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Advanced Technologies for Teaching *Rachana* Sharir: Implications for Academic Education

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ABSTRACT

The study of *Rachana Sharira* is a cornerstone of educational programs in the biological and healthcare fields. It is crucial that the teaching methods and instructional strategies used in this subject effectively prepare students. Traditionally, *Rachana Sharira* has been taught through a combination of lectures and hands-on practical sessions involving cadaver dissections and pre-dissected specimens. However, with the advent of modern digital technologies, such as smartphones, QR codes, and virtual reality, along with advanced imaging techniques like radiography, ultrasonography, MRI, and CT scans, the landscape of *Rachana Sharira* education is evolving. This review aims to explore how these innovative tools are being integrated into academic settings to enhance the diversity and effectiveness of *Rachana Sharira* teaching, ultimately improving students' understanding of the subject and its clinical applications.

Key words: *Digital technologies, virtual reality, advanced imaging, teaching methods, Rachana Sharira.*

INTRODUCTION

One of the primary challenges faced by *Rachana Sharira* instructors is replicating the hands-on experience of practical exposure. This includes activities such as cadaver dissections, bone demonstrations, museum specimens, and histology slide examinations, which foster interactive communication with students and enhance their communication and clinical skills. Recently, *Rachana Sharira* educators nationwide have begun integrating advanced technologies to make teaching and learning sessions more engaging. It is essential to incorporate innovative educational technologies into everyday teaching methodologies.

Rachana Sharira education has progressed significantly from its origins with traditional blackboard teaching. It has advanced through the use of overhead projectors, PowerPoint presentations, 3D models, and virtual dissection tools, and has now embraced online remote learning with 3D virtual dissection. As a fundamental subject in medicine, a deep understanding of *Rachana Sharira* is crucial for developing competent clinicians.[1] The responsibility to impart this knowledge effectively lies with *Rachana Sharira* educators.

Modern educators do more than just instruct their students; they actively facilitate learning by incorporating innovative technologies. While the adoption of these advanced educational tools isn't entirely new, their significance has grown tremendously in the current environment. Therefore, it is crucial for *Rachana Sharira* instructors to stay informed about the latest advancements in medical education. Additionally, students' learning habits have

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changed dramatically - they no longer depend solely on textbooks for knowledge acquisition. Being tech-savvy, they have adapted well to using various technologies in their *Rachana Sharira* studies, including YouTube videos, learning apps, and online workshops to enhance their dissection skills.[2]

New tools like anatomy studios, virtual dissectors, simulation labs, and radiology machines have recently been introduced to enhance the study of *Rachana Sharira*. The latest development, endoscopic anatomy, offers students a deeper understanding by going beyond traditional anatomical positions, providing a fresh perspective on the human body.[3] With these emerging trends in mind, we have highlighted various educational technologies and their impact on the teaching of *Rachana Sharira*.

Digital Innovations in *Rachana Sharira*

Web-Based Learning

Rachana Sharira education is undergoing a significant transformation with the integration of online web-based remote learning and portable network devices, which are now essential components of the learning environment. These advancements are influencing curriculum design and reshaping *Rachana Sharira* education. Today, students have access to a wealth of web-based resources, including automated learning systems and interactive programs, which support self-directed learning. Information such as lecture schedules, presentations, exam timetables, and assessment results is readily available online with just a click.[4] Courses are increasingly delivered through platforms like Zoom, Google Classroom, and Microsoft Teams. While traditional lectures remain a staple in *Rachana Sharira* education, these new technologies can enrich the teaching and learning experience by integrating large amounts of information in an organized digital format, making conventional lectures more engaging. However, students should be cautious with web-based platforms. For instance, while Wikipedia offers easily accessible information, it may contain inaccuracies and poorly sourced references. Despite its convenience, Wikipedia is not a substitute for authoritative anatomical texts.[5]

Virtual Dissection

The approach of *Rachana Sharira* educators to dissection has evolved in response to societal and professional changes.[6] In recent decades, *Rachana Sharira* education has been shifting from traditional cadaveric dissection towards virtual dissection, pre-dissected plasticized specimens, and virtual 3D body systems. While virtual dissection tables were once a feature of well-funded medical schools, they have now become a widespread trend. These tables employ simulation technology to offer detailed 3D views of virtual cadavers. Unlike physical dissection, students can repeatedly perform, undo, and redo dissections. Virtual dissection tools include images of gross and regional anatomy derived from digitally traced real cadavers, as well as a library of microscopic histology scans. These scans enable students to study microscopic tissue structures and cell-specific biomarkers from accurately stained digital images.[7]

Immersion and Haptic Technology

Virtual reality (VR), augmented reality (AR), and other advanced technologies offer innovative methods for teaching health professionals of all ages. These technologies provide a range of strategies to enhance learning through computer-generated simulations. Using human-computer interfaces (HCI), virtual environments are created for students to interact with and experience. The degree of immersion, fidelity, and interactivity varies among these technologies.

In VR, high-definition visual inputs create precise digital representations of the real world. Interaction with these virtual environments is facilitated through VR headsets, motion sensors, controllers, keyboards, and speech recognition software. On the other hand, AR adds computer-generated elements to real-world settings, such as overlaying anatomical structures on a manikin.[8]

Alternate reality platforms create immersive worlds where users can engage with and influence narratives by making choices. These platforms enable interactions with virtual environments using real-world technologies, like managing patient data in electronic health record simulations. While VR and AR often

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overlap on a "mixed reality" spectrum, the key difference lies in the level of immersion: VR offers a fully immersive experience, whereas AR enhances real-world environments with additional digital information.

Social Media

Social media platforms, including Facebook, Instagram, and similar applications, enable students to connect with each other, arrange tutorial and group study sessions, and share information. While these platforms may not directly enhance learning abilities, they facilitate communication, alleviate anxieties, boost morale, and create supportive networks, especially during challenging modules.[9]

3D Printing

3D printing (3DP) technology, which involves scanning and printing anatomical structures from dissected specimens, represents a new approach to enhancing student learning. This technology allows for the creation of detailed models of organs and structures, enabling interactive group investigations.[10] 3DP is particularly useful for visualizing anatomical features that are challenging to see in cadavers, such as the bones of the middle ear, sinuses, and brain ventricles, and can be valuable in clinical *Rachana Sharira* training.

While 3DP offers advantages over two-dimensional images, there has yet to be a study comparing its effectiveness directly with cadaver dissection. The integration of 3DP in anatomy education has shown promising results, but more research is needed to determine its comparative effectiveness. 3DP appears to be a valuable complement to cadaver dissection, and future studies could explore its potential to play a more significant role in *Rachana Sharira* education compared to other teaching methods.[11]

Further Thoughts and Recommendations

Improving the teaching of *Rachana Sharira* and related basic medical sciences can be achieved through strategic adaptations and the effective use of technology and media.[12] The current digital advancements offer valuable insights into both the advantages and limitations of technology and its innovative applications. The ongoing integration of technology into *Rachana Sharira* education is essential for enhancing learning outcomes and managing the cognitive load associated with extensive *Rachana Sharira* training.[13]

While traditional methods like cadaveric dissection have long been central *Rachana Sharira* education, the modern era of digital advancement makes it impractical to rely solely on a limited number of cadavers. Technology provides a reliable alternative to address the gaps that arise from this limitation, ensuring that students benefit from the available advancements. Therefore, it is crucial to judiciously incorporate technology and creative approaches to deliver timely, effective, and impactful *Rachana Sharira* education, especially in light of challenges posed by the pandemic and beyond.[14-15]

Conclusion

Achieving a nationwide consensus on the best approach for *Rachana Sharira* education is currently impractical. Instead, each state should develop its own strategies to maintain high standards in *Rachana Sharira* teaching and training. This process will require time, prioritization, and sensitivity to preserve the core aspects of *Rachana Sharira* education while adapting to new methods. The recent adoption of online pedagogy - such as pre-recorded lectures, medical simulations, and virtual cadavers - has proven effective as a temporary solution for delivering course content and lectures. However, the long-term effectiveness of these methods remains uncertain. Policymakers must critically evaluate how to integrate offline and online approaches to reform *Rachana Sharira* education effectively and timely.

References

1. Patra A, Chaudhary P, Ravi KS (2020) Adverse impact of Covid-19 on anatomical sciences teachers of India and proposed ways to handle this predicament. Anat Sci Educ 14:163–165. https://doi.org/10.1002/ase.2052
2. Owolabi J, Bekele A (2021) Implementation of innovative educational technologies in teaching of anatomy and basic medical sciences during the COVID-

ISSN: 2456-3110 **REVIEW ARTICLE** August 2024

19 pandemic in a developing country: the COVID-19 silver lining? Adv Med Educ Pract 12:619–625. https://doi.org/10.2147/AMEP.S295239

3. Sharma A, Kumar A (2021) Evolving trends in anatomy—a global perspective. Indian J Clin Anat Physiol 8:159–161. https://doi.org/10.18231/j.ijcap.2021.037
4. Mavrych V (2016) Modern trends in clinical anatomy teaching. MOJ Anat Physiol 2:1–2. https://doi.org/10.15406/mojap.2016.02.00035
5. London DA, Andelman SM, Christiano AV, Kim JH, Hausman MR, Kim JM (2019) Is Wikipedia a complete and accurate source for musculoskeletal anatomy? Surg Radiol Anat 41:1187–1192. https://doi.org/10.34197/ATS-SCHOLAR.2021-0002RE10.1007/s00276-019-02280-1
6. Gregory SR, Cole TR (2002) The changing role of dissection in medical education. JAMA 287:1180. https://doi.org/10.1001/jama.287.9.1180-JMS0306-4-1
7. García Martín J, Mora D, Aguado-Henche S (2019) Possibilities for the use of anatomage (the anatomical real body-size table) for teaching and learning anatomy with the students mini review open access. Biomed Sci Technol 4:4080–4083. https://doi.org/10.26717/BJSTR.2018.04.001094
8. Kassutto SM, Baston C, Clancy C (2021) Virtual, augmented, and alternate reality in medical education: socially distanced but fully immersed. ATS Scholar. https://doi.org/10.34197/ATS-SCHOLAR.2021-0002RE
9. Hennessy CM, Kirkpatrick E, Smith CF, Border S (2016) Social media and anatomy education: using twitter to enhance the student learning experience in anatomy. Anat Sci Educ 9:505–515. https://doi.org/10.1002/ase.1610
10. Sharma A, Kumar A (2021) Evolving trends in anatomy—a global perspective. Indian J Clin Anat Physiol 8:159–161. https://doi.org/10.18231/j.ijcap.2021.037
11. Chytas D, Johnson EO, Piagkou M, Tsakotos G, Babis GC, Nikolaou VS, Markatos K, Natsis K (2020) Three-dimensional printing in anatomy teaching: current evidence. Surg Radiol Anat 42:835–841. https://doi.org/10.1007/s00276-020-02470-2
12. Le TT, Prober CG (2018) A proposal for a shared medical school curricular ecosystem. Acad Med 93:1125–1128. https://doi.org/10.1097/ACM.0000000000002194
13. Gaur U, Majumder MAA, Sa B, Sarkar S, Williams A, Singh K (2020) Challenges and opportunities of preclinical medical education: COVID-19 crisis and beyond. SN Compr Clin Med 2:1992–1997. https://doi.org/10.1007/s42399-020-00528-1
14. Longhurst GJ, Stone DM, Dulohery K, Scully D, Campbell T, Smith CF (2020) Strength, weakness, opportunity, threat (SWOT) analysis of the adaptations to anatomical education in the United Kingdom and Republic of Ireland in response to the Covid-19 pandemic. Anat Sci Educ 13:301–311. https://doi.org/10.1002/ase.1967
15. Saverino D (2021) Teaching anatomy at the time of COVID-19. Clin Anat 34:1128–1128. https://doi.org/10.1002/ca.23616

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