

Advancements in Manikin Technology: Enhancing Realism and Effectiveness in Nursing Education

UH Abeysuriya^{1#}, KG Samarawickrama¹, WLPK Wijesinghe¹,
IMCWB Kohombakadawala¹, SAC Dalpatadu²,
JRS de Silva³, and EHADK Hewadikaram¹

¹Faculty of Engineering, General Sir John Kotelawala Defence University, Ratmalana, Sri Lanka

²Faculty of Medicine, General Sir John Kotelawala Defence University, Ratmalana, Sri Lanka

³Lady Ridgeway Hospital, Colombo, Sri Lanka

#uviharsh@gmail.com

Abstract

With the modern advancement of technology, use of manikins plays a major role in nursing education. Manikins are anatomically accurate simulators that replicate human physiology and provide a realistic representation of patients in various clinical scenarios. The historical development of manikins originated from 18th century by introducing the anatomical models in nursing education. The simulation-based training was evolved by the manikins as rudimentary mechanical simulators enabled the learners to practice basic skills, such as bandaging or intramuscular injections, on realistic models. With the technological progression, different types of manikins have been developed based on level of fidelity, functionalities incorporating realistic physiological responses and educational outcomes for nursing students to develop a wide range of skills and competencies. With the diversity of manikins, the nursing students are exposed into realistic complex clinical scenarios where they enhance their clinical skills, critical thinking and decision-making abilities in a safe and controlled environment. Several future trends and challenges are expected to alter the development and usage of manikins in nursing education with the integration of embedded sensors, wireless connectivity, virtual and augmented reality. Ongoing research, interdisciplinary collaborations and adherence to ethical considerations are necessary to enhance the effectiveness and realism of manikin-based simulations and to ensure that manikin-based education remains aligned with evolving educational needs and professional standards.

Keywords: *Manikin, Nursing education, High fidelity, Low fidelity*