their prior use among dental student populations. For this study, minor modifications were introduced to accommodate faculty-specific factors, such as questions on record management practices.

The survey was hosted on Google Forms, designed in compliance with GDPR guidelines, and required approximately five minutes to complete. The response link remained open throughout November 2022.

Collected data were summarized through percentage distribution of all categorical variables. The Kendall's tau test was employed to evaluate ordinal associations between measured factors. For faculty, relationships between responses and sex, age, employment status, number of courses taught, and highest qualification were tested. Among students, correlations were examined with sex, age group, and academic year. Additionally, chi-square (χ^2) tests were applied to determine whether two categorical variables were statistically independent. For significant associations, the Cramer's V coefficient quantified the strength of the relationship. The statistical significance threshold was predetermined at $\alpha = 0.05$ ($p \leq 0.05$) and assessed through Monte Carlo simulation [19]. All

computations were conducted using SPSS software, version 26 (IBM Corp., Armonk, NY, USA).

Results and Discussion

A total of 47 faculty members (response rate = 66.2%) and 304 students (response rate = 80%) completed the survey. The demographic characteristics of both groups are detailed in **Table 1**. No significant associations were identified between faculty responses and demographic variables; however, among students, notable correlations were found between certain responses and sex, age group, and academic level, suggesting variations in awareness across subgroups.

Table 1. Demographic information of participating faculty (n = 47) and students (n = 304).

Characteristic	Faculty [n (%)]	Students [n (%)]
Sex	25 (53.2%) Men, 22 (46.8%) Women	129 (42.4%) Men, 172 (56.6%) Women, 3 (1.0%) Chose not to specify
Age Bracket	10 (21.3%) 26–35 years old, 15 (31.9%) 36–45 years old, 12 (25.5%) 46–55 years old, 10 (21.3%) Over 55 years old	4 (1.3%) Under 18 years, 163 (53.6%) 18–21 years old, 100 (32.9%) 22–25 years old, 24 (7.9%) 26–28 years old, 13 (4.3%) Over 28 years old
Work Status / Study Level	12 (25.5%) Full-time employment, 35 (74.5%) Part-time employment	59 (19.4%) First Year, 61 (20.1%) Second Year, 86 (28.3%) Third Year, 51 (16.8%) Fourth Year, 45 (14.8%) Fifth Year, 2 (0.7%) Hold a prior Dental Degree and enrolled in Third to Fifth Year
Courses Taught	19 (40.4%) Teach one course, 17 (36.2%) Teach two courses, 5 (10.6%) Teach three courses, 6 (12.8%) Teach four courses	—
Academic Credentials	19 (40.4%) Doctoral degree, 22 (46.8%) Master's degree, 6 (12.8%) Bachelor's degree	—

The summarized responses of both faculty and students to the survey items are reported in **Table 2**.

Table 2. Distribution of faculty (n = 47) and student (n = 304) responses to survey questions.

Survey Question	Response Options	Faculty [n (%)]	Students [n (%)]
Are you aware that forensic odontology is a dental specialty?	Yes	41 (87.2%)	197 (64.8%)
	No	6 (12.8%)	107 (35.2%)
Can teeth be a viable DNA source?	Yes	44 (93.6%)	257 (84.5%)
	No	0 (0%)	7 (2.3%)
	Not sure	3 (6.4%)	40 (13.2%)
How can dental age be determined in adults and children? *	Eruption and calcification	40 (85.1%)	248 (81.6%)
	Microscopic techniques	24 (51.1%)	148 (48.7%)
	Biochemical assessment	15 (31.9%)	94 (30.9%)
	Uncertain	6 (12.8%)	45 (14.8%)
Methods to estimate the deceased's age and gender during mass disasters? *	Reconstruction of fragmented remains	18 (38.3%)	111 (36.5%)
	Dental record comparison	42 (89.4%)	221 (72.7%)
	Fingerprint analysis	17 (36.2%)	98 (32.2%)
	Not sure	5 (10.6%)	56 (18.4%)
Is forensic odontology effective in identifying offenders and deceased individuals?	Yes	46 (97.9%)	270 (88.8%)
	No	0 (0%)	2 (0.7%)
	Not sure	1 (2.1%)	32 (10.5%)
The study of lip impressions in forensics is known as:	Lipology	1 (2.1%)	39 (12.8%)

	Cheiloscopy	18 (38.3%)	117 (38.5%)
	Dermatoglyphics	4 (8.5%)	18 (5.9%)
	Not sure	24 (51.1%)	130 (42.8%)
Are you familiar with the significance of bite mark analysis?	Yes	40 (85.1%)	193 (63.5%)
	No	7 (14.9%)	111 (36.5%)
Main sources of information about forensic dentistry? *	Books	19 (40.4%)	59 (19.4%)
	Online media	18 (38.3%)	191 (62.8%)
	Workshops / lectures	29 (61.7%)	101 (33.2%)
	No source	7 (14.9%)	97 (31.9%)
Do you believe your understanding of forensic odontology is adequate?	Yes	4 (8.5%)	13 (4.3%)
	No	35 (74.5%)	263 (86.5%)
	Not sure	8 (17%)	28 (9.2%)
Would you attend training sessions or seminars in forensic odontology?	Yes	31 (66%)	259 (85.2%)
	No	16 (34%)	45 (14.8%)
Do you maintain patient dental records in your practice?[1]	Yes	37 (78.7%)	—
	No	4 (8.5%)	—
	Not applicable	6 (12.8%)	—
Is accurate record-keeping essential to quality patient care?[2]	Yes	—	237 (78%)
	No	—	9 (3%)
	Maybe	—	58 (19.1%)
How would you detect signs of physical, sexual, or emotional abuse in a child?	Physical trauma	0 (0%)	15 (4.9%)
	Behavioral indicators	1 (2.1%)	10 (3.3%)
	Clothing clues	0 (0%)	3 (1%)
	Presence of scars	1 (2.1%)	1 (0.3%)
	All of the above	45 (95.7%)	257 (84.5%)
	Uncertain	0 (0%)	18 (5.9%)
What would be your response if you suspected child abuse?	Notify authorities	38 (80.9%)	258 (84.9%)
	Inform guardians	9 (19.1%)	36 (11.8%)
	Take no action	0 (0%)	10 (3.3%)
Are you aware that dentists can act as expert witnesses in court?	Yes	30 (63.8%)	173 (56.9%)
	No	10 (21.3%)	85 (28%)
	Not applicable	7 (14.9%)	46 (15.1%)

Multiple answers were permitted. [1] Question asked only to faculty; [2] Question asked only to students.

A large portion of respondents recognized the application of forensic odontology in identifying deceased individuals and criminal suspects. Nevertheless, 35.2% of students were unaware that forensic odontology constitutes a dental discipline. A smaller percentage—6.4% of faculty and 13.2% of students—did not know that teeth can contain retrievable DNA.

Most respondents, including 85.1% of faculty and 81.6% of students, acknowledged that dental age estimation is achievable through eruption and calcification patterns, though several additionally cited

biochemical or histological methods. Both faculty (78.7%) and students (78%) emphasized that dental records play an essential role in determining age and sex in mass disaster victim identification.

Awareness of cheiloscopy, the study of lip prints, was limited—61.7% of faculty and 61.5% of students failed to correctly identify the term. However, recognition of bite mark analysis was considerably higher, with 85.1% of faculty and 63.5% of students understanding its relevance within forensic odontology.

A considerable share of the teaching staff (74.5%) and students (86.5%) reported having no prior familiarity with the discipline of forensic odontology. Nevertheless, only 66% of the faculty expressed interest in joining educational sessions such as workshops or seminars related to the topic.

Roughly 79% of instructors confirmed that they regularly keep dental records in their clinical practice, while 78% of students regarded comprehensive documentation as an essential factor for delivering high-quality dental care. Furthermore, a large majority of faculty (95.7%) indicated that physical injuries, visible scars, unusual clothing, and behavioral shifts could signal child abuse, an opinion shared by 84.5% of students.

When asked how they would respond to cases of suspected child abuse, 80.9% of the faculty reported they would notify the police, whereas 19.1% would inform the parents. The responses among students followed a comparable trend. Additionally, 63.8% of educators and 56.9% of students acknowledged that dentists can provide expert testimony in court based on forensic dental findings.

Associations between faculty and student answers from the second section of the questionnaire and their demographic variables are shown in **Tables 3 and 4**.

Table 3. Association of faculty members' responses with demographic features*.

Survey Variable	Sex	Age Range	Employment Status	Courses Taught	Highest Degree
Knowledge that forensic odontology constitutes a field of dentistry	τ = 0.103, p = 0.484	τ = 0.043, p = 0.770	τ = 0.078, p = 0.598	τ = 0.021, p = 0.879	τ = −0.111, p = 0.431
Awareness that teeth can provide DNA evidence	τ = 0.071, p = 0.632	τ = 0.136, p = 0.357	τ = −0.153, p = 0.300	τ = 0.181, p = 0.187	τ = 0.284, p = 0.045
Understanding that forensic dentistry aids in criminal and victim identification	τ = 0.138, p = 0.348	τ = 0.077, p = 0.603	τ = −0.086, p = 0.558	τ = −0.151, p = 0.272	τ = 0.074, p = 0.599
Recognition of the scientific term for lip print analysis	τ = 0.032, p = 0.822	τ = −0.020, p = 0.885	τ = 0.040, p = 0.776	τ = 0.135, p = 0.306	τ = −0.075, p = 0.582
Familiarity with the forensic relevance of bite mark impressions	τ = −0.087, p = 0.557	τ = −0.211, p = 0.135	τ = 0.029, p = 0.843	τ = 0.164, p = 0.233	τ = −0.009, p = 0.948
Self-evaluation of sufficiency in forensic odontology knowledge	τ = 0.239, p = 0.096	τ = −0.007, p = 0.959	τ = −0.101, p = 0.482	τ = 0.203, p = 0.129	τ = −0.190, p = 0.168
Intention to participate in educational programs (seminars/workshops) related to forensic odontology	τ = 0.134, p = 0.363	τ = 0.264, p = 0.074	τ = 0.197, p = 0.181	τ = 0.113, p = 0.410	τ = 0.031, p = 0.824
Consistency in maintaining dental documentation within clinical practice	τ = 0.187, p = 0.194	τ = −0.113, p = 0.434	τ = 0.032, p = 0.824	τ = −0.083, p = 0.537	τ = 0.317, p = 0.022
Means of identifying child abuse indicators (physical, psychological, or neglect)	τ = 0.197, p = 0.180	τ = 0.109, p = 0.457	τ = −0.123, p = 0.403	τ = 0.054, p = 0.695	τ = −0.065, p = 0.644
Procedure followed upon recognizing signs of child abuse	τ = 0.131, p = 0.373	τ = −0.011, p = 0.939	τ = 0.087, p = 0.555	τ = 0.075, p = 0.585	τ = 0.019, p = 0.894
Awareness of the ability to act as an expert witness in legal proceedings	τ = 0.005, p = 0.970	τ = −0.052, p = 0.715	τ = −0.251, p = 0.076	τ = −0.024, p = 0.854	τ = 0.061, p = 0.652

Only single-choice questions considered. Statistically significant p-values are in bold.

Table 4. Association of students' responses with demographic features*.

Survey Statement	Biological Sex	Age Range	Academic Year
Awareness that forensic odontology constitutes a field within dentistry	$\tau = -0.020$ p = 0.723	$\tau = -0.144$ p = 0.009	$\tau = -0.264$ p < 0.001
Recognition that teeth can function as a DNA source	$\tau = 0.013$ p = 0.821	$\tau = -0.135$ p = 0.045	$\tau = -0.083$ p = 0.104
Understanding that forensic dental practice assists in identifying offenders and deceased individuals	$\tau = 0.126$ p = 0.027	$\tau = -0.135$ p = 0.013	$\tau = -0.102$ p = 0.048
Familiarity with the forensic term referring to lip print examination	$\tau = 0.039$ p = 0.467	$\tau = -0.030$ p = 0.555	$\tau = -0.158$ p = 0.001
Knowledge of the relevance of bite mark impressions in forensic investigations	$\tau = -0.030$ p = 0.596	$\tau = -0.009$ p = 0.870	$\tau = -0.047$ p = 0.366
Self-assessment of adequacy in forensic odontology knowledge	$\tau = 0.105$ p = 0.061	$\tau = -0.064$ p = 0.238	$\tau = -0.041$ p = 0.414
Willingness to attend training programs such as workshops or seminars on forensic odontology	$\tau = 0.207$ p < 0.001	$\tau = -0.016$ p = 0.765	$\tau = -0.058$ p = 0.257
Belief that maintaining accurate dental records contributes to quality care	$\tau = 0.077$ p = 0.173	$\tau = -0.129$ p = 0.017	$\tau = -0.076$ p = 0.136
Awareness of how to detect various forms of child abuse (physical, emotional, sexual, or neglect)	$\tau = 0.123$ p = 0.028	$\tau = -0.099$ p = 0.062	$\tau = -0.071$ p = 0.155
Actions respondents would take upon detecting child abuse	$\tau = 0.077$ p = 0.173	$\tau = 0.065$ p = 0.230	$\tau = -0.028$ p = 0.576
Awareness of eligibility to testify as an expert witness in legal proceedings involving dental evidence	$\tau = 0.024$ p = 0.644	$\tau = -0.128$ p = 0.014	$\tau = -0.038$ p = 0.446

Only single-choice questions considered. Statistically significant p-values are in bold.

A weak but statistically significant positive relationship was observed between educational qualifications of faculty and their replies to the items "Can teeth be a DNA source?" and "Do you keep dental records in your clinic?" **(Table 3)**.

Among students, mild positive yet significant correlations were detected between gender and the questions "Is forensic dentistry beneficial in identifying offenders and deceased persons?" and "Would you be interested in attending forensic odontology workshops or seminars?". Conversely, a weak negative link was observed between gender and recognition of forensic odontology as a branch of dentistry. Likewise, age category showed weak negative correlations with awareness of forensic odontology as a dental branch and with the question "Can teeth act as a DNA source?". The year of study also demonstrated weak negative correlations with awareness of forensic odontology as a dental field and its perceived usefulness in identifying deceased or criminal subjects **(Table 4)**.

Table 5 presents the χ^2 test outcomes evaluating the connections between faculty responses and demographic characteristics such as sex, age, employment status, number of courses handled, and highest qualification obtained. None of these relationships were statistically significant.

Table 5. χ^2 analysis of faculty responses in relation to demographic features*.

Survey Item	Gender	Age Category	Employment Status	Courses Taught	Highest Qualification
Awareness that forensic odontology constitutes a discipline within dentistry	0.670	1.000	0.678	0.812	0.717
Recognition that teeth can serve as a viable DNA source	1.000	0.589	0.560	0.382	0.095
Understanding that forensic dental science aids in identifying deceased individuals or offenders	1.000	1.000	1.000	1.000	1.000
Familiarity with the term describing lip print analysis in forensic contexts	0.855	0.731	0.206	0.248	0.171

Knowledge regarding the forensic importance of bite mark impressions	0.690	0.155	0.842	0.539	1.000
Perception of one's own adequacy in knowledge of forensic odontology	0.273	0.504	0.739	0.285	0.143
Interest in attending academic workshops or seminars related to forensic odontology	0.538	0.131	0.289	0.583	1.000
Practice of maintaining dental records within clinical settings	1.000	1.000	0.559	0.055	0.060
Capability to recognize indicators of child abuse (physical, sexual, psychological, or neglect)	1.000	1.000	1.000	0.418	0.788
Response or action taken upon identifying child abuse	0.470	1.000	0.674	0.227	0.592
Awareness of eligibility to act as an expert witness providing forensic dental testimony in court	1.000	1.000	0.693	1.000	0.391

Only single-choice questions considered.

The students' response associations with sex, age, and academic level are illustrated in **Table 6**.

Table 6. χ^2 analysis of student responses in relation to demographic features*.

Question	Biological Sex	Age Group	Year of Study
Do you know that forensic odontology is a specialized field within dentistry?	0.807	0.008	<0.001
Can human teeth be used as a DNA source?	0.198	0.435	0.933
Is forensic dentistry valuable for identifying offenders and deceased individuals?	0.033	0.163	0.103
What is the term for analyzing lip impressions in forensic dentistry?	0.441	0.857	0.012
Are you familiar with the importance of bite mark patterns in investigations?	0.630	0.902	0.117
Do you believe your current understanding of forensic odontology is sufficient?	0.080	0.606	0.756
Would you be interested in joining seminars or workshops about forensic odontology?	<0.001	0.122	<0.001
Do you consider detailed dental record keeping an essential part of high-quality patient care?	0.431	0.118	0.212
How would you recognize a child experiencing physical, emotional, sexual, or neglect-related abuse?	0.067	0.240	0.065
What measures would you take upon detecting signs of child abuse?	0.453	0.526	0.148
Do you know that dentists can serve as expert witnesses in court to present forensic evidence?	0.706	0.506	0.981

Only single-choice questions considered. Statistically significant p-values in bold.

Results from the χ^2 tests revealed that biological sex was significantly linked to the items "Is forensic dentistry useful for identifying criminals and deceased individuals?" (p = 0.033; Cramer's V = 0.101) and "Are you interested in attending seminars and workshops on forensic odontology?" (p < 0.001; Cramer's V = 0.224). In both questions, female participants provided significantly more affirmative responses **(Table 7)**.

Table 7. Distribution of student responses to *"Is forensic dentistry useful in identifying offenders and deceased persons?"* and *"Are you interested in participating in related workshops and seminars?"* according to gender.

	Is Forensic Dentistry Helpful in Identifying Criminals and Deceased Individuals?				**Are You Interested in Attending Workshops and Seminars on Forensic Dentistry?**		
Biological Sex	Yes	No	I Do Not Know	Total	Yes	No	Total
Female	159 (92.4%)	1 (0.6%)	12 (7.0%)	172 (100%)	158 (91.9%)	14 (8.1%)	172 (100%)
Male	108 (83.7%)	1 (0.8%)	20 (15.5%)	129 (100%)	98 (76.0%)	31 (24.0%)	129 (100%)

Total	267 (88.7%)	2 (0.7%)	32 (10.6%)	301 (100%)	256 (85.0%)	45 (15.0%)	301 (100%)

Moreover, a statistically meaningful correlation emerged between students' age range and the question "Are you aware of forensic odontology as a field of dentistry?" (p = 0.008; Cramer's V = 0.213). Students aged 22–28 years demonstrated greater familiarity with forensic odontology compared with those 18–21 years or older than 28 years **(Table 8)**.

Table 8. Distribution of responses to *"Are you aware of forensic odontology as a field of dentistry?"* by age group.

Age Category	Yes	No	Total
18–21	92 (56.3%)	71 (43.6%)	163 (100%)
22–25	73 (73.0%)	27 (27.0%)	100 (100%)
26–28	20 (83.3%)	4 (16.7%)	24 (100%)
>28	8 (61.5%)	5 (38.5%)	13 (100%)
Total	193 (64.3%)	107 (35.7%)	300 (100%)

Statistically meaningful correlations were noted between the academic level of students and their responses to three key questions: "Have you heard of forensic odontology as a field within dentistry?" ($p < 0.001$; Cramer's V 0.298), "What is the branch of forensic dentistry dealing with lip prints called?" ($p = 0.012$; Cramer's V 0.176), and "Would you like to attend workshops or seminars related to forensic odontology?" ($p < 0.001$; Cramer's V 0.283). Awareness of forensic odontology as a dental specialty rose steadily with each advancing study year **(Table 9)**.

Table 9. Responses to "Have you heard of forensic odontology as a field within dentistry?" categorized by year of study.

Academic Year	Yes	No	Total
1st Year	25 (42.4%)	34 (57.6%)	59 (100%)
2nd Year	34 (55.7%)	27 (44.3%)	61 (100%)
3rd Year	59 (68.6%)	27 (31.4%)	86 (100%)
4th Year	40 (78.4%)	11 (21.6%)	51 (100%)
5th Year	37 (82.2%)	8 (17.8%)	45 (100%)
Total	195 (64.6%)	107 (35.4%)	304 (100%)

According to the χ^2 test results **(Table 10)**, the majority of students in their first, third, and fourth academic years were unfamiliar with the term used for the study of lip prints in forensic dentistry. In contrast, a higher proportion of second- and fifth-year students correctly identified the discipline as *cheiloscopy*.

Table 10. Responses to "What is the branch of forensic dentistry dealing with lip prints called?" categorized by year of study.

Academic Year	Dermatoglyphics	Cheiloscopy	Lipology	I Do Not Know	Total
1st Year	2 (3.4%)	14 (23.7%)	13 (22.0%)	30 (50.8%)	59 (100%)
2nd Year	4 (6.6%)	27 (44.3%)	9 (14.8%)	21 (34.4%)	61 (100%)
3rd Year	4 (4.7%)	32 (37.2%)	8 (9.3%)	42 (48.8%)	86 (100%)
4th Year	3 (5.9%)	17 (33.3%)	4 (7.8%)	27 (52.9%)	51 (100%)
5th Year	5 (11.1%)	25 (55.6%)	5 (11.1%)	10 (22.2%)	45 (100%)
Total	18 (6.0%)	115 (38.1%)	130 (43.0%)	39 (12.9%)	304 (100%)

A number of first- and fourth-year participants expressed interest in attending seminars and workshops in forensic odontology. However, nearly all respondents in the second, third, and fifth years demonstrated enthusiasm toward such educational opportunities **(Table 11)**.

Table 11. Responses to "Would you like to attend workshops or seminars related to forensic odontology?" categorized by year of study.

Academic Year	Yes	No	Total
1st Year	44 (74.6%)	15 (25.4%)	59 (100%)
2nd Year	53 (86.9%)	8 (13.1%)	61 (100%)
3rd Year	83 (96.5%)	3 (3.5%)	86 (100%)
4th Year	36 (70.6%)	15 (29.4%)	51 (100%)
5th Year	41 (91.1%)	4 (8.9%)	45 (100%)
Total	257 (85.1%)	45 (14.9%)	304 (100%)

Every year, large-scale natural events, accidents, and criminal acts result in multiple fatalities, often leaving victims unidentified [20]. Dental professionals are integral to forensic investigations that focus on identification of such individuals. Forensic odontology—a distinct branch within dental science—plays a crucial role in this process due to the unique structural characteristics of oral hard tissues [1, 21]. For dentists to participate effectively in identification cases, familiarity with this field must be promoted within dental education and practice.

This research, carried out in Cyprus, evaluated knowledge, perception, and practical engagement regarding forensic odontology among students and faculty at the School of Dentistry, European University Cyprus. The school, established in 2017 and accredited by the European Union, is the only institution in Cyprus offering a Bachelor of Dental Surgery degree and includes an elective course entitled "Legal and Forensic Dentistry" during the fourth year of study.

In the present study, 87% of faculty members and 65% of students reported awareness of forensic odontology as a recognized domain of dentistry. These results indicate encouraging levels of awareness within the Cypriot dental community, suggesting growing recognition of its contribution to human identification. Comparable studies conducted in Saudi Arabia found awareness levels between 62.5% and 78.4% [6, 22], while Indian data showed lower figures [23]. Differences among these studies may arise from variations in educational exposure, regional emphasis on forensic applications, and healthcare system integration. Moreover, the student awareness levels observed in this study are consistent with those from earlier research [17, 23, 24].

In addition, 85% of students correctly identified teeth as a viable source of DNA, surpassing findings reported by Abdul *et al*., who noted awareness levels ranging from 40% to 75% among different educational groups [17]. This outcome highlights the effectiveness of the university curriculum in transmitting essential forensic knowledge.

Faculty awareness reached 94%, aligning closely with Sahni *et al*., who found 95% awareness among 200 dental faculty members [8]. This high percentage is particularly encouraging, as instructors shape students' understanding of applied dental science. A weak yet statistically significant positive association was also identified between academic qualifications and knowledge levels among faculty, particularly in relation to maintaining dental records in private practice. This association suggests that advanced academic training contributes to more comprehensive understanding, underscoring the relevance of continued professional learning.

Furthermore, 97.9% of faculty and 88.8% of students acknowledged that forensic odontology aids in identifying both deceased persons and offenders. These values closely correspond to the 95% awareness reported among Saudi dental students [17].

When examining familiarity with dental age estimation techniques for both children and adults, the proportions of participants lacking this knowledge (15% among students and 13% among faculty) were lower than the 25% awareness rate noted by Abdul *et al*. [17]. This difference underscores the necessity of strengthening educational coverage of age estimation procedures within the curriculum. While DNA analysis, fingerprinting, anthropometric profiling, and dental records remain primary identification tools, adjunct approaches—such as cheiloscopy, palatoscopy, and odontometric assessments—can provide reliable results when systematically applied. Concerning cheiloscopy, which investigates the unique topography of lip prints formed by ridges and grooves on the lip surface, our data (38.3% of faculty and 38.5% of

students) were in close agreement with previous findings among both professionals and students in dentistry [17]. However, 51% of faculty members and 42.8% of students indicated that they were unfamiliar with the term used for lip print analysis. This contrast points to an evident gap in faculty training concerning certain specialized forensic odontology methods.

Awareness of the diagnostic value of bite mark patterns varied, reaching 85.1% in faculty and 63.5% in students. Prior research from India and Pakistan reported unawareness levels of 32% and 48%, respectively [23, 25], which differ considerably from our findings. Conversely, a Saudi Arabian investigation revealed recognition rates of 87.5% among postgraduate students, 50% among graduates, and 27.3% among undergraduates regarding the relevance of forensic odontology [17].

Information sources also diverged between the two groups. Students primarily accessed online content, while faculty members relied more heavily on academic texts and classroom instruction. Both cohorts rated their knowledge as insufficient, mirroring sentiments from previous literature [17, 26]. This shared self-assessment reflects an understanding of the field's complexity and a collective interest in further professional development. Interest in attending specialized workshops and seminars on forensic odontology was evident—66% of faculty expressed willingness to participate (lower than rates reported elsewhere), whereas 85.2% of students showed enthusiasm, aligning with figures from earlier research [8, 12, 17, 25, 26].

Maintaining dental records, vital for both clinical and legal purposes, also plays a key role in forensic investigations [27]. In our sample, 80% of faculty reported keeping patient records, consistent with the 90% rate recorded by Savić Pavičin *et al*. in Croatia [15]. By comparison, Preethi *et al*. found that only 12% of dentists kept complete documentation, 21% had none, and 93% failed to retain records beyond seven years [12]. Astekar *et al*. similarly reported 38% compliance with record-keeping and 62% neglect [28]. Another study by Waleed *et al*. demonstrated that dental students maintained records more diligently than private practitioners [29]. More recently, research conducted in India showed that 97% of postgraduate students and clinicians maintained dental records [30]. In the present study, 78% of students agreed that accurate record keeping forms an essential element of quality patient care, a belief likely reinforced by the School's strong institutional emphasis on proper documentation.

Child abuse, a rapidly escalating global concern, demands early and accurate detection [8]. Our findings revealed encouraging levels of awareness—96% of faculty and 85% of students recognized that signs such as injuries, scarring, clothing condition, and behavioral shifts can indicate abuse. These outcomes markedly exceed Abdul's data, where only 25% identified such indicators and 12.5% were unaware of detection methods [17]. In contrast, our corresponding rate of unawareness was only 5.9%.

When evaluating attitudes toward reporting child abuse, the responses were similarly positive. In our study, 81% of faculty and 85% of students stated they would report suspected cases to the police. This contrasts with earlier research documenting only 25% reporting willingness. A small fraction—3% of students—said they would take no action, which still reflects improvement compared with the 12.5% figure observed in Abdul's Riyadh-based survey [17]. Another Indian study found that 41% of dental educators preferred informing the child's parents directly [8], whereas our data show lower proportions—20% of faculty and 12% of students favored this approach.

It should be noted that our institution lacks an on-site social worker who could serve as an intermediary for handling suspected abuse cases, which might represent an optimal first response before engaging law enforcement or guardians. Given that domestic violence frequently occurs within the family environment, direct parental notification without prior professional assessment could potentially intensify, rather than resolve, the situation.

Our research also found that 64% of faculty members and 57% of students recognized the role of dental professionals within the legal framework, particularly in delivering expert testimony and presenting dental forensic evidence in court. In contrast, Abdul *et al*. reported a higher awareness rate of 85% [17].

Discrepancies between our findings and those of previous studies may result from several influencing elements. Regional and cultural priorities can shape the degree to which forensic odontology is emphasized within professional and academic contexts. Likewise, differences in dental curricula and teaching standards can affect students' and practitioners' exposure to and understanding of the subject. Since our investigation was confined to a single dental institution in Cyprus, outcomes may reflect the distinctive educational environment of that school. Additionally, variations in timing across studies may contribute, as awareness levels can evolve through advancements in teaching, technology, or media attention. Participant

demographics—such as age, qualifications, and clinical experience—can also influence results. Furthermore, regional legal policies and professional codes surrounding forensic odontology may affect knowledge levels. Finally, sensitivity toward social issues like child abuse may differ between cultures, influencing both recognition of warning signs and reporting behaviors.

Although forensic odontology is a well-established discipline worldwide, it remains relatively underdeveloped in Cyprus. To date, its use within the country has primarily been facilitated through coroners, who occasionally consult governmental dental practitioners. A notable event underscoring its importance was the Helios Airways Flight 522 disaster in 2005, which claimed 121 lives. In that case, dental professionals played a pivotal role in identifying victims, relying on dental records collected from Cypriot and Greek dentists. Specialists from the Department of Dentistry, School of Health Sciences, National and Kapodistrian University of Athens, were instrumental in conducting the identifications.

This investigation fills a significant research gap by examining forensic odontology awareness and education in Cyprus, where formal instruction in this field has historically been minimal. By assessing knowledge, perception, and practice among faculty and students at the European University Cyprus School of Dentistry, the study establishes a foundation for understanding the current educational landscape. The opening of the dental school and the introduction of the elective course "Legal and Forensic Dentistry" mark critical steps toward strengthening forensic education in the country. It could be argued that this elective should become a compulsory subject to ensure every dental student receives exposure to this essential discipline.

Integrating forensic odontology into dental curricula is increasingly vital, as it equips future practitioners to contribute effectively in cases involving disaster victim identification, missing persons, child abuse, and age estimation [31, 32]. However, the field is still absent from the basic dental education requirements described in Directive 2005/36/EC of the European Parliament and Council (7 September 2005) on the recognition of professional qualifications—Section 4 [33]. Therefore, inclusion of forensic odontology in the core dental training framework should be considered to align with modern professional expectations and improve practitioner competencies.

Beyond providing baseline data, our findings highlight areas for targeted educational intervention, such as organizing specialized workshops and continuing education programs for faculty. The results also reaffirm the critical role dentists can play in legal processes, particularly in recognizing and reporting child abuse. These insights may guide curriculum enhancement and professional development within Cyprus. Policymakers could collaborate with the Cyprus Dental Council and national dental associations to introduce dedicated forensic odontology modules or courses, ensuring consistent and comprehensive training for practitioners. Awareness campaigns could further inform dentists about the discipline's legal and societal significance. Additionally, the study emphasizes the importance of accurate and standardized dental record maintenance, encouraging authorities to establish national record-keeping protocols that support both clinical quality and forensic accuracy.

Several limitations should be noted. The study was restricted to a single dental school in Cyprus, which may constrain the generalizability of its results to the broader professional population. The moderate sample size may not fully capture the range of opinions and experiences across the dental community. Reliance on self-reported data introduces the possibility of recall or social desirability bias, potentially affecting reported awareness levels. Moreover, the cross-sectional nature of the study offers only a momentary perspective, without addressing temporal changes in awareness. Response bias may also exist if participants with stronger interest in the topic were more likely to respond. Additionally, cultural influences on perceptions and attitudes toward forensic odontology were not examined in depth, representing a direction for future inquiry. Addressing these constraints in subsequent research could enhance the reliability and applicability of future studies within the Cypriot context.

Conclusion

The survey demonstrated an overall strong level of awareness of forensic odontology among respondents. Although faculty members exhibited solid conceptual understanding, their participation in continuing education activities remains limited. Greater emphasis should be placed on promoting systematic record-keeping for potential forensic use.

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