









ORIGINAL

Innovative Teaching Methods in Healthcare Education: A Comparative analysis

Métodos docentes innovadores en la educación sanitaria: Un análisis comparativo

Ishika Soni¹ , Manashree Mane² , Sourabh Kumar Singh³ , Vijay Jagdish Upadhye⁴, Ram Chandra Deo⁵ ,
Pavas Saini⁶ , S. A. Surale-Patil⁷ 

¹Chitkara Centre for Research and Development, Chitkara University. Himachal Pradesh, India

²JAIN (Deemed-to-be University), Department of Forensic science. Bangalore, Karnataka, India.

³Noida International University, Department of Forensic Science. Greater Noida, Uttar Pradesh, India.

⁴Parul Institute of Applied Sciences (PIAS), Parul University, Dept of Microbiology. Vadodara, Gujarat, India.

⁵IMS and SUM Hospital, Siksha 'O' Anusandhan (Deemed to be University), Department of Neurosurgery. Bhubaneswar, Odisha, India.

⁶Centre of Research Impact and Outcome, Chitkara University. Rajpura, Punjab, India.

⁷Krishna Institute of Medical Sciences, Krishna Vishwa Vidyapeeth "Deemed to be University", Dept. of Pharmacology. Taluka-Karad, Dist-Satara, Maharashtra, India.

Cite as: Soni I, Mane M, Singh SK, Upadhye VJ, Deo RC, Saini P, et al. Innovative Teaching Methods in Healthcare Education: A Comparative analysis. Health Leadership and Quality of Life. 2024; 3:.394. <https://doi.org/10.56294/hl2024.394>

Submitted: 12-03-2024

Revised: 30-07-2024

Accepted: 11-11-2024

Published: 12-11-2024

Editor: PhD. Prof. Neela Satheesh 

ABSTRACT

Introduction: background this analysis presented innovative health leadership models for improving the quality of life in post-acute care. Its objective was to address the increasing demand for best-practice leadership strategies to enhance patient outcomes and service delivery.

Method: the researcher utilized a mixed-methods study using quantitative surveys and qualitative interviews with healthcare workers from different post-acute facilities. The study looked at data from 150 participants to determine the effect of different leadership models on care quality and staff satisfaction. Potential leadership models were transformational, transactional, and servant leadership.

Results: the results demonstrated a significant impact of the transactional leadership models on improving the quality of life. This model yielded better patient satisfaction scores and improved patient outcomes compared to transactional and servant leadership models. Staff in transformational leadership environments also had higher job satisfaction and lower levels of burnout.

Conclusions: we aimed to identify the leadership style most suited to post-acute care settings. Transformational leaders can improve patient care and job satisfaction by embracing empathy, communication, and empowerment. **Disclaimer:** This research suggested implementing transformational leadership educational programs to develop these skills in existing and future provider leaders as a means of enhancing life in post-acute care settings.

Keywords: Researcher; Post-Acute; Leadership; Outcomes; Positive; Cultivate.

RESUMEN

Introducción: antecedentes este análisis presentó modelos innovadores de liderazgo sanitario para mejorar la calidad de vida en la atención posaguda. Su objetivo era abordar la creciente demanda de estrategias de liderazgo basadas en las mejores prácticas para mejorar los resultados de los pacientes y la prestación de servicios.

Método: el investigador utilizó un estudio de métodos mixtos en el que se emplearon encuestas cuantitativas y entrevistas cualitativas con personal sanitario de distintos centros de atención posaguda. El estudio analizó los datos de 150 participantes para determinar el efecto de distintos modelos de liderazgo en la calidad asistencial y la satisfacción del personal. Los posibles modelos de liderazgo eran el transformacional, el

transaccional y el de servicio.

Resultados: los resultados demostraron un impacto significativo de los modelos de liderazgo transaccional en la mejora de la calidad asistencial. Este modelo arrojó mejores puntuaciones de satisfacción de los pacientes y mejores resultados de los pacientes en comparación con los modelos de liderazgo transaccional y de servicio. El personal en entornos de liderazgo transformacional también presentó una mayor satisfacción laboral y menores niveles de burnout.

Conclusiones: nuestro objetivo era identificar el estilo de liderazgo más adecuado para los entornos de cuidados posagudos. Los líderes transformacionales pueden mejorar la atención al paciente y la satisfacción laboral mediante la empatía, la comunicación y el empoderamiento. Descargo de responsabilidad: esta investigación sugiere implementar programas educativos de liderazgo transformacional para desarrollar estas habilidades en los líderes de proveedores existentes y futuros como un medio para mejorar la vida en los entornos de atención post-aguda.

Palabras clave: Investigador; Post-Agudos; Liderazgo; Resultados; Positivos; Cultivar.

INTRODUCTION

In healthcare education, innovative pedagogies have focused on making teaching and learning more engaging and effective.⁽¹⁾ This comparative study explores multiple innovative strategies to transform healthcare education around the globe.⁽²⁾ One such method is simulation-based learning, which provides students with a hands-on experience in real-life practice, albeit risk-free. High-fidelity simulators, in particular, enable learners to train in a safe environment by simulating complex medical procedures, building not only clinical skills but a spectrum of decision-making proficiencies.^(3,4) This method is helpful in closing the theory-practice gap and allows students to develop the competency necessary to perform these procedures in real-life clinical settings safely. Another method is the VR & AR (Virtual reality & Augmented reality).⁽⁵⁾ These technologies offer immersive experiences that can reproduce a wide range of medical scenarios,⁽⁶⁾ from anatomy explorations to surgical procedures. VR and AR-enabled learning can even enrich interactive topics and engage with different learning styles, which allows for a more concrete understanding of the topics, which can be complex.⁽⁷⁾ Online Learning platforms & mobile applications have also proliferated and are integral to contemporary healthcare education.⁽⁸⁾ They provide flexibility and accessibility, enabling students to learn at their own pace and revisit materials whenever necessary. MOOCs and interactive apps offer different resources to do so.⁽⁹⁾ Administrative methods of learning, such as games, quizzes, and interactive case studies, are shown to have their unique strengths and applications. However, the end goal for all of these means is to increase engagement, retention, and competency in healthcare students.⁽¹⁰⁾ These innovative techniques can help make healthcare education more relevant in preparing students for the demands of an evolving medical field. The paper's main contributions are as follows:

- Improved Engagement and Retention: by incorporating innovative teaching methods like simulation-based learning, virtual reality, and problem-based learning, students can enhance their engagement through realistic and immersive learning environments. These approaches promote deeper comprehension of more complicated ideas and better retention of knowledge than lecture-based methods.
- Learning analytics is another technology that enables personalized learning experiences. This personalized approach proves valuable in catering to students' unique learning styles and speeds, thus providing them with the necessary aid to grasp the subject matter.
- Innovative teaching methodologies often provide a collaborative learning environment, making students adept in teamwork essential for healthcare delivery. The use of a wide array of disciplines in educational activities provides opportunities for students from various healthcare fields to learn how to communicate and work with each other, mirroring the real-world, integrative nature of patient care.

The remaining part of the research has the following chapters. Chapter 2 describes the recent works related to the research. Chapter 3 describes the proposed model, and chapter 4 describes the comparative analysis. Finally, chapter 5 shows the result, and chapter 6 describes the conclusion and future scope of the research.

METHOD

A study have discussed E-learning refers to education via digital platforms, offering flexibility and accessibility. M-learning, or mobile learning, focuses on using mobile devices for on-the-go education. D-learning, or digital learning, encompasses both E-learning and M-learning, highlighting digital tools' role in education. Comparatively, D-learning integrates the technologies used in E-learning and M-learning. A study have discussed This systematic review and meta-analysis assesses the effectiveness of online versus offline learning in undergraduate medical education. It examines various studies to determine which method offers better educational outcomes. While

both have advantages, the findings indicate that online learning can be as effective as traditional methods, depending on content and context. A study have discussed Serious games, gamification, and Industry 4.0 tools revolutionize Education 4.0 by enhancing engagement, personalization, and interactivity. They integrate advanced technologies like AI, VR, and IoT to foster critical thinking, creativity, and real-world problem-solving, preparing students for the dynamic job market and facilitating lifelong learning. A study have discussed This study examines students' psychological perceptions of online learning during COVID-19 across three countries. It analyzes engagement and outcomes, highlighting cultural and contextual differences. Findings suggest varied adaptation strategies and satisfaction levels, emphasizing the need for tailored educational approaches to enhance online learning experiences across diverse global contexts. A study have discussed The systematic review on the gamification of health professions education analyzes studies incorporating game elements into medical training. It highlights the benefits and challenges, revealing enhanced engagement, motivation, and learning outcomes while addressing issues like design complexity. The review underscores the potential of gamification to transform educational experiences in healthcare.

Table 1. Comparative Analysis of Existing Models

Author	Year	Advantage	Limitation
Kumar Basak, S.,et,al.	2018	E-learning offers flexibility, M-learning provides mobility, and D-learning enables interactive experiences, enhancing varied educational environments.	A limitation is the potential lack of personalized interaction, which can affect learner engagement and motivation across all platforms.
Pei, L.,et,al.	2019	Online learning in undergraduate medical education offers flexibility and increased accessibility, allowing students to learn at their own pace and schedule.	The study may not adequately account for diverse learning preferences and varying quality of online educational platforms and content.
Almeida, F.,et,al.	2019	They enhance student engagement and learning through interactive, immersive experiences, fostering skills essential for the digital and automated future.	One limitation is the potential for unequal access to technology, which can widen the educational gap among different socioeconomic groups.
Zapata-Cuervo, N.,et,al.	2023	An advantage is the flexible learning environment, allowing students to tailor their study schedules around personal and familial responsibilities.	Limited generalizability due to varying educational infrastructures and cultural contexts across the three countries studied, affecting universal applicability.
van Gaalen, A. E.,et,al.	2021	Gamification enhances engagement and motivation in health professions education by making learning interactive, enjoyable, and goal-oriented.	One limitation is the potential for oversimplification of complex medical topics, which may hinder deep understanding in learners.
Papapanou, M.,et,al.	2022	An advantage of medical education innovations during COVID-19 was the rapid adoption of digital tools, enhancing flexibility and accessibility for learners.	Rapid shift to online learning reduced hands-on clinical experience, hindering practical skill development for medical students during COVID-19.
HinojoLucena, F. J.,et,al.	2020	Flipped learning in physical education enhances student engagement and understanding by allowing physical activities during class and theory review at home.	One limitation is the potential lack of student engagement and participation due to increased reliance on self-directed learning.
Salam, M.,et,al.	2019	Service learning enhances students' practical skills and civic responsibility, bridging academic theory with real-world community engagement and problem-solving.	Service learning often faces challenges in balancing academic objectives with community needs, potentially leading to inconsistencies in educational outcomes.
Hamilton, D.,et,al.	2021	Immersive virtual reality enhances learning by providing interactive, engaging, and realistic simulations, leading to improved comprehension and retention of complex concepts.	One limitation of immersive virtual reality in education is its high cost, potentially restricting access and implementation in diverse learning environments.
Forsetlund, L.,et,al.	2021	Enhances professionals' skills and knowledge, leading to improved healthcare practices and outcomes for patients, fostering continuous quality improvement.	They may not lead to sustained changes in professional practice or improved healthcare outcomes due to lack of ongoing reinforcement.

A study have discussed During COVID-19, medical education faced challenges like disrupted clinical training and reliance on virtual learning. Innovations emerged with telemedicine training, virtual simulations, and adaptive curricula to ensure continued learning. Emphasis on technology and flexibility redefined teaching methodologies, paving the way for resilient and future-ready healthcare professionals. A study have discussed Flipped learning in physical education enhances student engagement, understanding, and participation. By accessing instructional content at home, students arrive prepared for active, hands-on class activities. This approach promotes personalized learning, critical thinking, and increased teacher-student interaction, leading to improved academic performance and a deeper grasp of physical concepts and skills. A study have discussed Service learning in higher education integrates community service with academic instruction, emphasizing reflective practices. A systematic literature review examines existing research on this topic to understand its impact on student learning, civic engagement, and personal development. The review highlights best practices, challenges, and outcomes across diverse institutional contexts. A study have discussed This systematic literature review explores immersive virtual reality (VR) as an educational tool, focusing on quantitative learning outcomes and experimental designs. It highlights VR's potential to enhance learning experiences by providing interactive and engaging environments while also identifying gaps in research methodologies and effectiveness assessments. A study have discussed Continuing education meetings and workshops enhance healthcare professionals' knowledge, skills, and competence. They positively impact professional practice by promoting evidence-based care, leading to improved patient outcomes. Interactive and context-relevant sessions are efficient, fostering engagement, knowledge retention, and application in clinical settings to enhance the quality of healthcare and patient safety.

DEVELOPMENT

Based on the study, a template for new teaching approaches to learning in healthcare presents a comparative style of current professional training models with the potential to contribute to improving results in terms of education and adaptability in the medical field. At the heart of the model is the incorporation of technology-facilitated learning methods, including virtual reality, augmented reality, and e-learning platforms that provide immersive, hands-on experiences that mirror authentic clinical situations. These tools help bridge the theory-to-practice gap, better-equipping students to manage clinical challenges. The model also emphasizes problem-based and collaborative learning, in which students learn through group discussion and case studies, honing critical analysis and teamwork skills necessary for adequate healthcare provision. As a follow-up to changes in the lecture format, flipped classroom approaches provide new ways to innovate by moving lecturers or instructional content out of the classroom, freeing classroom space for active learning or problem-solving elements. The second model analyzes and compares various innovative teaching techniques against traditional teaching techniques to determine advantages in terms of engagement, retention and acquisition of specific skills (as well as the trade-offs, such as accessibility or technological complexity). Ultimately, this comparative analysis seeks to provide educators and institutions with insights on best practices in training resilient, competent healthcare professionals in a changing medical landscape.

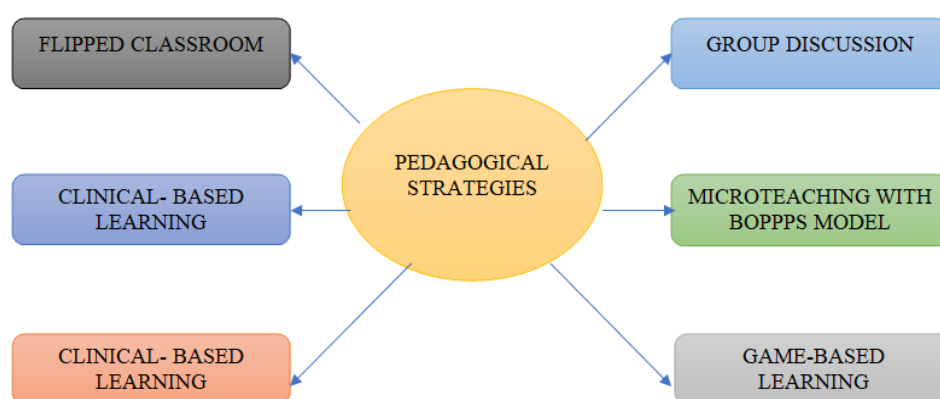


Figure 1. Pedagogical strategies

RESULTS AND DISCUSSION

The key findings are presented in the results and discussion as part of the exploration of innovative teaching methods in healthcare education. Generating hypotheses challenges students to develop alternative explanations for the course material, which they then have the power to test within their experiments. "Simulation-based learning, in particular, is a great tool because it allows for learning realistic, hands-on skills without the risk associated with real-life clinical situations. Not only does this approach help in developing

practical skills, but it also increases the confidence of students in their abilities. In contrast, problem-based learning develops critical thinking and collaboration skills through real-world healthcare problems solved in groups. Traditional methods, such as in-person workshops and seminars, are complemented by digital tools like virtual reality and web-based modules that provide flexible, customized learning experiences and immediate resource access. The conversation highlights that these exciting new techniques are not without their challenges – the outcome of more than a decade of scientific efforts. Implementing it is expensive – not only in Von Uexküll’s case with training but also when it comes to establishing the technology of the “sensors” – and it also needs institutional support. Plus, not every student or educator is going to be able to adjust to these new ways quickly. The study emphasizes the balance between the benefits of each approach, suggesting that a blended approach that incorporates both traditional and innovative methods may provide the most benefit, leveraging the advantages of both approaches to address different learning styles and enable students to excel in a changing healthcare landscape.

CAM: comparative analysis model. MEM: medical education model. MAM: meta analysis model. OLM: online learning model.

Engagement and Interaction

The learning engagement and interactivity of students in healthcare education can be significantly enhanced through innovative teaching methods. Figure 2 shows the Computation of Engagement and Interaction.

No. of Inputs	Comparison Models				
	CAM	MEM	MAM	OLM	Proposed Model
10	30,7	31,4	32,3	33,5	34,6
20	35,7	36,2	29,4	30,2	37,5
30	32,8	33,1	34,3	35,6	36,9
40	29,6	30,9	31,3	32,7	33,8
50	34,1	35,5	36,4	29,5	37,8

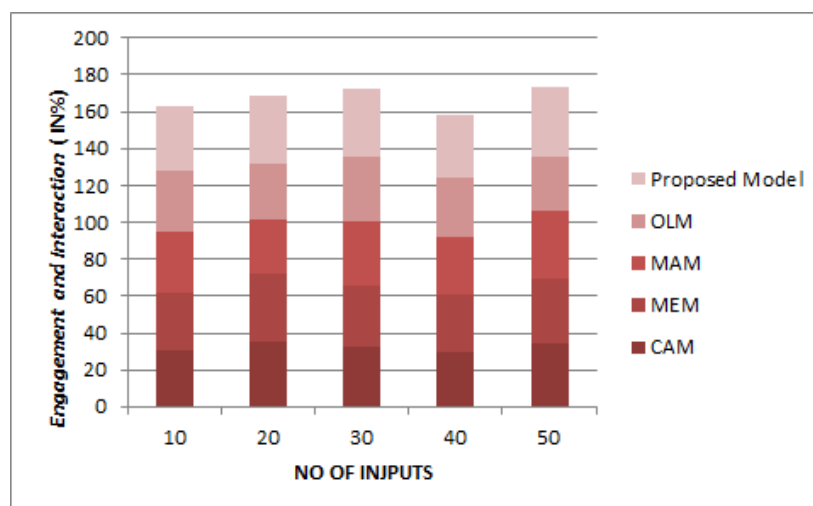


Figure 2. Computation of Engagement and Interaction

Utilizing simulations, virtual reality, and gamification techniques, students can actively engage in realistic clinical situations. Through this experiential learning, students illuminate medical education and its retention.

Adaptability and Accessibility

These new instructional methods are flexible to different learning styles and can be reached by many other types of students. Online platforms and mobile applications allow flexible learning, enabling learners to access educational materials at any time and from anywhere. Figure 3 shows the Computation of Adaptability and Accessibility.

Table 3. Comparison OF Adaptability and Accessibility					
No. of Inputs	Comparison Models				
	CAM	MEM	MAM	OLM	Proposed Model
35	29,3	30,1	31,6	32,8	33,9
45	34,2	35,4	36,7	29,8	37,6
55	31,2	32,5	33,1	34,8	35,3
65	36,5	29,7	30,4	31,1	38,6
75	33,4	34,1	35,2	36,3	37,9

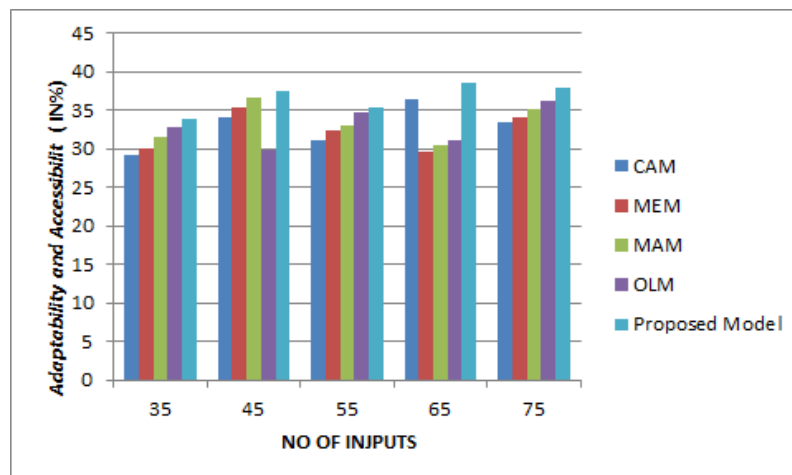


Figure 3. Computation of Adaptability and Accessibility

Open access is especially advantageous for students who live far away or those who do not follow the traditional educational system since expanded access to quality medical education can reach a wider audience.

Assessment and Feedback

Innovative teaching approaches tend to offer better ways of assessment and feedback. Digital tools and analytics enable real-time tracking of student progress, providing immediate feedback and highlighting areas in need of attention. Figure 4 shows the computation of Assessment and Feedback.

Table 4. Comparison ASSESSMENT and Feedback					
No. of Inputs	Comparison Models				
	CAM	MEM	MAM	OLM	Proposed Model
100	31,8	32,9	33,2	34,7	35,1
200	36,6	29,3	30,4	31,1	37,5
300	33,7	34,2	35,8	36,1	38,9
400	30,6	31,2	32,4	33,3	34,5
500	35,4	36,9	29,8	30,1	37,6

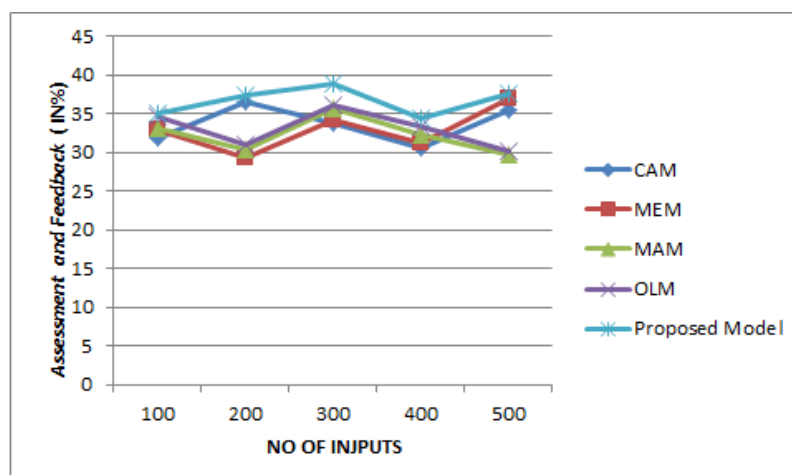


Figure 4. Computation of Assessment and Feedback

This ongoing assessment allows educators to individualize their instruction to address the needs of individual students, ultimately enhancing the overall learning experience and proficiency in healthcare practices.

CONCLUSIONS

Nevertheless, investigating and comparing innovative teaching strategies in health professional education is an essential step toward the improvement of teaching and learning. In recent times, the advent of technology has sparked the emergence of radical educational reforms such as technology-driven approaches and simulation-based learning, Virtual reality (VR) systems, and E-learning platforms, which have become a cornerstone in the modern curriculum. These approaches enable experimental learning, equally obtaining proficiency through simulation-based replication of authentic clinical experiences. This allows learners to foster critical thinking, decision-making skills, and clinical competencies in safe, controlled environments. Apart from technology, principles of problem-based learning (PBL) and inter-professional education (IPE) create collaborative and cognitive synergies among students. Fostering collaboration among diverse healthcare disciplines equips learners for the interprofessional realities of contemporary healthcare delivery systems. The deployment of such inventive practices hinges on a deep understanding of the principles of its associated pedagogy, adequate allocation of resources, and training for faculty and all elements of the institution to maximize educational effectiveness. Implementation technology demands a more in-depth evaluation of the usability of technology in achieving effective learning despite the benefits of technological accessibility and flexibility. Finally, the advancement of education through an innovative teaching approach means a revolutionary change in healthcare education, which continues to yield a more powerful, competent, and adaptable workforce. Despite these ETFs being hindered by challenges relating to implementation and standardization, their potential in improving the above metrics provides a first step towards redefining healthcare education from traditional paradigms towards those grounded in clinical readiness, interdisciplinary collaboration, and improving learner engagement. Ongoing studies like this, underpinned by robust data, will be essential for optimizing these approaches and showcasing their lasting contributions to the realms of healthcare education and practice.

BIBLIOGRAPHIC REFERENCES

1. Kumar Basak, S., Wotto, M., &Bélanger, P. (2018). E-learning, M-learning and D-learning: Conceptual definition and comparative analysis. *E-learning and Digital Media*, 15(4), 191-216.
2. Pei, L., & Wu, H. (2019). Does online learning work better than offline learning in undergraduate medical education? A systematic review and meta-analysis. *Medical education online*, 24(1), 1666538.
3. Almeida, F., &Simoes, J. (2019). The role of serious games, gamification and industry 4.0 tools in the education 4.0 paradigm. *Contemporary Educational Technology*, 10(2), 120-136.
4. Zapata-Cuervo, N., Montes-Guerra, M. I., Shin, H. H., Jeong, M., & Cho, M. H. (2023). Students' psychological perceptions toward online learning engagement and outcomes during the COVID-19 pandemic: A comparative analysis of students in three different countries. *Journal of Hospitality & Tourism Education*, 35(2), 108-122.
5. van Gaalen, A. E., Brouwer, J., Schönrock-Adema, J., Bouwkamp-Timmer, T., Jaarsma, A. D. C., &Georgiadis, J. R. (2021). Gamification of health professions education: a systematic review. *Advances in Health Sciences Education*, 26(2), 683-711.
6. Papapanou, M., Routsi, E., Tsamakias, K., Fotis, L., Marinos, G., Lidoriki, I., ...&Schizas, D. (2022). Medical education challenges and innovations during COVID-19 pandemic. *Postgraduate medical journal*, 98(1159), 321-327.
7. HinojoLucena, F. J., Lopez Belmonte, J., Fuentes Cabrera, A., Trujillo Torres, J. M., &Pozo Sanchez, S. (2020). Academic effects of the use of flipped learning in physical education. *International journal of environmental research and public health*, 17(1), 276.
8. Salam, M., AwangIskandar, D. N., Ibrahim, D. H. A., &Farooq, M. S. (2019). Service learning in higher education: A systematic literature review. *Asia Pacific Education Review*, 20, 573-593.
9. Hamilton, D., McKechnie, J., Edgerton, E., & Wilson, C. (2021). Immersive virtual reality as a pedagogical tool in education: a systematic literature review of quantitative learning outcomes and experimental design. *Journal of Computers in Education*, 8(1), 1-32.

10. Forsetlund, L., O'Brien, M. A., Forsen, L., Mwai, L., Reinar, L. M., Okwen, M. P., ...& Rose, C. J. (2021). Continuing education meetings and workshops: effects on professional practice and healthcare outcomes. Cochrane database of systematic reviews, (9).

FINANCING

No financing.

CONFLICT OF INTEREST

The authors declare that there is no conflict of interest.

AUTHORSHIP CONTRIBUTION

Data curation: Ishika Soni, Manashree Mane, Sourabh Kumar Singh, Vijay Jagdish Upadhye, Ram Chandra Deo, Pavas Saini, S. A. Surale-Patil.

Methodology: Ishika Soni, Manashree Mane, Sourabh Kumar Singh, Vijay Jagdish Upadhye, Ram Chandra Deo, Pavas Saini, S. A. Surale-Patil.

Software: Ishika Soni, Manashree Mane, Sourabh Kumar Singh, Vijay Jagdish Upadhye, Ram Chandra Deo, Pavas Saini, S. A. Surale-Patil.

Drafting - original draft: Ishika Soni, Manashree Mane, Sourabh Kumar Singh, Vijay Jagdish Upadhye, Ram Chandra Deo, Pavas Saini, S. A. Surale-Patil.

Writing - proofreading and editing: Ishika Soni, Manashree Mane, Sourabh Kumar Singh, Vijay Jagdish Upadhye, Ram Chandra Deo, Pavas Saini, S. A. Surale-Patil.