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EDITORIAL

Advancing the frontiers of innovation: insights and perspectives

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Open Sesame

And the door to 2023 opened with another edition of Short Reports on Simulation Innovations Supplement (SRSIS), bringing us novel ideas and creative solutions! For the first supplement of 2023, we received and reviewed articles about how simulationists conquered their unique challenges with a small dose of out-of-the-box thinking and a hefty dose of passion for simulation-based healthcare education (SBHE) in their professional fields. Being innovative is also one of the crucial traits of a simulationist.

Innovation comes in different forms and sizes and is the process by which new ideas are exploited to create economic, social and environmental value [1]. In this edition of SRSIS, the authors have leveraged both the technology and the technique from virtual reality (VR) [2–4] to do-it-yourself (DIY) models [5,6] and wearable physiologic monitors using smart textiles [7] to train simulation participants [8]. A quick overview of the submissions in this supplement and the trends they support are included below.

Most submissions used VR, reflecting a rapid upward trend from less than 12 billion U.S. dollars in 2022 to a projected value of 22 billion U.S. dollars by 2025 in the VR market [9]. VR is used for SBHE training as apps, treating patients as digital therapeutics [10,11], or as a patient education tool [12]. The multitude of eXtended reality (XR), which comprises VR, mixed reality (MR) and augmented reality (AR), led to different healthcare institutes integrating its training into their curricula [13]. Researching the nuances of XR application for healthcare providers provides the next step in this direction.

Additionally, the authors used the DIY models approach to tackle their teaching/learning environment challenges. The DIY innovative simulation solutions bring several benefits, such as return on investment and value [5,6,14], overcoming simulator limitations [15] and systems deficiencies [16], among several others. The *smart textiles* concept goes far back to its use by the armed forces for medical trauma assessment [17]. Several simulation industry vendors are developing similar products. However, research on this technology and its use in healthcare simulation are not prevalent, making it a novel situation in MacQuarrie et al.'s setting [7].

Lastly, SP methodology was the most used simulation training approach reported in a survey at the onset of the pandemic [18]. Being a true researcher, Holligan et al. [8] explained the shortcomings of SP methodology and their mitigating efforts in subsequent training. Their article emphasizes that sometimes innovation is born out of necessity when deficiencies are accepted and remedied [8].

Current trends

Artificial intelligence

The increasing role of artificial intelligence (AI) and its associated field, machine learning (ML), makes it a perfect research candidate for new technological frontiers [19] beyond ChatGpT [20]. AI in healthcare is predicted to increase from $1.4 billion in 2018 to $17.8 billion by 2025 [19].

XR applications

The distance between the learners and educators has decreased with using XR applications[13]. Combining the XR application with multiple data-gathering sources [13] (such as hand and gaze tracking, audio feed, and vital signs) with the newest Edge AI technology opened up new investigation areas for researchers [21].

Bridging the gap

Bridging the gap between the global north and south in innovation and research is essential [22]. With more awareness about diversity, equity and inclusivity, more researchers are working with their counterparts in different areas of the world. The very existence of this journal is the hallmark of this effort.

Gaps

In the previous SRSIS editorial [23], authors suggested some areas for SBHE researchers, such as human factors in simulation, research into XR applications, and diversity, equity and inclusivity. Besides reemphasizing these areas, we recommend research on the following concepts.

Professional development

The significance of professional development is evident [24,25]; more innovative research is needed that is grounded in a theoretical framework and utilizes the most current technological applications.

Multi-site translational simulation-based research

Translational simulation is a functional descriptor of healthcare simulation whose purpose is to directly demonstrate improvement in patient care and healthcare systems, minimizing other variables' effects on the desired outcomes [26]. A significant gap in the simulation literature is deploying methodologically sound translational research at multiple sites. Conducting multi-site research provides larger, more generalizable results necessary to move the field forward [27].

Disaster preparedness

The frequency of mass casualty events is increasing, from man-made atrocities such as wars, suicide bombings and mass shootings to natural catastrophes, such as hurricanes, tornadoes, earthquakes and pandemics such as COVID-19. These events add to the already present and growing healthcare training needs to prepare teams for various disasters to save as many lives as possible.

No time is better than the current time to find new and efficient ways grounded in research. Each edition of SRSIS is a Sesame that brings innovative treasures of simulation research for our broader simulation community. Therefore, we invite all researchers to create new ways to address these highlighted issues and publish their findings from successful and not-so-successful research.

Declarations

Authors' contributions

MB, AM and RAA participated in this paper's conceptualization, planning and design. All authors contributed to the writing and have followed the instructions for authors, and read and approved the manuscript.

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Competing interests

There are no conflicts of interest to disclose.

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