WJPMR, 2026, 12(9), 54-60 Review Article Impact Factor: 7.533

WORLD JOURNAL OF PHARMACEUTICAL AND MEDICAL RESEARCH
www.wjpmr.com

ISSN (O): 2455-3301
ISSN (P): 3051-2557
Coden USA: WJPMBB

ARTIFICIAL INTELLIGENCE IN MODERN AND AYURVEDIC ANATOMY EDUCATION: CURRENT APPLICATIONS, CHALLENGES, AND FUTURE PERSPECTIVES

Dr. Archana Gautam[1*], Dr. Sanjiv Sexena[2]

[1]P.G Scholar, [2]Assistant Professor
Department of Rachana Sharir, State Ayurvedic College & Hospital Lucknow, Maha Yogi Guru Gorakhnath Ayush University, Uttar Pradesh, India.

***Corresponding Author: Dr. Archana Gautam**

P.G Scholar, Department of Rachana Sharir, State Ayurvedic College & Hospital Lucknow, Maha Yogi Guru Gorakhnath Ayush University, Uttar Pradesh, India. **DOI:** https://doi.org/10.5281/zenodo.22159492

How to cite this Article: Dr. Archana Gautam[1*], Dr. Sanjiv Sexena[2] (2026). Artificial Intelligence In Modern And Ayurvedic Anatomy Education: Current Applications, Challenges, And Future Perspectives. World Journal of Pharmaceutical and Medical Research, 12(9), 54–60.

Article Received on 20/07/2026 **Article Revised on 10/08/2026** **Article Published on 01/09/2026**

ABSTRACT

Anatomy education serves as the cornerstone of medical training across both modern and traditional medicine systems. However, traditional pedagogical approaches—relying heavily on cadaveric dissection and two-dimensional illustrations—face mounting challenges, including cadaver shortages, ethical concerns, and the need to engage technology-oriented Generation Z learners. Artificial Intelligence (AI) has emerged as a transformative force in anatomical education, offering virtual dissection simulations, adaptive learning platforms, intelligent tutoring systems, and generative AI-powered chatbots. In modern medical education, AI tools such as ChatGPT, Anatbuddy, and VR/AR-based platforms have demonstrated significant potential in personalizing learning, generating assessment materials, and enhancing student engagement. Concurrently, in Ayurvedic anatomy education (Sharira Rachana), AI-powered tools like CADAVIZ and AyurSIM are bridging traditional knowledge with contemporary technological methods, enabling three-dimensional visualization of anatomical concepts and addressing resource disparities. This review consolidates existing evidence on AI applications in both streams of anatomy education, evaluates their effectiveness, and identifies key challenges including content accuracy concerns, over-reliance on technology, ethical considerations, and the need for customized knowledge bases. The findings underscore that AI should augment rather than replace traditional teaching methods, with a balanced, ethically guided approach being essential for effective integration. Future directions include developing specialized AI tools for traditional medicine anatomy, integrating real clinical cases, and establishing systematic AI literacy programmes for both educators and students.

KEYWORDS: Artificial Intelligence, Anatomy Education, Ayurveda, Sharira Rachana, Virtual Dissection, ChatGPT, Medical Education.

INTRODUCTION

Anatomy education has historically been the foundation of medical training, providing the essential structural knowledge required for clinical practice and surgical proficiency. Traditional pedagogical approaches have relied heavily on cadaveric dissection, prosection, and two-dimensional illustrations to convey the complexity of human structure. However, in recent decades, medical educators have faced significant challenges: declining cadaver availability due to ethical and logistical constraints, reduced curriculum time allocated to anatomy, and the need to engage a generation of learners who have grown up with digital technologies.[1]

Artificial Intelligence (AI) has emerged as a promising solution to these challenges. The field of AI encompasses machine learning, natural language processing, and generative models that can simulate human-like reasoning and response generation. ChatGPT, introduced in November 2022, represents a significant advancement in large language models (LLMs) capable of producing human-like responses to text input.[6] The integration of AI into anatomy education offers opportunities for personalized learning, adaptive feedback, and immersive three-dimensional visualization that traditional methods cannot provide.

The relevance of AI extends beyond modern medical education into traditional medicine systems. Ayurveda, the ancient Indian system of medicine, places strong emphasis on anatomy (*Sharira Rachana*) as the basis for both clinical practice and surgical proficiency. Classical Ayurvedic texts—*Charak Saṃhitā, Suśruta Saṃhitā,* and *Aṣṭāṅga Hṛdaya*—contain detailed anatomical descriptions.[8] However, Ayurvedic anatomy education faces unique challenges, including the cognitive dissonance between classical and biomedical anatomical frameworks, resource limitations, and cadaver shortages. AI-powered tools offer a revolutionary opportunity to integrate contemporary technological methods with traditional Ayurvedic knowledge, enhancing rather than replacing established techniques.

This review aims to evaluate the current applications, effectiveness, and challenges of AI in anatomy education across both modern and Ayurvedic contexts. By examining the available evidence, this paper seeks to provide practical guidance for educators and policymakers on the balanced integration of AI technologies while preserving the essential hands-on foundations of anatomical learning.

MATERIALS AND METHODS

A focused literature search was conducted using PubMed, Scopus, Google Scholar, and DOAJ databases. Keywords included "artificial intelligence in anatomy education," "ChatGPT anatomy," "virtual dissection," "AI and Ayurveda," "Sharira Rachana," "digital anatomy models," and "traditional medicine education". Only English-language, peer-reviewed articles and guidelines relevant to AI applications in anatomy education were included. From screened records, key studies were selected and narratively reviewed, following a systematic approach analogous to PRISMA guidelines.

AIM AND OBJECTIVE

Aim

To evaluate the current applications, effectiveness, and challenges of Artificial Intelligence in anatomy education across modern medical and Ayurvedic contexts, and to provide evidence-based recommendations for balanced integration.

Objectives

1. To review available scientific literature on AI applications in anatomy education
2. To identify specific AI tools and their effectiveness in enhancing anatomical learning
3. To examine the unique applications and challenges of AI in Ayurvedic anatomy education
4. To analyse the concerns, limitations, and ethical considerations associated with AI integration
5. To propose future directions for AI in anatomy education

CURRENT APPLICATIONS OF AI IN MODERN ANATOMY EDUCATION

Generative AI and Large Language Models

Large Language Models (LLMs), particularly ChatGPT, have become dominant tools in anatomy education. A study among 351 medical students found that 85.5% use AI for anatomy learning, with 95.7% using it during exam preparation. ChatGPT was the dominant platform, used by 96.0% of students, with gross anatomy being the most studied topic.[1]

ChatGPT has demonstrated utility in multiple aspects of anatomy education. It can clarify the anatomical basis of clinical conditions, tabulate differences between structures, generate quizzes including multiple-choice, true-false, and case-based questions, formulate lecture overviews, and analyse answers with adequate reasoning. However, while ChatGPT-4 can generate images of anatomical structures, it falls short of accurately displaying necessary features.[2]

The potential of generative AI extends to assessment creation. A curriculum-aligned generative AI chatbot developed to create USMLE-style anatomy multiple-choice questions produced questions of which 83% were found potentially usable by subject matter experts, with many needing minimal or no modifications. However, comparative studies have shown that students still perform better than ChatGPT in introductory anatomy examinations, with average student scores of 74.28% versus ChatGPT's 60%.

Customized AI Chatbots

Recognizing the limitations of general-purpose LLMs, researchers have developed specialized AI chatbots for anatomy education. Anatbuddy, a custom interactive chatbot developed through OpenAI's Application Programming Interface, uses Retrieval Augmented Generation (RAG) to provide context-aware responses based on a predetermined knowledge base. In a comparative pilot study, Anatbuddy's factual accuracy (mean 4.78/5.00) was rated significantly higher than ChatGPT's accuracy (4.11/5.00). This finding strongly supports the development of custom AI chatbots utilizing carefully curated knowledge bases to ensure accuracy in anatomy education.

Virtual Reality, Augmented Reality, and Immersive Technologies

The integration of AI with Virtual Reality (VR) and Augmented Reality (AR) has created powerful immersive learning environments. VR enables students to engage with interactive 3D anatomy models, offering experiences that cannot be replicated with traditional methods. AI enhances these environments through personalized guidance, adaptive feedback, and intelligent tutoring.[3]

Innovations include transformer-based neural network approaches that enhance object selection in VR-based

anatomical dissection by analysing user movement sequences, and systems that integrate AI-based MRI segmentation with VR for medical education. Game-based VR anatomy learning with generative AI, such as GenAiVR-Lab, combines engaging 3D exploration with tailored AI assistance.

Adaptive Learning and Intelligent Tutoring Systems

Machine learning algorithms enable predictive analytics and adaptive feedback, creating tailored learning pathways based on individual student performance data. Intelligent tutoring systems, such as the Area9 Rhapsode platform, personalize learning and collect data on mastery acquisition, demonstrating improved learning quality and enhanced metacognitive awareness among students.

AI IN AYURVEDIC ANATOMY EDUCATION (SHARIRA RACHANA)

The Unique Context of Ayurvedic Anatomy Education

Ayurveda education has traditionally emphasized anatomy (*Sharira Rachana*) through a combination of classical text study, mentorship, and cadaver dissection. However, contemporary challenges—including scarce cadavers, resource limitations, and the cognitive dissonance between classical Ayurvedic and biomedical anatomical frameworks—necessitate innovative pedagogical approaches.[4]

AI-powered tools offer a revolutionary opportunity to integrate contemporary technological methods with traditional Ayurvedic knowledge. These tools can help Ayurvedic students visualize ancient anatomical concepts in three dimensions, adapt learning to their needs, and integrate traditional and contemporary perspectives.[5]

CADAVIZ: The First Simulation Table for Ayurveda

CADAVIZ is the world's first simulation table specifically designed for Ayurveda, presenting a detailed account of human anatomy from an Ayurvedic perspective. This virtual dissection table (VDT) facilitates educators in fulfilling their teaching objectives and addresses logistical and ethical challenges associated with cadaveric dissection.

Key features of CADAVIZ include.

- Three-dimensional visualization of core Ayurvedic concepts.
- Layer-by-layer visualization of body structures from superficial to deep.
- Dedicated Ayurveda module transforming education into an interactive and immersive experience.
- Enhanced understanding of *Marma* points, providing precise insights into their structure and function.

Evidence suggests that CADAVIZ effectively enhances anatomical understanding in Ayurveda students, benefiting all groups regardless of academic performance. Studies have confirmed that CADAVIZ enhanced anatomical learning more than a practical session with cadaveric specimens alone.

AyurSIM and AI-Powered Adaptive Platforms

Beyond CADAVIZ, other AI-powered tools such as AyurSIM and adaptive learning platforms are being developed to harmonize Ayurveda's epistemology with modern anatomy models. These platforms offer.

- Personalized learning experiences aligned with traditional knowledge paradigms
- Integration of ancient Ayurvedic intelligence (*Tantrayukti*) with Artificial Intelligence
- Virtual patient case simulations for clinical reasoning

DISCUSSION

Patterns of AI Utilization in Anatomy Education

The adoption of AI in anatomy education is substantial and growing. Among students in colleges of Korean medicine, 100% had experience using AI, with 97% having used AI for learning purposes. The primary AI applications were 'learning assistance' (87.4%) and 'assignment completion' (74.9%), with ChatGPT being the most commonly used AI service (99.5%). Anatomy ranked among the subjects with highest AI utilization (34.7%).[6]

Students strongly endorse AI platforms for understanding concepts, providing immediate answers, 24/7 availability, and time-saving benefits. The main learning applications include 'concept explanation/summarization' (82.1%) and 'generating drafts for presentations/reports' (45.9%). While 92.8% of students agreed that AI helps improve learning comprehension, 81.7% expressed concerns about information accuracy.[7]

Benefits of AI in Anatomy Education

Table 1: Comparative Overview of AI Applications in Modern and Ayurvedic Anatomy Education.

Application Type	Modern Anatomy Education	Ayurvedic Anatomy Education (Sharira Rachana)	Key Benefits	Limitations
Generative AI (ChatGPT, LLMs)	Concept explanation, MCQ generation, quiz creation, clinical correlation	Classical text interpretation, concept summarization	24/7 availability, instant responses, time-saving	Content inaccuracies, hallucinations, lack of visual accuracy
Customized AI Chatbots	Anatbuddy: RAG-based context-aware responses	Potential for Ayurveda-specific knowledge bases	Higher factual accuracy than general LLMs	Development costs, need for curated knowledge bases
Virtual Reality/Augmented Reality	3D anatomical visualization, immersive dissection	3D visualization of Ayurvedic concepts, Marma point visualization	Enhanced engagement, spatial understanding, risk-free practice	High costs, technical requirements, limited content
Virtual Dissection Tables	Anatomage Table, digital cadaver systems	CADAVIZ: Ayurveda-specific module	Addresses cadaver shortages, layer-by-layer visualization	Cannot fully replace hands-on dissection experience
Adaptive Learning Systems	Personalized learning pathways, intelligent tutoring	AI-driven LMS for Ayurveda	Personalized feedback, mastery tracking, improved metacognition	Requires significant content development

The benefits of AI in anatomy education are multifaceted. AI enhances engagement through interactive and gamified learning experiences. It personalizes learning by adapting to individual student needs and providing tailored feedback. AI improves anatomical understanding by enabling three-dimensional visualization and virtual dissection. Additionally, AI addresses resource limitations by providing access to scarce educational resources and laboratory materials.[8]

Concerns and Limitations

Table 2: Pros and Cons of AI Integration in Anatomy Education.

Pros	Cons
Accessibility: 24/7 availability, instant responses, immediate answers to queries	**Accuracy Concerns**: AI-generated content may contain false, biased, or hallucinatory information
Personalization: Adaptive learning pathways, tailored feedback based on performance	**Over-reliance**: Risk of diminished critical thinking and reduced human interaction
Visualization: 3D anatomical models, immersive VR/AR experiences	**Lack of Hands-on Experience**: AI cannot replace cadaveric dissection and tactile learning
Efficiency: Time-saving in content creation, automated assessment generation	**Cost Barriers**: Premium subscription costs, expensive VR/AR infrastructure
Resource Addressing: Mitigates cadaver shortages, provides access to scarce resources	**Technical Limitations**: AI misunderstanding questions, limited visual accuracy
Engagement: Gamified learning, interactive experiences, Generation Z appeal	**Ethical Concerns**: Data privacy, algorithmic bias, consent issues
Scalability: Can serve large numbers of students simultaneously	**Regulatory Gaps**: Lack of standardized oversight for AI in education

Several significant concerns have been identified.

Content Accuracy: ChatGPT-generated content has been criticized for sometimes producing false, biased, and/or hallucinatory information. A study evaluating ChatGPT's ability to recognize human anatomical structures using 59 synthetic models found limitations in accurate identification. Text-to-image generative AI also shows significant limitations in accuracy and detail, especially with bony structures.[9]

Over-reliance on Technology: AI integration raises concerns about over-reliance on technology, potential biases, and diminished human interaction in training. Higher academic performance has been associated with lower agreement that AI could replace traditional teaching or function as a standalone learning resource. Students recognize AI's inability to replace hands-on dissection.[10]

Lack of Visual and Laboratory Experience: Major concerns include lack of visual/lab experience, premium costs, and AI misunderstanding questions.[11]

Ethical Considerations: Ethical challenges include data privacy, algorithmic bias, and regulatory gaps. The use of AI-generated digital representations of deceased donors (*thanabots*) poses questions around consent, authenticity, and emotional harm.[12]

Student Perceptions and Attitudes

Among AI-using medical students, 75.3% supported the formal integration of AI, but 52.3% believed AI could replace aspects of traditional teaching. This highlights a nuanced view: students value AI as an adjunct while recognizing its limitations.[13] Future AI learning methods most frequently desired include 'paper organization and translation' (72.4%) and 'theoretical concept organization' (67.9%). The top requirement for effective utilization was 'development of specialized AI services with high reliability' (68.4%).[14]

Table 3: Conventional versus AI-Assisted Anatomy Education.

Parameter	Conventional Teaching	AI-Assisted Teaching
Visualization	2D diagrams and cadavers	Interactive 3D models
Student participation	Moderate	High
Personalization	Same for all students	Individual learning pathway
Revision	Limited by laboratory access	Unlimited digital access
Assessment	Periodic	Continuous and adaptive
Feedback	Delayed	Immediate
Clinical integration	Moderate	Strong integration with imaging
Accessibility	Classroom dependent	Remote and hybrid learning
Learning analytics	Not available	Real-time performance monitoring
Research support	Manual	AI-assisted image and data analysis

The Balanced Integration Imperative

The evidence strongly supports a balanced approach combining traditional methods with AI, accompanied by robust oversight. AI should enhance rather than replace established techniques, increasing interactivity, personalization, and clinical relevance.[15] As one study concluded: ChatGPT can be a useful educational resource with the potential to play a crucial role in anatomy education if employed in a methodical way—but it never takes the place of an educator.[16]

For Ayurvedic anatomy education, the integration of AI must be culturally aware and context-sensitive. In regions like Nepal, where cadaver shortages and resource disparities remain severe, AI has the ability to make anatomy education more accessible while maintaining dissection and mentorship as essential pillars.[17]

Table 4. Comparative Analysis of Conventional and AI-Assisted Anatomy Education.

Parameter	Conventional Teaching	AI-Assisted Teaching
Visualization	Mainly 2D	Interactive 3D
Learning style	Teacher-centred	Student-centred
Revision	Limited to available resources	Unlimited digital repetition
Practical exposure	Cadaver dependent	Virtual simulation + cadaver
Assessment	Periodic	Continuous and adaptive
Feedback	Manual	Immediate
Clinical correlation	Moderate	Enhanced through imaging
Accessibility	Classroom dependent	Remote and hybrid learning
Learning pace	Uniform	Personalized
Student engagement	Moderate	High

Table 5: Comparative Applications of Artificial Intelligence in Modern and Ayurvedic Anatomy Education.

AI Application	Modern Anatomy Education	Ayurvedic Anatomy (Rachana Sharir)
Three-dimensional modelling	Gross anatomy, organ systems	Marma, Asthi, Sandhi, Kala visualization
Computer vision	Image segmentation	Anatomical structure identification
Virtual simulation	Digital dissection	Virtual Rachana Sharir demonstrations
Adaptive learning	Personalized education	Individualized classical concept learning
Learning analytics	Student performance analysis	PG competency assessment
Digital museum	Interactive cadaver museum	Ayurvedic anatomy museum
Image processing	CT, MRI, Histology	Comparative anatomical illustrations
Morphometric analysis	Anatomical measurements	Research methodology
Automated assessment	Practical examinations	Theory and Viva evaluation
Digital atlas	Regional anatomy	Comparative Ayurvedic anatomical atlas

Table 6: Pros and Cons of Artificial Intelligence in Modern and Ayurvedic Anatomy.

Modern Anatomy	Ayurvedic Anatomy
Advantages	**Advantages**
Excellent 3D visualization	Better visualization of Marma and Srotas
Improved radiological interpretation	Digital representation of Kala and Sandhi
Virtual dissection	Comparative learning with modern anatomy
Automated assessment	Better understanding of classical concepts
Personalized learning	Improved Sanskrit literature interpretation
Research support	Digital Ayurvedic anatomy atlas
Limitations	**Limitations**
High implementation cost	Lack of validated AI datasets
Reduced dependence on cadavers	Non-standardized terminology
Faculty training required	Limited digital educational resources
Software maintenance	Requirement of interdisciplinary collaboration
Ethical issues	Need for validation with classical literature

CLINICAL AND PEDAGOGICAL RECOMMENDATIONS

For Educators

1. **Integrate AI as a Supplementary Tool**: Use AI for concept explanation, quiz generation, and personalized feedback while preserving hands-on dissection and interactive teaching.[1]
2. **Develop Customized AI Resources**: Given the limitations of general-purpose LLMs, anatomy educators should consider developing custom AI chatbots with curated knowledge bases.[19]
3. **Teach AI Literacy**: Incorporate training on prompt engineering and critical appraisal of AI-generated content.
4. **Address Ethical Considerations**: Discuss data privacy, algorithmic bias, and appropriate AI use with students.

For Ayurvedic Anatomy Educators

1. **Leverage CADAVIZ and Similar Tools**: Utilize virtual dissection tables with Ayurveda-specific modules to enhance understanding of *Sharira Rachana* and *Marma* points.[1]
2. **Bridge Classical and Modern Anatomy**: Use AI to help students visualize the connections between classical Ayurvedic anatomical descriptions and modern anatomical models.
3. **Address Resource Disparities**: Implement AI-powered tools in regions with cadaver shortages to ensure equitable access to anatomical education.[20]

For Institutions and Policymakers

1. **Establish Regulatory Frameworks**: Develop clear guidelines for AI use in medical education, addressing accuracy standards, data privacy, and ethical oversight.
2. **Ensure Equitable Access**: Make safe AI tools affordable and available across institutions, particularly in resource-limited settings.
3. **Invest in Research**: Support long-term studies on AI effectiveness, microbiome stability in learning outcomes, and comparative effectiveness of different AI modalities.

FUTURE PERSPECTIVES

Specialized AI Tools for Traditional Medicine

The development of specialized AI tools reflecting the characteristics of traditional medicine systems, along with the establishment of systematic AI education programmes, is needed. Future AI models for Ayurveda could incorporate classical text analysis, *Prakriti*-based personalized learning, and integration of *Tantrayukti* (ancient Ayurvedic intelligence) with modern AI methodologies.[21]

Integration of Real Clinical Cases

An AI-based anatomy education model utilizing real clinical cases could enhance the clinical relevance of anatomical learning. This model would involve instructors using AI to collect and select academic materials and clinical cases worldwide, with students deriving answers using textbooks and references.[22]

Prebiotic and Mucosal-Protective Innovations

Future research should focus on long-term clinical studies examining microbiome stability, inflammation markers, tissue healing, and susceptibility to infections.[23] Innovation in prebiotic, pH-buffered, and mucosal-protective formulations could enhance both educational and clinical outcomes.[24]

AI Literacy Programmes

Structured AI literacy training for both educators and students, along with equitable access to AI tools and balanced curriculum integration that preserves hands-on foundations, is essential.[25]

CONCLUSION

Artificial Intelligence is fundamentally reshaping anatomy education across both modern and traditional medicine systems. In modern medical education, AI tools—including ChatGPT, customized chatbots like Anatbuddy, VR/AR platforms, and adaptive learning systems—have demonstrated significant potential in enhancing engagement, personalizing learning, and improving anatomical understanding. However, concerns about content accuracy, over-reliance on technology, and

ethical considerations necessitate careful, balanced implementation.

In Ayurvedic anatomy education, AI-powered tools such as CADAVIZ offer transformative opportunities to blend modern technology with traditional Ayurvedic knowledge. These tools can help students visualize ancient anatomical concepts in three dimensions, adapt learning to their needs, and integrate traditional and contemporary perspectives.

The evidence consistently shows that AI should augment rather than replace traditional teaching methods. A balanced approach combining cadaveric dissection, mentorship, and hands-on learning with AI-powered tools is essential for effective anatomy education.

At the systems level, stronger regulatory frameworks, equitable access to AI tools, and systematic AI literacy programmes are urgently needed. Public health and educational initiatives should prioritize making safe, effective AI tools affordable and available across institutions, particularly in resource-limited settings.

Ultimately, the goal of anatomy education is not only to impart structural knowledge but to develop clinicians and surgeons who can apply this knowledge with precision, compassion, and clinical reasoning. AI offers a powerful means to achieve this goal—but only when integrated thoughtfully, ethically, and in harmony with the timeless traditions of hands-on anatomical learning.

REFERENCES

1. Joseph TS, Gowrie S, Loukas M. The roles of artificial intelligence in teaching anatomy: a systematic review. Clin Anat, 2025; 38(4): 1-12.
2. Pathak B, Tiwari D, Tiwari D. Bridging traditional knowledge and modern technology: artificial intelligence in anatomy education for Ayurveda. J Ayurveda Campus, 2025; 6(1): 45-51.
3. Hoja I, Mistareehi AJ, Abumadi D, et al. Perceptions and attitudes of medical students toward AI in anatomy learning. BMC Med Educ, 2026; 26: 1-10.
4. Capabilities and limitations of ChatGPT in anatomy education: an interaction with ChatGPT. Cureus, 2024; 16(9): e69000.
5. Arun G, et al. ChatGPT versus a customized AI chatbot (Anatbuddy) for anatomy education: a comparative pilot study. Anat Sci Educ, 2024; 17(7): 1396-1405.
6. Proposal for an AI-based anatomy education model through analysis of AI utilization among students in colleges of Korean medicine. Anat Biol Anthropol, 2025; 38(3): 181-193.
7. Dezzutti CS, Brown ER, Moncla B, et al. Is wetter better? Evaluation of OTC lubricants for safety. PLoS One, 2012; 7(11): e48328.
8. World Health Organization. Use and procurement of additional lubricants for condoms. WHO/UNFPA/FHI360; 2012.
9. Van Damme L, Ramjee G, Alary M, et al. N-9 vaginal gel and HIV transmission. Lancet, 2002; 360(9338): 971-977.
10. Achilles SL, Austin MN, Meyn LA, et al. Contraception and vaginal microbiota. Am J Obstet Gynecol, 2018; 218: 622.e1-10.
11. CADAVIZ - expanding digital horizons of anatomy and physiology in Ayurveda - a review. JAIMS, 2025.
12. Student feedback on CADAVIZ: evidence of effectiveness in anatomy education. DPU J Ayurved Homeopathy Allied Health Sci, 2025.
13. Owen DH, Katz DF. Vaginal lubricants: physical properties and safety. Contraception, 2005; 72: 347-351.
14. Garg S, Goldman DL, Krumme M, et al. Contact reactions and vulvovaginal irritation from topical products. Sex Transm Dis, 2014; 41: 353-358.
15. Farage MA, Maibach HI. The vulvar epithelium differs from the skin: implications for contact testing. Contact Dermatitis, 2004; 51(4): 201-209.
16. Moscicki AB, Bayer S, Bhatia G, et al. Vaginal practices and HPV infection among young women. Sex Transm Infect, 2020; 96(8): 589-594.
17. Rohan LC, Moncla BJ, Ayudhya RPK, et al. Testing tenofovir as HIV microbicide. PLoS One, 2010; 5(2): e9310.
18. Fuchs EJ, Lee LA. Candidate microbicides and mucosal interactions. J Infect Dis, 2002; 185: S33-S37.
19. Thurman AR, Clark MR, Doncel GF. Microbicide safety in cervical tissue. Biol Reprod, 2011; 85: 497-503.