

НАВЧАЛЬНО-МЕТОДИЧНІ РОБОТИ

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FORENSIC ODONTOLOGY AS AN INTERDISCIPLINARY COMPONENT OF THE PROFESSIONAL TRAINING OF DENTISTS

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Abstract. This article examines the current state and challenges of teaching forensic odontology in Ukraine as a component of dental education.

The aim of the study. To analyze the current state and challenges of teaching forensic odontology within the professional training of dentists in Ukraine, identify the main obstacles to its integration, and propose ways to improve the educational process based on an interdisciplinary approach and international experience.

Materials and methods. The study is based on a comprehensive analysis of current educational programs, Ukrainian legislative acts, and international standards (EBFO, ABFO, INTERPOL DVI) using systematic, comparative legal methods and a review of scientific literature. This approach enabled the identification of key problems in integrating forensic odontology into the educational process and substantiated pathways for its improvement.

Results. The interdisciplinary connections of this discipline with courses in forensic medicine, pathological anatomy, criminalistics, ethics, and law were analyzed. The main obstacles to integrating forensic odontological knowledge into the medical education system were identified, including regulatory gaps, personnel shortages, lack of methodological materials, and low student awareness of the dentist's role in identification processes. Ways to improve the educational process were proposed, namely the development of competency standards, electronic courses, clinical-expert trainings, and international educational partnerships.

Conclusion. Forensic odontology is a crucial, yet currently underappreciated, component of professional dental training in Ukraine. Its interdisciplinary nature requires the reform of curricula, development of teaching staff, and implementation of digital technologies. The integration of forensic odontological knowledge into the educational process will contribute to enhancing the quality of medical education, developing forensic medical expertise, and strengthening the rule of law.

Keywords: forensic odontology, forensic medicine, professional training, medical education, identification, interdisciplinarity.

СУДОВА СТОМАТОЛОГІЯ ЯК МІЖДИСЦИПЛІНАРНА СКЛАДОВА ПРОФЕСІЙНОЇ ПІДГОТОВКИ ЛІКАРЯ-СТОМАТОЛОГА

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Резюме. У статті розглянуто сучасний стан і проблеми викладання судової стоматології в Україні як складової підготовки лікаря-стоматолога.

Мета роботи. Проаналізувати сучасний стан та проблеми викладання судової стоматології в системі професійної підготовки лікарів-стоматологів в Україні, визначити основні перешкоди її інтеграції та запропонувати шляхи удосконалення освітнього процесу на основі міждисциплінарного підходу та міжнародного досвіду.

Матеріали та методи дослідження. Робота ґрунтуються на комплексному аналізі чинних навчальних програм, законодавчих актів України та міжнародних стандартів (EBFO, ABFO, INTERPOL DVI) з використанням системного, порівняльно-правового методів та узагальнення наукових джерел, що дозволило виокремити ключові проблеми інтеграції судової стоматології в освітній процес та обґрунтувати шляхи її вдосконалення.

Результати. Проаналізовано міждисциплінарні зв'язки цієї навчальної дисципліни з курсами судової медицини, патологічної анатомії, криміналістики, етики та права. Визначено основні перешкоди інтеграції судово-стоматологічних знань у систему медичної освіти, зокрема нормативну неврегульованість, кадровий дефіцит, нестачу методичних матеріалів та низький рівень обізнаності студентів щодо ролі стоматолога у процесах ідентифікації. Запропоновано шляхи удосконалення навчального процесу, зокрема створення стандартів компетентностей, електронних курсів, клініко-експертних тренінгів та міжнародних освітніх партнерств.

Висновок. Судова стоматологія є ключовим, але наразі недооціненим компонентом професійної підготовки лікаря-стоматолога в Україні. Її міждисциплінарна природа вимагає реформування навчальних планів, розвитку педагогічних кадрів і впровадження цифрових технологій. Інтеграція судово-стоматологічних знань у навчальний процес сприятиме підвищенню якості медичної освіти, розвитку судово-медичної експертизи та зміцненню правової держави.

Ключові слова: судова стоматологія, судова медицина, професійна підготовка, медична освіта, ідентифікація, міждисциплінарність.

Introduction. Forensic odontology is a specialized branch of forensic medicine that applies dental knowledge for personal identification, determination of age and sex, establishing the mechanism of injuries, analysis of bite marks, and evaluation of both antemortem and postmortem injuries to the maxillofacial region [1,

2]. Unlike clinical dentistry, which is focused on treatment, forensic odontology holds evidentiary value, as the results of expert examinations can be utilized in criminal, civil, or administrative proceedings [3].

In the EU, USA, Canada, and Australia, forensic odontology is recognized as a distinct subspecialty of forensic medicine with its own specific training and accreditation standards (European Board of Forensic Odontology, 2019; American Board of Forensic Odontology, 2021). Educational programs are designed to develop competencies in areas such as personal identification based on dental characteristics (AM/PM comparison), analysis of bite marks, assessment of dentoalveolar trauma, and documentation of injuries in cases of violent crimes and mass disasters [4, 5]. EU countries maintain national registries of certified forensic odontologists, and their practice is regulated by INTERPOL's DVI (Disaster Victim Identification) protocols [6].

In Ukraine, forensic odontology is not currently established as a separate educational module. Its elements are presented fragmentarily within courses on "Forensic Medicine" and "Prosthetic Dentistry." This leads to a lack of systematic understanding among students regarding the role of dental data in the identification process and reduces graduates' readiness to participate in expert activities, particularly in scenarios involving mass fatalities, terrorist attacks, military events, or disasters [7].

The aim of the study. To analyze the current state and challenges of teaching forensic odontology within the professional training of dentists in Ukraine, identify the main obstacles to its integration, and propose ways to improve the educational process based on an interdisciplinary approach and international experience.

Materials and methods. The study is based on a comprehensive analysis of current educational programs, Ukrainian legislative acts, and international standards (EBFO, ABFO, INTERPOL DVI) using systematic, comparative legal methods and a review of scientific literature. This approach enabled the identification of key problems in integrating forensic odontology into the educational process and substantiated pathways for its improvement.

Results. As of 2025, the standards of higher medical education in Ukraine for specialty 221 "Dentistry" do not include separate competencies in "personal identification based on dental characteristics" or "participation of dentists in forensic medical examinations." The Law of Ukraine "On Forensic Examination" (2020) also does not define a separate qualification of "forensic odontologist," which limits the possibility of engaging dental specialists as experts in criminal proceedings [8]. This creates a legal vacuum in the system of training and certification of specialists.

Forensic odontology is closely related to forensic medicine (identification, injury analysis), pathological anatomy (determining the morphology of tissues and bone structures), criminalistics (documentation of bite marks, photo- and 3D modeling), medical law, and deontology (maintaining confidentiality, preserving evidence, ethical interaction with relatives of the deceased) [9-11]. This combination fosters in future dentists a comprehensive understanding of the role of evidence-based medicine in the justice system, which forms the foundation for developing interdisciplinary education in the field of forensic medical expertise [12].

Problems of the Educational Process:

1. Fragmentation of Curricula. In the current educational standards for specialty 221 "Dentistry," the discipline "Forensic Odontology" is not designated as a separate course. Instead, its elements are integrated into the curriculum topics of forensic medicine, therapeutic dentistry, and prosthetic dentistry. This approach leads to superficial assimilation of the material, a lack of systematic understanding of the forensic medical process structure, and reduces student motivation. Most universities limit instruction to 2-4 academic hours of lecture material without a practical component, which makes it impossible to form professional competencies in the field of expert activity. In contrast, in EU countries, the Forensic Odontology course typically spans 40-60 hours, including practical sessions, analysis of radiographs, AM/PM comparison modeling, and mass disaster simulations [1, 4].

2. Personnel shortage. Ukraine faces a significant shortage of instructors with dual expertise in both dentistry and forensic medicine. In most medical universities, the "Forensic Medicine" course is taught by specialists without a dental education, while instructors at dental departments, in turn, lack practical expert experience. This creates a gap between theoretical knowledge and clinical reality. The absence of the "forensic odontologist" specialization in the Ukrainian Classifier of Professions complicates the development of a professional workforce and limits opportunities for training new instructors. According to the European Board of Forensic Odontology (EBFO, 2019), the optimal ratio for quality teaching should be one certified forensic odontologist per every 50-100 students, a target currently unattainable in Ukraine [5, 6].

3. Lack of educational case studies and practical training. Practical training is a crucial prerequisite for developing professional skills; however, in Ukraine, it is limited to theoretical lectures and viewing illustrations. Students lack the opportunity to work through real-life scenarios, such as creating odontograms, comparing radiographs, or working with digital 3D jaw models or plaster casts. Furthermore, there is no system of clinical-expert training in collaboration with bureaus of forensic medical examination. In EU countries and the USA, such practical sessions are conducted within multidisciplinary teams, where dental students work alongside forensic medical experts, anthropologists, and criminalists during simulations of DVI (Disaster Victim Identification) procedures [3, 7, 9]. The availability of realistic case studies and practical tasks not only enhances students' competence but also their ethical preparedness to work in complex psychological situations associated with mass fatalities or violent crimes.

4. Insufficient digitalization of the educational process. Despite advancements in digital dentistry, forensic odontology education remains outside the process of digital transformation. There is a lack of specialized software for maintaining digital odontograms, databases of radiographic samples, 3D scanners for dental models, and simulation platforms for training in DVI procedures. The absence of a unified database of digital educational materials and methodological guidelines makes distance or blended learning unfeasible. For comparison, in the EU, virtual laboratories, such as the *Forensic Odontology e-Learning Platform* (University of Dundee, UK), are actively used, featuring interactive modules for analyzing

radiographs and bite mark case studies [2, 8]. In Ukraine, the need to implement digital educational tools has become particularly urgent due to the wartime conditions, where some educational institutions operate remotely or in evacuation.

In summary, the problems within the educational process are systemic in nature and require a comprehensive approach - from updating state educational standards to creating electronic learning platforms and interuniversity training centers for forensic odontology.

Therefore, to integrate forensic odontology into the education system, the following measures are necessary to develop an educational and professional standard "Forensic Odontology" for the postgraduate level; create a MOOC (Massive Open Online Course) in Ukrainian and English; establish cooperation with INTERPOL DVI for practical training; implement student simulation centers for modeling expert procedures; prepare scientific and methodological manuals aligned with international protocols.

Conclusion. Forensic odontology is a crucial yet currently underappreciated component of professional dental training in Ukraine. Its interdisciplinary nature requires reforming curricula, developing teaching staff, and implementing digital technologies. The integration of forensic odontological knowledge into the educational process will contribute to enhancing the quality of medical education, advancing forensic medical expertise, and strengthening the rule of law.

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