

## CHALLENGES AND MODERN APPROACHES IN TEACHING HUMAN ANATOMY IN MEDICAL HIGHER EDUCATION INSTITUTIONS

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### Introduction

Human Anatomy is one of the fundamental subjects in medical education, serving as the foundation for understanding the structure of the human body. It is essential for the formation of clinical thinking and practical skills among medical students. However, there are several challenges and outdated practices in the current teaching of anatomy that negatively impact both the quality of education and students' preparedness for clinical practice.

### Main Challenges

1. **Overemphasis on theory** – Practical sessions are often limited, and students rely too much on textbook knowledge.
2. **Limited access to cadavers** – Many institutions lack sufficient cadaveric materials for dissection-based learning.
3. **Insufficient use of digital tools** – Technologies like 3D modeling and virtual reality are not widely integrated.
4. **Low student engagement** – Traditional lecture methods often fail to actively involve students in the learning process.
5. **Outdated pedagogical approaches** – Some instructors still rely on Soviet-era teaching methods.
6. **Lack of interdisciplinary integration** – Anatomy is often taught in isolation, with minimal links to physiology or clinical subjects.

### Modern Approaches

1. **Interactive technologies** – Use of 3D anatomical atlases and AR/VR platforms to visualize complex structures.
2. **Virtual laboratories** – Simulated environments allow students to explore anatomy without the need for cadavers.
3. **Problem-Based Learning (PBL)** – Case-based learning that ties anatomical knowledge to clinical scenarios.
4. **Interdisciplinary integration** – Coordination between anatomy, physiology, pathology, and clinical modules.
5. **Gamification and online assessments** – Use of game elements and interactive tests to boost motivation and feedback.
6. **3D printing** – Creating tangible anatomical models for hands-on learning experiences.

### Conclusion

Introducing modern educational technologies and teaching methodologies into anatomy education can transform the learning process to be more effective, student-centered, and clinically relevant. By doing so, students gain not only theoretical knowledge but also essential practical skills. Thus, modernizing anatomy instruction strengthens its role in producing competent future healthcare professionals.

## REFERENCES

1. Bergman, E. M., van der Vleuten, C. P. M., & Scherpbier, A. J. J. A. (2011). Why don't they know enough about anatomy? A narrative review. *Medical Teacher*, 33(5), 403–409. <https://doi.org/10.3109/0142159X.2011.558539>
2. Estai, M., & Bunt, S. (2016). Best teaching practices in anatomy education: A critical review. *Annals of Anatomy*, 208, 151–157. <https://doi.org/10.1016/j.aanat.2016.02.010>
3. Sugand, K., Abrahams, P., & Khurana, A. (2010). The anatomy of anatomy: A review for its modernization. *Anatomical Sciences Education*, 3(2), 83–93. <https://doi.org/10.1002/ase.139>
4. Tam, M. D., Hart, A. R., Williams, S., Heylings, D. J. A., & Leinster, S. J. (2010). Is learning anatomy facilitated by computer-aided learning? A review of the literature. *Medical Teacher*, 32(1), e21–e26. <https://doi.org/10.3109/01421590903197580>
5. Papa, V., & Vaccarezza, M. (2013). Teaching anatomy in the XXI century: New aspects and pitfalls. *The Scientific World Journal*, 2013, Article ID 310348. <https://doi.org/10.1155/2013/310348>
6. Azer, S. A., & Eizenberg, N. (2007). Do we need dissection in an integrated problem-based learning medical course? *Surgical and Radiologic Anatomy*, 29(2), 173–180. <https://doi.org/10.1007/s00276-007-0180-x>
7. Winkelmann, A. (2007). Anatomical dissection as a teaching method in medical school: A review of the evidence. *Medical Education*, 41(1), 15–22. <https://doi.org/10.1111/j.1365-2929.2006.02625.x>
8. Zibis, A. H., Mitousoudis, A. S., Karantanas, A. H., & Arvanitis, D. L. (2015). Medical students' perceptions and preferences concerning anatomy teaching. *Education for Health*, 28(2), 119–123. <https://doi.org/10.4103/1357-6283.170129>
9. Johnson, J. H. (2002). Importance of dissection in learning anatomy: Personal perspective. *Clinical Anatomy*, 15(5), 435–440. <https://doi.org/10.1002/ca.10038>
10. McLachlan, J. C., Bligh, J., Bradley, P., & Searle, J. (2004). Teaching anatomy without cadavers. *Medical Education*, 38(4), 418–424. <https://doi.org/10.1046/j.1365-2923.2004.01795.x>
11. INTESTINAL IMMUNITY. (2025). *Multidisciplinary Journal of Science and Technology*, 5(2), 485–488. <https://mjstjournal.com/index.php/mjst/article/view/2691>
12. RESULTS OF STUDIES ON THE LEVEL OF POPULATION KNOWLEDGE ABOUT PARASITIC DISEASES AND ITS PREVENTION. (2023). *Western European Journal of Medicine and Medical Science*, 1(4), 15–20. <https://westerneuropeanstudies.com/index.php/3/article/view/121>
13. Nurllayev R. R., Ibadullayeva S. S., Yoqubov Q. Y. KICHIK QON AYLANISH DOIRASI ARTERIYALARINING MORFOLOGIK TUZILISHI //Научный Фокус. – 2023. – Т. 1. – №. 8. – С. 463-468.
14. CHARACTERISTICS OF PATHOMORPHOLOGICAL CHANGES IN LYMPHOCYTIC LEUKOSIS IN CHILDREN. (2023). *Western European Journal of Medicine and Medical Science*, 1(4), 21–26. <https://westerneuropeanstudies.com/index.php/3/article/view/122>
15. ANALYSIS OF THE EPIDEMIOLOGICAL FEATURES OF DIARRHEAL DISEASES IN CHILDREN IN THE SOUTHERN ARAL REGION. (2024). *Multidisciplinary Journal of Science and Technology*, 4(2), 345–351. <https://www.mjstjournal.com/index.php/mjst/article/view/870>

16. Yusupov , S., Sadullayev , S., & Yoqubov , Q. (2025). GEPATITLAR FONIDA KORONAVIRUS INFEKSIYASINING KECHISHI. *Journal of Science-Innovative Research in Uzbekistan*, 3(3), 294–303. Retrieved from <https://inlibrary.uz/index.php/journal-science-innovative/article/view/76633>
17. Yusupov , S., Sadullayev , S., Yoqubov , Q., & Ibragimov , U. (2025). HOMILADOR AYOLLAR ORASIDAGI QIZILCHA: XUSUSIYATLARI, XAVFLARI VA OLDINI OLIISH. *Journal of Science-Innovative Research in Uzbekistan*, 3(3), 286–293. Retrieved from <https://inlibrary.uz/index.php/journal-science-innovative/article/view/76634>
18. FEATURES OF THE COURSE OF THE HERPES TYPE 4 VIRUS IN CHILDREN. (2025). *Multidisciplinary Journal of Science and Technology*, 5(3), 397-402. <http://www.mjstjournal.com/index.php/mjst/article/view/2909>
19. PECULIARITIES OF THE ETIOLOGICAL STRUCTURE OF ACUTE DIARRHEAL DISEASES IN THE CONDITIONS OF THE SOUTHERN ARAL REGION. (2025). *Multidisciplinary Journal of Science and Technology*, 5(3), 403-408. <https://mjstjournal.com/index.php/mjst/article/view/2910>
20. EPIDEMIOLOGY AND COMPLICATIONS OF COVID-19. (2025). *Multidisciplinary Journal of Science and Technology*, 5(3), 218-224. <https://mjstjournal.com/index.php/mjst/article/view/2869>
21. NOSOCOMIAL PNEUMONIA AND ITS ETIOLOGICAL FACTORS. (2025). *Multidisciplinary Journal of Science and Technology*, 5(3), 225-230. <http://www.mjstjournal.com/index.php/mjst/article/view/2870>
22. NUTRITION IN VIRAL HEPATITIS. (2025). *Multidisciplinary Journal of Science and Technology*, 5(3), 59-62. <https://mjstjournal.com/index.php/mjst/article/view/2820>
23. EMERGENCIES IN INFECTIOUS DISEASES: EPIDEMIOLOGICAL, MEDICAL AND SOCIAL ASPECTS. (2025). *Multidisciplinary Journal of Science and Technology*, 5(3), 63-67. <http://www.mjstjournal.com/index.php/mjst/article/view/2821>
24. EPIDEMIOLOGICAL AND CLINICAL CHARACTERISTICS OF ENTEROBIASIS . (2025). *Multidisciplinary Journal of Science and Technology*, 5(2), 665-668. <http://www.mjstjournal.com/index.php/mjst/article/view/2731>
25. FEATURES OF THE COURSE AND SPREAD OF TENIARINCHOSIS DISEASE. (2025). *Multidisciplinary Journal of Science and Technology*, 5(2), 669-672. <http://www.mjstjournal.com/index.php/mjst/article/view/2732>
26. IMMUNE STATUS IN PATIENTS WITH PARASITIC DISEASES IN KHOREZM REGION. (2025). *Multidisciplinary Journal of Science and Technology*, 5(1), 514-517. <http://www.mjstjournal.com/index.php/mjst/article/view/2518>
27. Masharipova Sh.S., Ibrakhimova H.R, Sadullaev S.E., & Nurllayev R.R. (2023). SPREAD OF MYOCARDIAL INFARCTION AMONG THE POPULATION OF THE KHOREZM REGION. *IMRAS*, 6(7), 328–332. Retrieved from <https://journal.imras.org/index.php/sps/article/view/523>
28. Masharipov, S., Sadullaev, S. E., & Sh, M. D. (2023). THE COURSE OF CORONAVIRUS AGAINST THE BACKGROUND OF CHRONIC HEPATITIS. *Scientific Impulse*, 2(15), 65-70.
29. Masharipova Sh.S, Masharipov S, Sadullaev S.E, & Matyakubova D.Sh. (2023). THE COURSE OF CORONAVIRUS AGAINST THE BACKGROUND OF CHRONIC HEPATITIS. *Scientific Impulse*, 2(15), 65–70. Retrieved from
30. Nurullayev R. R., Sadullayev S. E. DIAREYALI KASALLIKLARNING EPIDYEMIOLOGIK XUSUSIYATLARI //World of Science. – 2023. – T. 6. – №. 9. – C. 64-67.