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У тезах доповідей науково-практичної конференції з міжнародною участю лікарів, науковців та молодих учених, подаються стислі відомості щодо результатів наукової роботи, виконаної учасниками конференції.

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number of times, bringing this skill to automaticity, what is decisively important for today's surgeons.

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THE UTILISATION OF SURGICAL SIMULATION AND LEARNING TECHNOLOGIES IN CONTEMPORARY SETTINGS

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Introduction. In recent decades, general surgery has undergone substantial advancements, resulting in a notable transformation of surgical education in higher education institutions across Ukraine and globally [1]. Historically, the training of students in surgical departments was based on the student model that had been developed in previous phases of higher education. Concurrently, educators within surgical departments confronted a multitude of challenges, including heterogeneity in learning experiences, constrained prospects for instruction and experiential learning, a situation that gave rise to concerns regarding the attainment of comprehensive knowledge by trainees and patient safety in the utilization of this knowledge during postgraduate training [2]. These challenges have thus highlighted the urgent need for new educational approaches to adequately prepare surgeons for the demands of modern surgical practice.Simulation and training technologies have become pivotal in addressing numerous challenges associated with the pedagogy of students utilizing virtual reality (VR) and augmented reality (AR) models, physical simulators and computer platforms, among others. The underlying premise of their utilization is that these technologies offer a plethora of learning methodologies that enhance the learning experience, refine technical skills, and augment the level of patient care. They facilitate the creation of a safe environment for students, thereby enabling the integration of theoretical knowledge with practical clinical skills. Finally, the use of these approaches allows for the improvement of important

skills without compromising patient safety, which is of paramount importance in the provision of various types of surgical care in hospitals.

This brief review sought to evaluate the current state of simulation technologies employed in surgical education at the Department of Surgery #2 at Kharkiv National Medical University, with a particular emphasis on postgraduate general surgery curricula. The primary objective of this review was to address the practical question of how simulation technologies are integrated into surgical curricula and how they affect the development of surgical competencies, focusing on tools such as VR, AR and physical simulators.

Discussion. The integration of virtual reality (VR) technology within the anatomy department has the potential to offer learners a realistic environment in which to train. This technology can simulate real-life situations, including laparoscopic and robotic simulations. These VR systems facilitate the perception of human anatomy, allowing trainees to improve their skills and build confidence before operating on real patients.However, the current absence of technical capabilities precludes the implementation of augmented reality (AR) at this juncture. AR involves the overlaying of digital content in real-world environments, to enhance learning through the provision of interactive features and contextual information. In the context of surgical training, AR applications can project anatomical structures, procedural aids, and real-time data onto the operating field, thereby assisting surgeons during live procedures [3]. For instance, AR can be employed to overlay a 3D model of a patient's anatomy onto their body during surgery, facilitating precise incision planning and navigation [4]. This integration of virtual and physical components fosters a convergence between theoretical understanding and practical implementation, not only in the acquisition of skills, but also in the selection of specialists, retraining, and return to practice [5].Physical simulators, including manikins, haptic feedback devices, simulators, tissue-based modeling and cadaveric modeling, offer a variety of means to develop and improve procedural skills [6]. In particular, manikins equipped with sensors and programmable scenarios are extensively utilized in surgical skills laboratories for the training of procedures such as intubation, suturing and trauma care [6]. Haptic feedback technologies, incorporating motorized systems and natural haptic responses, provide realistic tactile feedback. These technologies enable learners to experience the resistance, texture, and physical properties of tissues during virtual dissections or needle insertion exercises, thereby enhancing the realism of medical simulations [7].

In summary, significant advancements have been made in surgical simulation technology in recent years, driven by innovations in computing power, graphics and artificial intelligence. Advancements in virtual reality (VR)

and augmented reality (AR) have rendered learning experiences more immersive and interactive, while developments in haptic technology have enhanced the tactile realism of physical simulations. The integration of artificial intelligence and machine learning is playing an increasingly important role in improving surgical simulation methodologies, and ongoing research and development are demonstrating their potential to improve accuracy and outcomes.

Conclusion. Consequently, the incorporation of simulation technologies into surgical education has precipitated substantial modifications in the configuration and substance of higher education curricula in Ukraine. Conventional surgical training, which relied heavily on didactic lectures and observations, is being supplemented or replaced by simulation-based training. This facilitates the acquisition of practical experience by students in a structured and safe environment, thereby enhancing their technical knowledge and decision-making ability before they engage in real surgical practice.

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BENEFITS OF PRACTICING SIMULATION SCENARIOS IN PEDIATRICS

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Simulation training has become an integral part of the activities of medical universities and healthcare organizations in Ukraine, which is reflected in state programs for the development of healthcare and medical education. The use of modern technologies for mastering and improving practical skills in the professional training of medical workers is an important condition for ensuring their high-quality professional competence.

Problems in passing clinical disciplines include the lack of individual provision of students with thematic patients, the inability of the teacher to monitor the quality of each student's performance of an objective examination of the patient. This is especially true for the pediatric patient, access to whom, even in more favorable conditions, has always been limited. Among the reasons that aggravate this situation are the increase in the number of students in groups, the decrease in the number of hospitalized patients, with the predominance of seriously ill children in the hospital, the negative attitude of the patients' parents towards students, which is associated with many current problems. All this contributes to the deterioration of the communication process between the subject patient and the medical professional, the development of practical skills and examination of the patient, and the ability to make independent and effective clinical decisions.

A sufficiently high level of theoretical training and a low level of students' mastery of practical skills of their future profession require new educational standards for professional competence and the need for changes in the methodology of medical education in the conditions of real practice in healthcare.

Simulation in medical education is a modern method of teaching and assessing practical skills, abilities, and knowledge, based on realistic modeling, imitation of a clinical situation or a single physiological system, for which biological, mechanical, electronic, and virtual (computer) models can be used.