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Dental Ethics Education in Lebanon: A Cross-Sectional Assessment of Knowledge Among Fresh Graduate Dentists

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Abstract

Introduction: Dental ethics education helps dentists to deal with ethical concerns regarding autonomy, informed consent, confidentiality, and justice in daily practice. Although, dental ethics education and ethical knowledge have been studied among dental students and graduates in several countries, no published data describe ethical knowledge among fresh graduate dentists in Lebanon. This study assessed the level of dental ethics knowledge and its predictors among recently graduated Lebanese dentists.

Methods: A cross-sectional survey was conducted among dentists who graduated in 2024-2025 from the three Lebanese dental schools (Lebanese University, Saint-Joseph University of Beirut, and Beirut Arab University). A 14-item multiple-choice questionnaire was developed based on the ethics and professional-responsibility content of the Integrated National Board Dental Examination (INBDE), with the questions adapted to clinical situations relevant to Lebanon, assessed knowledge of the five core ethical principles (autonomy, beneficence, non-maleficence, justice, veracity) and key concepts (informed consent, confidentiality, deontology), as well as their clinical application. The questionnaire was distributed electronically using convenience sampling. Descriptive statistics, Mann-Whitney U and Kruskal-Wallis tests, and Fisher's exact test were used for analysis.

Results: 87 dentists completed the survey (60.9% female). The median score was 11/14 (interquartile range (IQR) 5); 47.1% scored in the good range, while 28.7% scored below average or poor. Participants performed best on the questions assessing confidentiality and informed consent, with more than 88% answering these items correctly. Lower scores were observed for the deontology question and for several clinical scenarios requiring application of ethical principles, with 50.6% to 57.5% correct. Female dentists scored significantly higher than males (median 12 vs 10; p=0.03). No significant differences were found by university (p=0.145-0.555), year of graduation (p=0.725), or extracurricular ethics training (p=0.379).

Conclusions: Fresh graduates from Lebanese dental schools reveal moderate overall ethics knowledge but lower performance on several scenario-based items than on definitional items. This pattern should be interpreted cautiously. Gender was associated with total score in this sample. This finding is preliminary. Previous studies suggest that case-based and problem-based ethics teaching, together with structured postgraduate training, may be valuable; this study did not evaluate teaching methods.

Categories: Other, Dentistry
Keywords: cross-sectional study, dental curriculum, ethical knowledge, ethics education, fresh graduate dentists, lebanon, s: dental ethics

Introduction

Ethics, derived from the Greek "ethos," is the branch of philosophy concerned with the moral principles guiding individual and group conduct [1], and it underlies medical and dental practice by shaping patient care and intra-team communication [2]. Medical ethics education has been part of medical curricula since the Hippocratic Oath and has evolved into modern professional guidelines [3,4], whereas formal dental ethics curricula emerged later, from the 1980s onward, supported by networks such as the Professional Ethics in Dentistry Network and the American Dental Education Association (ADEA) [5,6]. Recent developments in cosmetic dentistry, artificial intelligence, and dental research have also created new ethical challenges involving patient autonomy, informed consent, professional relationships, commercialization, and advertising [7-9]. These developments further highlight the importance of ethics education in dental training [10].

Studies from different countries have reported gaps in the ethical knowledge of dental students and graduates, particularly when they are asked to deal with case-based ethical dilemmas. Such deficiencies have been reported among both undergraduate and postgraduate dental students [11]. Similar findings have been reported in Middle Eastern dental schools, including those in Egypt, Yemen, and Saudi Arabia, where many

students were unfamiliar with the five core ethical principles [12-14]. Comparable gaps have been documented in European dental schools, where theoretical foundations remained weak despite clinical exposure [15,16]. Reviews of dental ethics curricula have attributed these gaps to reliance on didactic lectures rather than reflective, case-based teaching, insufficient integration across the curriculum, and heavy reliance on professional regulation rather than patient-centered pedagogy [17-20]. Faculty role-modeling and the informal "hidden curriculum" have also been identified as major influences on students' ethical development, with unprofessional behavior among instructors or peers tending to become normalized over time [21]. Several studies have therefore suggested greater use of problem-based learning, small-group and case-based teaching, earlier introduction of ethics, and continued postgraduate training [22,23]. Reported predictors of ethical performance vary across settings and have included gender, family income, religiosity, and career plans [24,25].

Despite this body of literature from the Middle East and elsewhere, to the best of our knowledge, no published data describe dental ethics knowledge among dentists trained in Lebanon. This study addresses this gap among fresh graduate dentists from the three Lebanese dental schools.

The objectives of this study were to: (a) describe knowledge of the five core ethical principles, and of informed consent, confidentiality and deontology, among recent graduates; (b) describe performance on hypothetical clinical scenarios, reported separately from the principle and concept items; and (c) identify demographic and educational characteristics associated with total score.

Materials And Methods

Study design and setting

This was a cross-sectional, questionnaire-based study of the level of dental ethics knowledge among fresh graduate dentists trained in Lebanon.

Participants and Sampling

Eligible participants were dentists who graduated in 2024 or 2025 from one of three Lebanese dental schools: Lebanese University, Saint-Joseph University of Beirut, or Beirut Arab University. Dentists who graduated from universities outside Lebanon, or before 2024, were excluded. The three schools confirmed that they graduate about 200 dentists per year (Beirut Arab University 80, Saint-Joseph University of Beirut 60, Lebanese University 60), giving an estimated population of about 400 for the two cohorts. No registry of individual graduates was available.

Sample size was calculated with Cochran's formula [26] ($z = 1.96$, $p = 0.5$, margin of error 0.05), which gives 384 for a large population. Applying the finite-population correction for 400 graduates gave a target sample of 196.

The questionnaire was distributed electronically using convenience sampling. The Lebanese Dental Association (Beirut and Tripoli associations) sent the link to recent graduates, and it was also shared in official WhatsApp groups that include fresh graduates, with help from group administrators and dental instructors. The number of graduates who actually received the link cannot be determined, because it was distributed through group channels rather than to a known list, so the response rate can be estimated only approximately.

The survey received 108 responses. 20 were excluded: 13 from dentists who completed their dental education outside Lebanon, and 13 from dentists who graduated before 2024 (six met both criteria). Of the remaining 88, one response with no valid graduation year was excluded, leaving 87 for analysis. These 87 responses represent about 22% of the estimated 400 eligible graduates and 44% of the target of 196, so the target sample was not reached. Distribution through professional associations and WhatsApp groups may have introduced selection bias, because graduates with greater interest in ethics may have been more likely to respond (see Strengths and limitations).

Questionnaire

Data were collected with a Google Forms questionnaire in English, French, and Arabic. Respondents chose one language version. The questionnaire comprised five demographic questions and 14 multiple-choice items, and is provided in full in Appendix A. The items assess knowledge of the five core ethical principles (autonomy, beneficence, non-maleficence, justice and veracity) and of informed consent, confidentiality and deontology, including their application to hypothetical clinical scenarios adapted to Lebanon.

Item development: The items were written by the first author and adapted from the ethics and professional-responsibility content of the Integrated National Board Dental Examination (INBDE), with reference to the American Dental Association Principles of Ethics and Code of Professional Conduct [27,28].

Keyed answers: The first author set the keyed answers on the basis of fundamental content in ethics education. The keyed answers were checked for correctness by a professor of applied medical ethics. No dental ethics specialist reviewed the items or the keyed answers.

Expert review: Before distribution on 12 September 2025, the draft was reviewed by three academic experts: a professor of linguistics, who assessed whether the wording was clear and understandable; a professor of research methodology, who assessed whether the items addressed the study objectives; and a professor of applied medical ethics, who assessed the content of the items and the keyed answers. None of the reviewers is a specialist in dental ethics. The questionnaire was not pilot-tested, and its internal consistency and validity against an external criterion were not established.

Translation

The English, French and Arabic versions were prepared by the authors. Arabic is the native language of the authors, and the first author was trained in the English and French terminology of medical and dental ethics through a master's degree. The three versions were checked for clarity by the professor of linguistics before distribution. No independent back-translation was performed.

Scoring and Item Classification

Each item scores 1 point if the keyed answer is selected and 0 otherwise, giving a total from 0 to 14. Items were classified by the task they required: definitions and principles (Q1-Q7); naming the principle at stake in a hypothetical scenario (Q8, Q10, Q12, and Q14); and choosing an action in a hypothetical scenario (Q9, Q11, and Q13). Performance bands were defined for descriptive purposes: total score 0-4, 5-8, 9-11 and 12-14; item difficulty high (≥85% correct), moderate (70-84.9%) or low (<70%). These bands were not derived from a standard-setting procedure.

Data Collection and Handling

The questionnaire was open from September 16, 2025, to October 16, 2025. The online form required an answer to every item, and submission without answering all items was not permitted. Respondents signed in with a Google account, which allowed one response per respondent. Email addresses were not collected as study data and were not copied into the study database, and no names or other direct personal identifiers were intentionally collected. Responses were analyzed in aggregate only, and results are reported in a way that does not allow individual participants to be identified.

Statistical Analysis

Statistical analysis was performed using SPSS version 23. Medians and interquartile ranges (IQRs) were used for total score, and frequencies and percentages for categorical variables. Total score was compared across categories using the Mann-Whitney U test (two categories) and the Kruskal-Wallis test (more than two categories). The distribution of score categories across universities was compared using Fisher's exact test (Freeman-Halton extension). Approximately five bivariate tests were performed, without adjustment for multiple comparisons, so the results should be treated as exploratory. The significance level was 0.05.

Ethics and Consent

This study involved an anonymous, voluntary, and minimal-risk online questionnaire administered to recently graduated dentists in Lebanon. No names, contact information, or other directly identifying information were collected. Participation was voluntary, and participants were informed about the purpose of the study, the nature of their participation, and their right to decline participation without any consequences. Completion and submission of the questionnaire were considered as informed consent to participate in the study.

The study did not involve patients, clinical interventions, biological samples, or access to medical records. Given the anonymous nature of the survey, the minimal risk involved, and the absence of identifiable personal or health information.

Results

Descriptive characteristics

87 fresh graduate dentists participated in the study (Table *1*). The majority of respondents were female (53/87, 60.9%; males 34/87, 39.1%) and graduated in 2025 (53/87, 60.9%; 2024: 34/87, 39.1%). Almost half of the participants graduated from the Lebanese University (43/87, 49.4%), followed by Beirut Arab University (23/87, 26.4%) and Saint-Joseph University of Beirut (21/87, 24.1%). Most respondents (72/87, 82.8%) had not received any extracurricular ethics training, while 15/87 (17.2%) had. The ethics course was delivered as a standalone course for 44/87 (50.6%) of participants and as part of another subject for 43/87 (49.4%).

Category	n	%
Gender		
Male	34	39.1
Female	53	60.9
Year of Graduation		
2024	34	39.1
2025	53	60.9
University		
Lebanese University	43	49.4
Saint-Joseph University of Beirut	21	24.1
Beirut Arab University	23	26.4
Extracurricular Ethics Course		
None	72	82.8
Received	15	17.2
Format of Ethics Course		
Standalone course	44	50.6
Part of another course	43	49.4

TABLE 1: Demographic and educational characteristics of participants (N = 87)

Percentages are calculated out of N = 87.

Overall and item-level performance

The median total score was 11 (IQR 5) out of 14. According to the pre-defined performance categories (Table 2), 7/87 participants (8.0%) showed poor understanding, 18/87 (20.7%) had below-average knowledge, 21/87 (24.1%) performed at an average level, and 41/87 (47.1%) scored in the good range.

Performance Category	Score Range	n	%
Poor understanding	0-4	7	8
Below average	5-8	18	20.7
Average	9-11	21	24.1
Good	12-14	41	47.1

TABLE 2: Distribution of total knowledge scores (N = 87)

Maximum possible score = 14. Percentages are calculated out of N = 87.

Item-level performance varied across the 14 questions (Table 3). Performance was high for Q2 (79/87, 90.8%), Q3 (82/87, 94.3%) and Q11 (77/87, 88.5%), and moderate for Q4 (66/87, 75.9%), Q5 (72/87, 82.8%), Q6 (64/87, 73.6%), Q7 (67/87, 77.0%), Q9 (66/87, 75.9%) and Q13 (62/87, 71.3%). Performance was low for Q10 (57/87, 65.5%), Q14 (50/87, 57.5%), Q8 (48/87, 55.2%), Q12 (47/87, 54.0%) and Q1 (44/87, 50.6%). Q1 (the definition of deontology) was the lowest-scoring item overall.

Item	Correct, n	Correct, %	Incorrect, n	Incorrect, %	Performance Level
Q1 - Deontology (definition)	44	50.6	43	49.4	Low
Q2 - Confidentiality (definition)	79	90.8	8	9.2	High
Q3 - Informed consent (definition)	82	94.3	5	5.7	High
Q4 - Autonomy (principle)	66	75.9	21	24.1	Moderate
Q5 - Non-maleficence (principle)	72	82.8	15	17.2	Moderate
Q6 - Beneficence (principle)	64	73.6	23	26.4	Moderate
Q7 - Justice (principle)	67	77	20	23	Moderate
Q8 - Non-maleficence (clinical case)	48	55.2	39	44.8	Low
Q9 - Clinical case	66	75.9	21	24.1	Moderate
Q10 - Clinical case (principle applied)	57	65.5	30	34.5	Low
Q11 - Clinical case	77	88.5	10	11.5	High
Q12 - Clinical case (principle applied)	47	54	40	46	Low
Q13 - Clinical case	62	71.3	25	28.7	Moderate
Q14 - Clinical case (principle applied)	50	57.5	37	42.5	Low

TABLE 3: Item-level performance (N = 87)

Percentages are calculated out of N = 87. Performance level: High (≥85% correct), Moderate (70-84.9%), Low (<70%).

Bivariate analysis

The association between total score and participant characteristics is shown in Table *4*. Female participants obtained a significantly higher median score (12, IQR 4; n = 53) than male participants (10, IQR 6; n = 34) (Mann-Whitney U = 654, p = 0.030). No significant difference was found by year of graduation (U = 861, p = 0.725), by extracurricular ethics course (U = 462.5, p = 0.379), or by format of ethics course (U = 827, p = 0.307). Median scores did not differ significantly among the three universities (Lebanese University, n = 43; Saint-Joseph University of Beirut, n = 21; Beirut Arab University, n = 23) (Kruskal-Wallis H = 3.869, df = 2, p = 0.145).

Predictor	n	Median	IQR	Test	Test statistic	p-value
Gender						
Male	34	10	6	Mann-Whitney U	654	0.030*
Female	53	12	4	Mann-Whitney U	654	0.030*
Year of Graduation						
2024	34	10	5	Mann-Whitney U	861	0.725
2025	53	12	4	Mann-Whitney U	861	0.725
University						
Lebanese University	43	10	7	Kruskal-Wallis H	3.869	0.145
Saint-Joseph University of Beirut	21	11	4	Kruskal-Wallis H	3.869	0.145
Beirut Arab University	23	12	3	Kruskal-Wallis H	3.869	0.145
Extracurricular Ethics Course						
None	72	11	4	Mann-Whitney U	462.5	0.379
Received	15	12	4	Mann-Whitney U	462.5	0.379
Format of Ethics Course						
Standalone course	44	11.5	4	Mann-Whitney U	827	0.307
Part of another course	43	10	7	Mann-Whitney U	827	0.307

TABLE 4: Bivariate analysis between total score and study predictors

IQR: interquartile range. *p < 0.05. The test statistic and p-value refer to the comparison of all categories of that predictor. Kruskal-Wallis H has 2 degrees of freedom.

University-level comparison

The distribution of score categories did not differ significantly across the three universities (Fisher's exact test statistic = 4.911, p = 0.555) (Table *5*).

Score Category	LU, n	LU, %	USJ, n	USJ, %	BAU, n	BAU, %	Total, n	Test	Test Statistic	p-value
Poor (0-4)	4	57.1	1	14.3	2	28.6	7	Fisher's exact	4.911	0.555
Below average (5-8)	11	61.1	5	27.8	2	11.1	18	Fisher's exact	4.911	0.555
Average (9-11)	9	42.9	7	33.3	5	23.8	21	Fisher's exact	4.911	0.555
Good (12-14)	19	46.3	8	19.5	14	34.1	41	Fisher's exact	4.911	0.555

TABLE 5: Fisher's exact test: score category by university

Percentages are row percentages (each row sums to 100%).

LU: Lebanese University; USJ: Saint-Joseph University of Beirut; BAU: Beirut Arab University

Discussion

Assessing ethical knowledge matters because fresh graduate dentists will soon make independent decisions in clinical practice. Limited knowledge of basic ethical principles may affect decision-making, the dentist-patient relationship and patient care.

The median score was 11 (IQR 5), indicating moderate overall knowledge of dental ethics. Nearly 30%

(28.7%) of participants scored in the below-average or poor ranges, and scores varied considerably, so some graduates may have limited knowledge of basic dental ethics. Respondents performed well on items testing definitions and principles (Q2-Q7: 73.6-94.3% correct), except the definition of deontology (Q1: 50.6%). Items asking respondents to name the principle at stake in a hypothetical clinical scenario (Q8, Q10, Q12, and Q14: 54.0-65.5% correct) were answered less accurately than items asking what to do in a scenario (Q9, Q11, and Q13: 71.3-88.5% correct). This pattern may reflect the difficulty of identifying principles in written scenarios rather than an inability to act on them. The instrument was not validated, so this interpretation requires further study. The pattern is consistent with previous studies reporting that ethical judgment can be harder than recalling definitions or principles [22,23], female dentists had higher median scores than male dentists (median 12 vs 10; $p = 0.030$). This direction is consistent with a meta-analysis of moral sensitivity, which found an overall effect favoring women [29], and with cross-country data on ethical reasoning at work [30]. These studies measure related but distinct constructs, and they do not explain why the difference arises. The gap may also reflect who chose to respond: if women were more likely than men to complete an ethics survey, the observed difference could be inflated. Given the small sample and convenience recruitment, this finding should be regarded as preliminary.

No significant association was found between total score and extracurricular ethics training, year of graduation or course format. Only 15 respondents had extracurricular training, which is too few to assess its effect. Other factors may therefore contribute to differences in ethical knowledge and should be explored in future studies. Associations between ethical practice and factors such as origin, family income and gender have been reported [24], as has the influence of religious and spiritual teachings [25]. No significant difference in scores was found between the three universities, although the curricula of the three schools are not described here.

Educational implications

Previous studies suggest that case-based teaching may help [22,23]. This study did not evaluate teaching methods. It compared standalone and integrated ethics courses, and course format was not associated with score (Mann-Whitney $p = 0.307$). The study had limited power to detect small differences, so this result does not show that teaching format is unimportant. Formative assessment, such as short quizzes with immediate feedback, and structured postgraduate ethics training may be worth evaluating in future studies.

Strengths and limitations

To our knowledge, this is the first study to assess ethical knowledge among fresh graduate dentists from the three dental schools in Lebanon. The item-level analysis identifies specific topics with lower performance, which may guide future curricular work.

The study has several limitations. (1) Measurement validity: the questionnaire was reviewed before distribution by a linguist, a methodologist and a professor of applied medical ethics, but not by a dental ethics specialist. It was not pilot-tested, and its internal consistency and validity against an external criterion were not assessed; (2) Selection bias: convenience sampling through professional and WhatsApp networks, and an estimated response rate of about 22%, may favor graduates with more interest in ethics, and results may not represent all fresh graduates in Lebanon; (3) Format: the multiple-choice items measure recognition of ethical knowledge in written, hypothetical scenarios. They do not measure clinical competence or behavior; (4) Guessing: items have four or five options and there is no “don’t know” option. Random responding would give an average of about 3 out of 14; (5) External criteria: no external measure of ethical decision-making in clinical practice was available; (6) Precision and power: with 87 respondents, the study had about 80% power only to detect a standardized difference of about 0.6 between women and men, so the gender estimate is imprecise and may overstate the true effect; and (7) Translation: no independent back-translation was performed.

Cochran’s formula, with the finite-population correction for an estimated 400 eligible graduates, gave a target of 196, and only 87 responses were obtained. This smaller sample may have reduced statistical power and widened confidence intervals. The findings are preliminary and should be confirmed in a larger sample using a validated instrument.

Conclusions

Fresh graduate dentists from Lebanese universities showed moderate knowledge of dental ethics, with lower performance on items that ask for principles to be applied to scenarios. Performance was comparable across all three Lebanese dental schools, with no statistically significant differences between them. Female participants scored higher than males, but this bivariate association is preliminary. Drawing on previous literature, case-based and problem-based teaching and structured postgraduate ethics training may help strengthen applied dental ethics education; these recommendations were not tested in this study. While this study offers meaningful national insights, the findings are limited to the study sample and cannot be fully generalized to all fresh graduate dentists in Lebanon.

Appendices

Appendix A

Questionnaire, answer key, and scoring rules

The appendix contains the questionnaire in English, French, and Arabic, as administered between September 16, 2025, and October 16, 2025, together with the answer key and scoring rules. The questionnaire was available in all three languages. Participants choose one language version to fill.

Section 1. Scoring rules and Answer Key

The questionnaire has five demographic questions (1-5), which are not scored, and 14 multiple-choice items (Questions 1-14). Each item has one keyed answer.

- Each item scores 1 point if the keyed answer is selected and 0 points otherwise. The total score ranges from 0 to 14.
- A response to all items is required for submission.
- Chance level: a respondent answering at random would score about 3.2 out of 14 on average. Six items have five options (20% expected correct) and eight have four options (25% expected correct).
- The score bands used in the manuscript (0-4, 5-8, 9-11, 12-14) are descriptive. They were not derived from a standard-setting procedure.

Item	Topic	Keyed Answer
Q1	Deontology (definition)	c) Deontology
Q2	Confidentiality (definition)	d) The dentist's ethical and legal obligation to protect the patient's information unless disclosure is justified
Q3	Informed consent (definition)	b) A process where the patient freely agrees to a procedure after receiving a proper explanation of risks, benefits, and alternatives
Q4	Autonomy (principle)	d) Autonomy
Q5	Non-maleficence (principle)	d) To do no harm
Q6	Beneficence (principle)	b) Beneficence
Q7	Justice (principle)	a) Refusing to provide treatment to a non-Arabic speaking patient
Q8	Refusal to extract a restorable tooth	c) Non-maleficence
Q9	Wrong tooth luxated; next step	c) Inform the patient and document the error
Q10	Principle in the Q9 scenario	e) Veracity
Q11	Unnecessary treatment requested; response	c) Explain concerns and suggest alternatives
Q12	Principle in the Q11 scenario	c) Non-maleficence
Q13	Mistake in treatment plan; response	a) Inform the patient about the complication and the error
Q14	Principle in the Q13 scenario	e) Veracity

TABLE 6: Answer key

Question	Correct answer	1 pt
Q1. It is an approach to ethical decision-making that emphasizes the importance of moral duty and obligation, rather than the consequences of actions.	c) Deontology	1
Q2. What is confidentiality?	d) The dentist's ethical and legal obligation to protect the patient's information unless disclosure is justified	1
Q3. What is Informed Consent?	b) A process where the patient freely agrees to a procedure after receiving a proper explanation of risks, benefits, and alternatives	1
Q4. Which ethical principle involves the duty of a practitioner to respect a patient's right to self-governance?	d) Autonomy	1
Q5. What does the ethical principle of non-maleficence mean?	d) To do no harm	1
Q6. Which ethical principle involves a dentist's obligation to improve community dental health and welfare?	b) Beneficence	1
Q7. Which of the following actions violates the principle of justice?	a) Refusing to provide treatment to a non-Arabic speaking patient	1
Q8. A patient with a restorable tooth requests extraction, but the dentist refuses the request. Which ethical principle is being applied?	c) Non-maleficence	1
Q9. While performing an extraction, the dentist begins luxating the incorrect tooth, which was subsequently pointed out by the dental assistant. What is the next best step for the dentist?	c) Inform the patient and document the error	1
Q10. What principle must be considered in the previous scenario?	e) Veracity	1
Q11. A patient requests a specific treatment that you believe is unnecessary and could cause harm. What is the appropriate response?	c) Explain concerns and suggest alternatives	1
Q12. What principle must be considered in the previous scenario?	c) Non-maleficence	1
Q13. A patient experiences unexpected complications while undergoing a procedure. You realize that a mistake was made in the treatment plan. What should you do?	a) Inform the patient about the complication and the error	1
Q14. What principle must be considered in the previous scenario?	e) Veracity	1

TABLE 7: Answer key: English version

Question	Correct answer	1 pt
Q1. Il s'agit d'une approche de la prise de décision éthique qui met l'accent sur l'importance du devoir et de l'obligation moraux plutôt que sur les conséquences des actions.	c) Déontologie	1
Q2. Qu'est-ce que la confidentialité ?	d) L'obligation éthique et légale du dentiste est de protéger les informations du patient, sauf si leur divulgation est justifiée.	1
Q3. Qu'est-ce que le consentement éclairé ?	b) Un processus dans lequel le patient accepte librement une intervention après avoir reçu une explication appropriée des risques, des avantages et des alternatives.	1
Q4. Quel principe éthique implique le devoir pour un praticien de respecter le droit d'un patient à l'auto gouvernance ?	d) Autonomie	1
Q5. Que signifie le principe éthique de non-malfaisance ?	d) Ne pas nuire	1
Q6. Quel principe éthique implique l'obligation pour un dentiste d'améliorer la santé et le bien-être dentaires de la communauté ?	b) Bienfaisance	1
Q7. Laquelle des actions suivantes enfreint le principe de justice ?	a) Refus de prodiguer des soins à un patient ne parlant pas l'arabe	1
Q8. Un patient dont la dent peut être restaurée demande une extraction, mais le dentiste refuse sa demande. Quel principe éthique est appliqué ici ?	c) Non-malfaisance	1
Q9. Lors d'une extraction, le dentiste commence à extraire la mauvaise dent, ce qui lui est signalé par l'assistante dentaire. Quelle est la meilleure chose à faire pour le dentiste ?	c) Informer le patient et consigner l'erreur	1
Q10. Quel principe doit être pris en compte dans le scénario précédent ?	e) Vérité	1
Q11. Un patient demande un traitement spécifique que vous jugez inutile et susceptible de lui causer du tort. Quelle est la réponse appropriée ?	c) Expliquer vos préoccupations et proposer des alternatives.	1
Q12. Quel principe doit être pris en compte dans le scénario précédent ?	c) Non-Malfaisance	1
Q13. Un patient souffre de complications inattendues pendant une intervention. Vous vous rendez compte qu'une erreur a été commise dans le plan de traitement. Que devez-vous faire ?	a) Informer le patient de la complication et de l'erreur	1
Q14. Quel principe doit être pris en compte dans le scénario précédent ?	e) Vérité	1

TABLE 8: Answer key: French version

السؤال	الإجابة الصحيحة	نقطة واحدة
Q1. إنه نهج لاتخاذ القرارات الأخلاقية يركز على أهمية الواجب والالتزام الأخلاقيين، بدلًا من التركيز على عواقب الأفعال.	c) أخلاقيات المهنة	1
Q2. ما هي السرية؟	d) الالتزام الأخلاقي والقانوني لطبيب الأسنان بحماية معلومات المريض ما لم يكن الكشف عنها مبررًا	1
Q3. ما هو الموافقة المستنيرة؟	b) عملية يوافق فيها المريض بحرية على إجراء ما بعد تلقيه شرحًا مناسبًا للمخاطر والفوائد والبدائل	1
Q4. ما هو المبدأ الأخلاقي الذي ينطوي على واجب الممارس باحترام حق المريض في الحكم الذاتي؟	d) الاستقلال الذاتي	1
Q5. ماذا يعني المبدأ الأخلاقي المتمثل في عدم الإيذاء؟	d) عدم الإضرار	1
Q6. ما هو المبدأ الأخلاقي الذي ينطوي على التزام طبيب الأسنان بتحسين صحة الأسنان ورفاهية المجتمع؟	b) المعاملة الحسنة	1
Q7. أي من الإجراءات التالية ينتهك مبدأ العدالة؟	a) رفض تقديم العلاج لمريض لا يتحدث العربية	1
Q8. يطلب مريض لديه سن قابل للترميم خلعه، لكن طبيب الأسنان يرفض الطلب. ما هو المبدأ الأخلاقي المطبق في هذه الحالة؟	c) عدم الإيذاء	1
Q9. أثناء إجراء عملية قلع، يبدأ طبيب الأسنان في خلع السن غير الصحيح، والذي أشار إليه مساعد طبيب الأسنان لاحقًا. ما هي أفضل خطوة تالية لطبيب الأسنان؟	c) إبلاغ المريض وتوثيق الخطأ	1
Q10. ما هو المبدأ الذي يجب أخذه في الاعتبار في السيناريو السابق؟	e) الصدق	1
Q11. يطلب مريض علاجًا معينًا تعتقد أنه غير ضروري وقد يسبب له ضررًا. ما هو الرد المناسب؟	c) شرح المخاوف واقتراح البدائل	1
Q12. ما هو المبدأ الذي يجب أخذه في الاعتبار في السيناريو السابق؟	c) عدم الإيذاء	1
Q13. يعاني مريض من مضاعفات غير متوقعة أثناء خضوعه لإجراء طبي. تدرك أن خطأ قد وقع في خطة العلاج. ماذا يجب أن تفعل؟	a) إبلاغ المريض عن المضاعفات والخطأ	1
Q14. ما هو المبدأ الذي يجب أخذه في الاعتبار في السيناريو السابق؟	e) الصدق	1

TABLE 9: Answer key: Arabic version

Item classification

Items were classified by the task they required. Definitions and principles: Q1-Q7. Naming the principle at stake in a hypothetical scenario: Q8, Q10, Q12 and Q14. Choosing an action in a hypothetical scenario: Q9, Q11 and Q13.

Score bands and item difficulty

- Total score bands (descriptive): 0-4, 5-8, 9-11 and 12-14. These bands were not derived from a standard-setting procedure.

- Item difficulty (descriptive): high (⩾85% correct), moderate (70-84.9%) or low (<70%).

Form settings

- Data were collected with Google Forms in English, French and Arabic. Respondents chose one language version.

- Respondents signed in with a Google account, which allowed one response per respondent. Email addresses were recorded by the platform and deleted before analysis.

- The form required an answer to every item. Submission without answering all items was not permitted.

Section 2. Questionnaire (English)

Evaluation of Dental Ethics Knowledge Among Recent Dental Graduates in Lebanon

You are invited to participate in an academic research study that aims to evaluate the knowledge of recent dental graduates in the field of Dental ethics. Your participation is voluntary, and your responses will remain completely anonymous, confidential, and will be used only for research purposes. The questionnaire should take nearly 10 minutes to fill out.

1. Gender: *

Male

Female

2. Year of Graduation: *

(open response)

3. At which university did you complete your dental education? *

Lebanese University

Saint Joseph University

Beirut Arab University

University outside Lebanon

(If you graduated outside Lebanon, please specify the university and the country)

4. Where did you receive your dental ethics education? *

Within the university curriculum (such as lectures)

Outside the university curriculum (such as workshops, continuous education)

Both

I did not receive any ethics education

5. If you studied ethics at the university, how was it taught?

As a standalone course (independent course)

As part of another course (chapter or module in another subject)

Key Concepts in Ethics

Question 1 (Q1)

It is an approach to ethical decision-making that emphasizes the importance of moral duty and obligation, rather than the consequences of actions.

a) Paternalism

b) Beneficence

c) Deontology

d) Non-maleficence

e) Ethics

Question 2 (Q2)

What is confidentiality?

a) The responsibility of a dentist is to take care of the patient's well-being

b) The duty of a dentist is to get patient consent before medical intervention

c) The patient's right to decide freely about their treatment and medical options

d) The dentist's ethical and legal obligation to protect the patient's information unless disclosure is justified

Question 3 (Q3)

What is Informed Consent?

a) A process where the patient agrees to be treated without receiving details

b) A process where the patient freely agrees to a procedure after receiving a proper explanation of risks, benefits, and alternatives

c) A process where the dentist documents the procedure in the medical file

d) A process where the dentist makes the decision and informs the patient afterward

Question 4 (Q4)

Which ethical principle involves the duty of a practitioner to respect a patient's right to self-governance?

a) Veracity

b) Beneficence

c) Non-maleficence

d) Autonomy

Question 5 (Q5)

What does the ethical principle of non-maleficence mean?

a) The right of privacy

b) To help other

c) To treat people fairly

d) To do no harm

Question 6 (Q6)

Which ethical principle involves a dentist's obligation to improve community dental health and welfare?

a) Autonomy

b) Beneficence

c) Non-maleficence

d) Justice

e) Veracity

Question 7 (Q7)

Which of the following actions violates the principle of justice?

a) Refusing to provide treatment to a non-Arabic speaking patient

b) Reporting a dentist with a history of faulty patient treatment

c) Rejecting a business offer that includes unethical fee splitting

d) Allocating resources fairly among patients in need

Question 8 (Q8)

A patient with a restorable tooth requests extraction, but the dentist refuses the request. Which ethical principle is being applied?

a) Autonomy

b) Beneficence

c) Non-maleficence

d) Justice

e) Veracity

Question 9 (Q9)

While performing an extraction, the dentist begins luxating the incorrect tooth, which was subsequently pointed out by the dental assistant. What is the next best step for the dentist?

a) Don't tell the patient, and tell the assistant to remain silent

b) Inform the patient, but instruct them to keep the information confidential and not document

c) Inform the patient and document the error

d) Ignore the situation by removing the correct tooth, hoping the patient does not notice

Question 10 (Q10)

What principle must be considered in the previous scenario?

a) Autonomy

b) Beneficence

c) Non-maleficence

d) Justice

e) Veracity

Question 11 (Q11)

A patient requests a specific treatment that you believe is unnecessary and could cause harm. What is the appropriate response?

a) Refuse the treatment and dismiss the patient from your practice

b) Perform the treatment, but document your disagreement

c) Explain concerns and suggest alternatives

d) Proceed with the treatment to respect patient autonomy

Question 12 (Q12)

What principle must be considered in the previous scenario?

a) Autonomy

b) Beneficence

c) Non-maleficence

d) Justice

e) Veracity

Question 13 (Q13)

A patient experiences unexpected complications while undergoing a procedure. You realize that a mistake was made in the treatment plan. What should you do?

a) Inform the patient about the complication and the error

b) Correct the mistake without telling the patient

c) Document the error internally without disclosing it to the patient

d) Wait to see if the patient notices before saying anything

Question 14 (Q14)

What principle must be considered in the previous scenario?

a) Autonomy

b) Beneficence

c) Non-maleficence

d) Justice

e) Veracity

Section 3. Questionnaire (French)

Évaluation des connaissances en éthique dentaire chez les dentistes récemment diplômés au Liban

Vous êtes invité à participer à une étude de recherche universitaire visant à évaluer les connaissances des jeunes diplômés en médecine dentaire dans le domaine de l'éthique dentaire. Ce questionnaire est destiné uniquement aux dentistes diplômés depuis 1 à 2 ans. Votre participation est volontaire, vos réponses resteront entièrement anonymes, confidentielles, et ne seront utilisées qu'à des fins de recherche. Il vous faudra environ 10 minutes pour remplir le questionnaire.

1. Genre *

Male

Femelle

2. Année d'obtention du diplôme *

(open response)

3. Dans quelle université avez-vous suivi votre formation dentaire ? *

Université Libanaise

Université Saint-Joseph

Beirut Arab University

Université hors du Liban

(Si vous avez obtenu votre diplôme en dehors du Liban, veuillez préciser l'université et le pays)

4. Où avez-vous suivi votre formation en éthique dentaire ? *

Dans le cadre du programme universitaire

En dehors du programme universitaire (ateliers, formation continue, etc.)

Les deux

Je n'ai reçu aucune formation en matière d'éthique

5. Si vous avez étudié l'éthique à l'université, comment était-elle enseignée ?

En tant que cours autonome (cours indépendant)

Dans le cadre d'un autre cours (chapitre ou module dans une autre matière)

Concepts clés en éthique

Question 1 (Q1)

Il s'agit d'une approche de la prise de décision éthique qui met l'accent sur l'importance du devoir et de l'obligation moraux plutôt que sur les conséquences des actions.

a) Paternalisme

b) Bienfaisance

c) Déontologie

d) Non-malfaisance

e) Ethique

Question 2 (Q2)

Qu'est-ce que la confidentialité ?

a) La responsabilité d'un dentiste est de veiller au bien-être du patient.

b) Le devoir d'un dentiste est d'obtenir le consentement du patient avant toute intervention médicale.

c) Le droit du patient à décider librement de son traitement et des options médicales qui lui sont proposées

d) L'obligation éthique et légale du dentiste est de protéger les informations du patient, sauf si leur divulgation est justifiée.

Question 3 (Q3)

Qu'est-ce que le consentement éclairé ?

a) Un processus dans lequel le patient accepte d'être traité sans recevoir de détails.

b) Un processus dans lequel le patient accepte librement une intervention après avoir reçu une explication appropriée des risques, des avantages et des alternatives.

c) Un processus dans lequel le dentiste consigne l'intervention dans le dossier médical

d) Un processus dans lequel le dentiste prend la décision et informe le patient après

Principes fondamentaux de l'éthique médicale

Question 4 (Q4)

Quel principe éthique implique le devoir pour un praticien de respecter le droit d'un patient à l'auto gouvernance ?

a) Vérité

b) Bienfaisance

c) Non-malfaisance

d) Autonomie

Question 5 (Q5)

Que signifie le principe éthique de non-malfaisance ?

a) Le droit à la vie privée

b) Aider les gens

c) Traiter les gens équitablement

d) Ne pas nuire

Question 6 (Q6)

Quel principe éthique implique l'obligation pour un dentiste d'améliorer la santé et le bien-être dentaires de la communauté ?

a) Autonomie

b) Bienfaisance

c) Non-malfaisance

d) Justice

e) Vérité

Question 7 (Q7)

Laquelle des actions suivantes enfreint le principe de justice?

a) Refus de prodiguer des soins à un patient ne parlant pas l'arabe

b) Signaler un dentiste ayant des antécédents de mauvais traitements infligés à des patients

c) Refuser une offre commerciale qui comprend un partage des honoraires contraire à l'éthique

d) Répartir équitablement les ressources entre les patients dans le besoin

Cas Cliniques

Question 8 (Q8)

Un patient dont la dent peut être restaurée demande une extraction, mais le dentiste refuse sa demande. Quel principe éthique est appliqué ici?

a) Autonomie

b) Bienfaisance

c) Non-malfaisance

d) Justice

e) Vérité

Question 9 (Q9)

Lors d'une extraction, le dentiste commence à extraire la mauvaise dent, ce qui lui est signalé par l'assistante dentaire. Quelle est la meilleure chose à faire pour le dentiste ?

a) Ne pas en parler au patient et demander à l'assistant de garder le silence

b) Informer le patient, mais lui demander de garder cette information confidentielle et de ne pas la consigner.

c) Informer le patient et consigner l'erreur

d) Ignorer la situation en retirant la bonne dent, en espérant que le patient ne s'en aperçoive pas

Question 10 (Q10)

Quel principe doit être pris en compte dans le scénario précédent?

a) Autonomie

b) Bienfaisance

c) Non-Malfaisance

d) Justice

e) Vérité

Question 11 (Q11)

Un patient demande un traitement spécifique que vous jugez inutile et susceptible de lui causer du tort. Quelle est la réponse appropriée ?

a) Refuser le traitement et renvoyer le patient de votre cabinet.

b) Effectuer le traitement, mais consigner votre désaccord.

c) Expliquer vos préoccupations et proposer des alternatives.

d) Poursuivre le traitement afin de respecter l'autonomie du patient.

Question 12 (Q12)

Quel principe doit être pris en compte dans le scénario précédent?

a) Autonomie

b) Bienfaisance

c) Non-Malfaisance

d) Justice

e) Vérité

Question 13 (Q13)

Un patient souffre de complications inattendues pendant une intervention. Vous vous rendez compte qu'une erreur a été commise dans le plan de traitement. Que devez-vous faire?

a) Informer le patient de la complication et de l'erreur

b) Corriger l'erreur sans en parler au patient

c) Consigner l'erreur en interne sans la divulguer au patient

d) Attendre de voir si le patient s'en aperçoit avant de lui en parler

Question 14 (Q14)

Quel principe doit être pris en compte dans le scénario précédent?

a) Autonomie

b) Bienfaisance

c) Non-Malfaisance

d) justice

e) Vérité

Section 4. Questionnaire (Arabic)

تقييم المعرفة بالأخلاقيات في طب الأسنان لدى أطباء الأسنان حديثي التخرج في لبنان

أنت مدعو للمشاركة في دراسة بحثية أكاديمية تهدف إلى تقييم معرفة خريجي طب الأسنان الجدد في مجال أخلاقيات طب الأسنان هذا الاستبيان مخصص فقط لأطباء الأسنان الذين تخرجوا خلال العامين الماضيين مشاركتك طوعية، وستبقى إجاباتك مجهولة الهوية وسرية ولن تستخدم إلا لأغراض البحث يستغرق ملء الاستبيان حوالي 10 دقائق.

1. الجنس *

ذكر

أنثى

2. سنة التخرج *

(إجابة مفتوحة)

3. في أي جامعة أكملت دراستك في طب الأسنان؟ *

الجامعة اللبنانية

جامعة القديس يوسف

جامعة بيروت العربية

جامعة خارج لبنان

4. أين تلقيت تعليمك في مجال أخلاقيات طب الأسنان؟ *

(ضمن المنهج الجامعي (مثل المحاضرات

(خارج المنهج الجامعي (مثل ورش العمل والتعليم المستمر

كلاهما

لم أتلق أي تعليم في مجال الأخلاقيات

5. إذا كنت قد درست الأخلاقيات في الجامعة، كيف تم تدريسها؟

كمادة دراسية مستقلة

كجزء من مقرر دراسي آخر (فصل أو وحدة في مادة أخرى)

المفهوم الرئيسي في الأخلاقيات

Question 1 (Q1)

إنه نهج لاتخاذ القرارات الأخلاقية يركز على أهمية الواجب والالتزام الأخلاقيين، بدلًا من التركيز على عواقب الأفعال.

a) الأبوية

b) المعاملة الحسنة

c) أخلاقيات المهنة

d) عدم الإيذاء

e) أخلاقيات

Question 2 (Q2)

ما هي السرية؟

a) مسؤولية طبيب الأسنان هي العناية بصحة المريض

b) واجب طبيب الأسنان هو الحصول على موافقة المريض قبل التدخل الطبي

c) حق المريض في اتخاذ قرار حر بشأن علاجه وخياراته الطبية

d) الالتزام الأخلاقي والقانوني لطبيب الأسنان بحماية معلومات المريض ما لم يكن الكشف عنها مبررًا

Question 3 (Q3)

ما هو الموافقة المستنيرة؟

a) عملية يوافق فيها المريض على تلقي العلاج دون الحصول على تفاصيل عنه

b) عملية يوافق فيها المريض بحرية على إجراء ما بعد تلقيه شرحًا مناسبًا للمخاطر والفوائد والبدائل

c) عملية يقوم فيها طبيب الأسنان بتوثيق الإجراء في الملف الطبي

d) عملية يتخذ فيها طبيب الأسنان القرار ويبلغ المريض به بعد ذلك

القيم في أخلاقيات الطب

Question 4 (Q4)

ما هو المبدأ الأخلاقي الذي ينطوي على واجب الممارس باحترام حق المريض في الحكم الذاتي؟

a) الصدق

b) المعاملة الحسنة

c) عدم الإيذاء

d) الاستقلال الذاتي

Question 5 (Q5)

ماذا يعني المبدأ الأخلاقي المتمثل في عدم الإيذاء؟

a) الحق في الخصوصية

b) لمساعدة الآخرين

c) معاملة الناس بإنصاف

d) عدم الإضرار

Question 6 (Q6)

ما هو المبدأ الأخلاقي الذي ينطوي على التزام طبيب الأسنان بتحسين صحة الأسنان ورفاهية المجتمع؟

a) الاستقلال الذاتي

b) المعاملة الحسنة

c) عدم الإيذاء

d) العدالة

e) الصدق

Question 7 (Q7)

أي من الإجراءات التالية ينتهك مبدأ العدالة؟

a) رفض تقديم العلاج لمريض لا يتحدث العربية

b) الإبلاغ عن طبيب أسنان له سجل حافل بمعاملة المرضى بشكل خاطئ

c) رفض عرض عمل يتضمن تقسيم أتعاب غير أخلاقي

d) توزيع الموارد بشكل عادل بين المرضى المحتاجين

حالات سريرية

Question 8 (Q8)

يطلب مريض لديه سن قابل للترميم خلعه، لكن طبيب الأسنان يرفض الطلب ما هو المبدأ الأخلاقي المطبق في هذه الحالة؟

a) الاستقلال الذاتي

b) المعاملة الحسنة

c) عدم الإيذاء

d) العدالة

e) الصدق

Question 9 (Q9)

أثناء إجراء عملية قلع، يبدأ طبيب الأسنان في خلع السن غير الصحيح، والذي أشار إليه مساعد طبيب الأسنان لاحقًا ما هي أفضل خطوة تالية لطبيب الأسنان؟

a) لا تخبر المريض، واطلب من المساعد أن يلتزم الصمت

b) أبلغ المريض، ولكن اطلب منه الحفاظ على سرية المعلومات وعدم توثيقها

c) إبلاغ المريض وتوثيق الخطأ

d) تجاهل الموقف عن طريق إزالة السن الصحيح، على أمل ألا يلاحظ المريض ذلك

Question 10 (Q10)

ما هو المبدأ الذي يجب أخذه في الاعتبار في السيناريو السابق؟

a) الاستقلال الذاتي

b) المعاملة الحسنة

c) عدم الإيذاء

d) العدالة

e) الصدق

Question 11 (Q11)

يطلب مريض علاجًا معينًا تعتقد أنه غير ضروري وقد يسبب له ضررًا. ما هو الرد المناسب؟

a) رفض العلاج وطرد المريض من عيادتك

b) قم بإجراء العلاج، ولكن قم بتوثيق عدم موافقتك

c) شرح المخاوف واقتراح البدائل

d) مواصلة العلاج احترامًا لاستقلالية المريض

Question 12 (Q12)

ما هو المبدأ الذي يجب أخذه في الاعتبار في السيناريو السابق؟

a) استقلال ذاتي

b) المعاملة الحسنة

c) عدم الإيذاء

d) العدالة

e) الصدق

Question 13 (Q13)

يعاني مريض من مضاعفات غير متوقعة أثناء خضوعه لإجراء طبي. تدرك أن خطأً قد وقع في خطة العلاج. ماذا يجب أن تفعل؟

a) إبلاغ المريض عن المضاعفات والخطأ

b) صحح الخطأ دون إخبار المريض

c) توثيق الخطأ داخليًا دون الكشف عنه للمريض

d) انتظر لترى ما إذا كان المريض سيلاحظ ذلك قبل أن تقول أي شيء

Question 14 (Q14)

ما هو المبدأ الذي يجب أخذه في الاعتبار في السيناريو السابق؟

a) الاستقلال الذاتي

b) المعاملة الحسنة

c) عدم الإيذاء

d) العدالة

e) الصدق

Additional Information

Author Contributions

All authors have reviewed the final version to be published and agreed to be accountable for all aspects of the work.

Concept and design: Abdo Wanna, Fadi Abou Mrad

Acquisition, analysis, or interpretation of data: Abdo Wanna, Lubna Tarabey

Drafting of the manuscript: Abdo Wanna

Critical review of the manuscript for important intellectual content: Abdo Wanna, Lubna Tarabey, Fadi Abou Mrad

Supervision: Abdo Wanna, Lubna Tarabey, Fadi Abou Mrad

Disclosures

Human subjects: Informed consent for treatment and open access publication was obtained or waived by all participants in this study. **Animal subjects:** All authors have confirmed that this study did not involve animal subjects or tissue. **Conflicts of interest:** In compliance with the ICMJE uniform disclosure form, all authors declare the following: **Payment/services info:** All authors have declared that no financial support was received from any organization for the submitted work. **Financial relationships:** All authors have declared that they have no financial relationships at present or within the previous three years with any organizations that might have an interest in the submitted work. **Other relationships:** All authors have declared that there are no other relationships or activities that could appear to have influenced the submitted work.

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