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TEACHING HUMAN ANATOMY IN CONTEMPORARY CONDITIONS: METHODOLOGICAL AND PEDAGOGICAL ASPECTS

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Abstract

Human anatomy is a fundamental discipline in medical education that provides the basis for the formation of professional knowledge and the subsequent study of clinical subjects. Current transformations in higher medical education, particularly the implementation of competency-based approaches, require the modernization of methodological and pedagogical strategies for anatomy teaching. The aim of this study was to analyze contemporary approaches to teaching human anatomy and to determine directions for improving the educational process in higher medical education institutions. Modern anatomy education is characterized by the combination of traditional teaching methods with innovative educational technologies. Conventional forms of instruction, including lectures, practical classes, and work with anatomical specimens, remain essential for developing systematic anatomical knowledge and professional thinking. At the same time, increasing attention is given to active learning strategies, interdisciplinary integration, and student-centered educational approaches. The implementation of digital technologies, including multimedia

resources, three-dimensional models, virtual simulations, and modern anatomical atlases, contributes to improved visualization and facilitates understanding of anatomical structures. However, the educational effectiveness of such technologies depends on their reasonable and methodologically grounded integration into the learning process. Challenges associated with anatomy education include limitations of distance learning, adaptation to emerging technologies, and the need for adequate methodological support. In conclusion, optimization of human anatomy teaching requires the balanced integration of traditional and innovative educational approaches. Such a strategy contributes to improving the quality of medical education and supports the development of professional competencies necessary for future physicians.

Key words: human anatomy; medical education; anatomy teaching; educational technologies; competency-based education; active learning.

In higher medical education institutions, fundamental disciplines play a decisive role in shaping the professional training of future physicians, as biomedical sciences provide the foundation for the subsequent mastery of clinical disciplines. In this context, there is an increasing need for a comprehensive analysis of contemporary methodological and pedagogical approaches to teaching human anatomy in order to substantiate strategies for optimizing the educational process. Modern medical education is characterized by a transition to a competency-based model, which integrates knowledge, skills, and practical abilities required for effective professional practice [1-3]. Accordingly, the teaching of human anatomy must align with current educational trends, including the activation of students' cognitive engagement, the implementation of interdisciplinary integration, and a focus on the development of clinical reasoning [4, 5].

The aim of the work was to analyze contemporary approaches to teaching human anatomy and to determine directions for improving the educational process in higher medical education institutions.

An analysis of current educational trends indicates a gradual shift from the traditional teaching model, primarily based on the reproductive assimilation of material, toward interactive and student-centered approaches [7, 9]. At the same time, traditional teaching methods—such as lectures, practical classes, and work with anatomical specimens—continue to play a vital role in medical education. They ensure the systematic acquisition of knowledge, establish fundamental concepts of human body structure, and contribute to the

development of professional thinking. Particularly important is the integration of classical approaches with modern pedagogical technologies, which enhances learning effectiveness and promotes a deeper understanding of anatomical structures [1, 5].

The organization of the educational process in human anatomy should take into account the specific characteristics of training students from different faculties, necessitating the adaptation of educational content to their professional needs. A key objective is the development of analytical thinking, achieved through engaging students in active cognitive processes, independent information retrieval, and critical evaluation [6, 7]. In this regard, the use of active learning strategies, collaborative formats, and problem-based learning is of particular importance [1, 7].

A crucial component of the modern educational process is the implementation of innovative technologies, which significantly expand the possibilities for teaching anatomy. The use of multimedia tools, three-dimensional models, virtual simulations, and digital platforms enhances the visualization of educational material and facilitates comprehension [2, 3, 12, 13]. Contemporary anatomical atlases incorporating images obtained through computed tomography, magnetic resonance imaging, and endoscopic techniques allow the educational process to more closely approximate clinical practice [3, 10]. At the same time, the excessive use of digital technologies without appropriate methodological justification may reduce learning effectiveness, underscoring the need for their rational integration with traditional teaching approaches [10].

One of the key aspects of teaching anatomy is ensuring a high level of visualization, which is achieved through the use of natural anatomical specimens. Working with real objects enables students to develop a spatial understanding of organ structure, their relative positions, and topographical relationships—an essential component in the formation of practical skills required for future clinical practice [11]. At the same time, the use of photographic atlases and other modern visualization tools complements traditional methods, providing a more comprehensive and multidimensional understanding of anatomical information [11].

The methodological foundation of modern anatomy teaching is based on the principle of the unity of structure and function, as well as the principle of the organism’s integrity. This involves considering anatomical structures not in isolation, but in relation to their functional significance and their role within the organism as a whole [9, 11]. Such an approach fosters systems thinking and ensures a deeper comprehension of the material. It is also important to consider the influence of external factors on the human body, enabling the integration of anatomical knowledge with other biomedical disciplines [5, 12].

Among the challenges of modern anatomy teaching are the adaptation of emerging technologies to the educational process, insufficient instructor preparedness for their effective use, and limitations in material and technical resources [5, 16]. A related issue concerns the effectiveness of distance learning, which, despite its accessibility and flexibility, cannot fully replace traditional forms of education—particularly in a practice-oriented discipline such as anatomy [10, 16]. The lack of direct interaction with instructors and limited opportunities for hands-on work with anatomical specimens may negatively impact the quality of student training.

Our colleagues who teach fundamental disciplines are facing similar problems given the challenges of the present time [17, 18].

An important direction for optimizing the educational process is the integration of diverse pedagogical approaches, combining traditional and innovative teaching methods. This ensures a balance between theoretical knowledge and practical skills, enhances student motivation, and supports the development of professional competencies [1, 15, 19]. Particular attention should also be given to creating a supportive educational environment that acknowledges the emotional dimension of learning and fosters sustained interest in the discipline [19].

Thus, contemporary teaching of human anatomy requires a comprehensive approach based on the analysis of current educational trends, the preservation of the value of traditional methods, the active implementation of innovative technologies, and consideration of existing challenges. Optimization of the educational process can be achieved through the thoughtful integration of diverse pedagogical strategies, ultimately improving the quality of training of future physicians and ensuring the development of essential professional competencies.

Conclusions

1. The implementation of digital technologies, including multimedia resources, three-dimensional models, virtual simulations, and modern anatomical atlases, contributes to improved visualization and facilitates understanding of anatomical structures.

2. The educational effectiveness of such technologies depends on their reasonable and methodologically grounded integration into the learning process.

3. Challenges associated with anatomy education include limitations of distance learning, adaptation to emerging technologies, and the need for adequate methodological support.

4. Human anatomy teaching requires the balanced integration of traditional and innovative educational approaches. Such a strategy contributes to improving the quality of medical education and supports the development of professional competencies necessary for future physicians.

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